Ethiopian TVET-System

Health Extension Service

Level III

Based on Jan.2018G.C Occupational Standard

Module Title: MODULE TITLE: Providing First Aid and Emergency Response

TTLM Code: HLT HES3 TTLM 0919 v1

This module includes the following Learning Guides

LG63: Assess and identify client's condition

LG64: Provide first aid service

LG65:Prepare, evaluate and act in an emergency

LG66: Refer client requiring further care

Instruction Sheet	LG63: Assess and identify client's condition

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics –

- Introduction to first aid.
  - ✓ Definition of first aid
  - ✓ Purpose of first aid
  - ✓ Steps in giving emergency care
  - ✓ Characteristics of first aider
  - ✓ The scope of first aid treatment
- Basic principles of first aid
- General assessment of the situation
  - ✓ Checking state of consciousness
  - ✓ Taking history of event
  - ✓ Taking vital sign
  - ✓ Brief examination of patient
- First aid kit/supplies
- Implementing Organizational emergency procedures and policies
- Applying Occupational health and safety procedures and working practice

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to –

- Discuss Introduction to first aid
- Check and monitor Vital signs in accordance with local health post standard guidelines.
- obtaine History of the event by data records

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below

3. Read the information written in the “Information Sheets”. Try to understand what are being discussed. Ask your teacher for assistance if you have hard time understanding them.
4. Accomplish the “Self-checks”. In each information sheets.
5. Ask from your teacher the key to correction (key answers) or you can request your teacher to correct your work. (You are to get the key answer only after you finished answering the Self-checks).
6. If you earned a satisfactory evaluation proceed to “Operation sheets and LAP Tests if any”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity.
7. After You accomplish Operation sheets and LAP Tests, ensure you have a formative assessment and get a satisfactory result;
8. Then proceed to the next information sheet

1.1 Definition of first aid First aid is the initial assistance / support or treatment given to an injured or accidentally ill person using whatever materials or equipment available at the time before he / she reaches to a health facility. In the provision of first aid service, before providing the service, the first step that a first aider has to consider is that assessment and identification of clients condition. The identification of casualty's condition helps to set priority and decide the type of first aid measure that has to be initiated first. The casualty's condition can be assessed and identified by doing a quick observation of the surroundings and by taking quick history and physical examination.

1.2 Purpose of first aid

First Aid is used to help people who need urgent medical attention. In the most serious cases First Aid is not used to treat people completely but focuses on keeping people alive until trained medical professional with the necessary equipment arrive on the scene. First Aid saves many many lives every year.

- To keep the injured or ill person alive
- To prevent the injured condition from becoming worse
- To help him/her to recover
- To sustains life

1.3 **First-Aid scope** The scope of first aid tretement:

• Assessing the situation
• Diagnosing the problems
• Giving immediate treatment
• Referring of the causality to higher health institutions

First Aid Management and Accident Prevention

By observation:

- Cheek for any external bleeding and determine whether the bleeding is severe or not
- Check for breathing pattern and determine whether there is respiratory problem or not.

Note: Bleeding and respiratory problems are the top urgent emergency conditions that need fast decision and action.

B. Brief Examination of patient First check:

Breathing (Listen and look at rise and fall of the chest) ƒ Color of skin (darks skin due to shortage of oxygen)

Circulation of blood (by taking pulse and blood pressure) Pupils of the eye (large, small, altered with light)

- Check parts of the body: Look carefully and quickly of each part of the body in the following order or steps:
    - Head
    - Back
    - Neck
    - Arms,
    - hands,
    - fingers
    - Chest
      First Aid Management and Accident Prevention
    - legs,
    - feet,
    - toes
    - Abdomen
- Look for:
    - Signs of internal damage to organ
    - Burns
    - Dislocation (broken bone)
    - Wounds Dislocation (bone put out of place)
    - Fracture
    - Sprain
    - Strain

Self-Check -1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What is fist aid?
2. Why we provide first aid ?
3. What first is the step that a first aider has to consider during providing first aid?
4. To whom we have provide first aid?

Note: **Satisfactory rating - 2 points** **Unsatisfactory - below 2 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information sheet 2	General assessment of the situation

1.1 General direction /principles / of first aid

In the management (mgt) of casualty, as a general principle, the first aider has to consider the following tasks as his or her responsibility.

- **Assessment of the situation and casualty**
- **Reaching to diagnosis for each casualty**
- **Giving immediate & adequate treatment based on priority matrix**
- **Arrangement for transport according to the seriousness of the condition**
- **Prevent cross infection**
- **Provision of psychological and emotional support**

1.2 Assessment of the casualty's condition

This involves assessment of the overall situation and the general condition of the casualty. During the process of assessment the following principles has to be considered:

- **be calm and confident**
- **Talk, listen & reassure the conscious causality**
- **Check safety of casualty and of yourself**
- **Check for breathing, bleeding and level of consciousness**
- **Get others to help / (Emergency Medical Staff)EMS/**

Components of assessment process:

- **Assessment of the situation and safety / scene size up/**
- **Initial assessment**
- **Physical examination**

- **Vital sign**
- **Focused History taking**
- **Ongoing assessment**

1.2.1 Assessment of the situation /Scene size up/ – An assessment of the scene (current situation of an event) and the surroundings, if it is safe, will provide valuable information to the first responder and will ensure the well-being of the first responder. Ex. Unstable Situation, violent, Hazmat Situation (industry hazardous material) etc. Scene safety in relation to personal protection, casualty and bystander protection is important. If the scene is unsafe, make it safe, Otherwise, DO NOT ENTER

1.2.2 Initial assessment- After a through observation of the situation and the surroundings, the first aider can proceeds to initial assessment comprising General impression, assessment of responsiveness, and Assessment of Air way, Breathing and Circulation (A,B and C).

a. General impression – this is performed based on the First Responder's immediate assessment of the environment and the patient's chief complaint

Figure: 1. General assessment

b. Assessment of responsiveness by checking if the casualty is Alert, responding to Verbal stimuli, responding to pain stimuli or Unresponsive.

The level of responsiveness / consciousness can be expressed as:

Full consciousness – able to speak & answer questions normally

Drowsiness- Easley aroused (awoken) but lapses in to unconsciousness

Stupor – Can be aroused with difficulty and is aware of painful stimuli Ex- pin prick

Coma – Cannot be aroused by any stimuli

Figure 2: first aider assess responsivenes of the casulty

c. Assessment of Air way (open the air way, inspect the air way, clear the air way as needed) , Breathing and Circulation)

Figure 3: Air way assessment: open airway by performing head-tilt/chin-lift maneuver

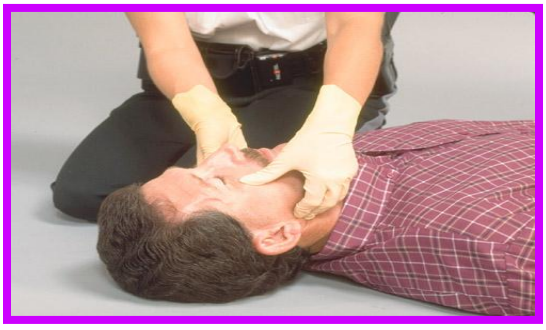


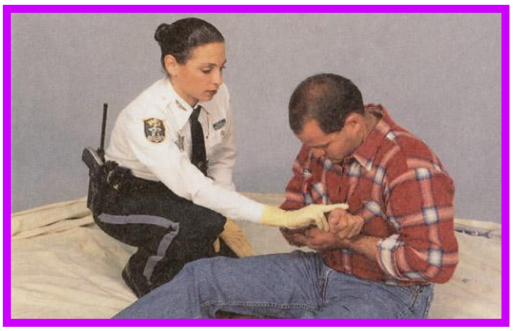
Figure 4: Open airway; perform jaw thrust.

d. Assessment of Breathing -

- **Look at the effort of breathing.**
- **Look, listen, and feel for**
- **presence of ventilations**
- **Ventilate as needed**

Figure 5: Assess breathing; look, listen,feel

e. Assess the Patient's Circulation



AsAssess Pulse , Assess for Bleeding and Assess Skin

Figure 6: checking for radial pulse

Figure 7; Check for a carotid pulse.

Figure 8: Checking Brachial pulse

1.2.3 Physical examination

The First Responder Physical Examination is designed to locate and begin the initial management of the signs and symptoms of illness or injury. The First Responder should complete a physical exam on all patients following the initial assessment. Inspection and palpation /feeling of body parts/ are the two important methods of physical examination in first aid practice.
Inspect and palpate for DOTS (Deformity, Open wound, tenderness and Swelling).
Do the physical examination in the sequence of: Head ⏵ Neck ⏵ Chest ⏵ Abdomen ⏵ Pelvic ⏵ Extremities

Figure 9: Assessment of the neck

Figure 11; Assessment of the Chest

Figure 12: Assessment of the abdomen

Figure 13: Assessment of the pelvic

1.2.4 Vital Sign

Vital sign is an outward signs of what is occurring inside the body. They are the key signs that are used to evaluate the patient's condition. The first set of vital signs that you obtain

is called the baseline vital sign. You should take vital sign every 5 minutes for unstable patient and every 15 minutes for stable patient.

Age	Range, breath per minute
Adult	12 to 20
Children	15 to 30
Infant	25 to 50

Table1.Rate Normal range respiration for different age group

1.1.4. A. Respiration

Breathing is a continuous process in which each breath regularly follows the last with no notable interruption. Breathing normally a spontaneous, automatic process, which occurs without conscious thought, visible effort, marked sounds or pain. You will assess breathing by watching the patient chest rise and fall, feeling for air through the mouth and nose during exhalation and listening to the breath sound with a sthetscope over

each lung. Chest rise and breath sound should be equal on both sides of the chest. When assessing respirations, you must determine the rate, quality (character) and depth of the patients breathing

1.1.4. B Pulse

The pulse is the pressure wave that occurs as each heart beat causes a surge in the blood circulating through the arteries. The pulse is mostly felt at a pulse point where a major artery lies near the surface and can be pressed gently against a bone or solid organ. To palpate (feel) the pulse, hold together your index and long fingers and place their tip over a pulse point, press gently against the artery until you feel intermittent pulsation

Figure 14 Radial pulse

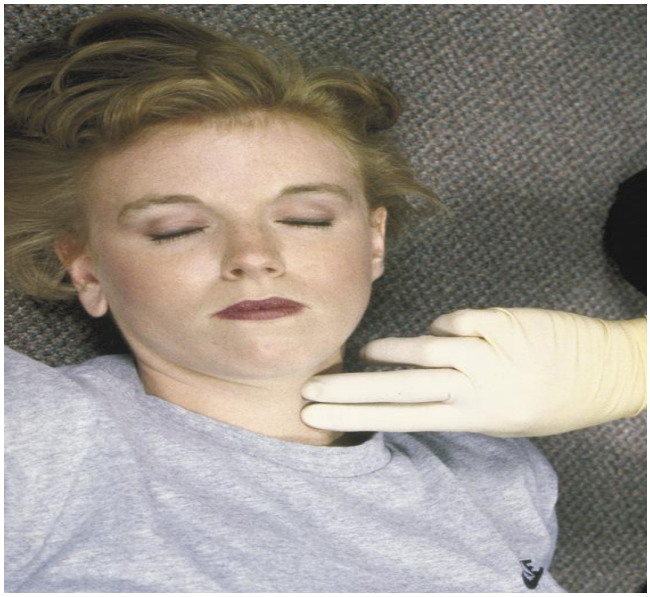


Figure 16 Carotid pulses

Figure 15 Brachial pulse

Table 2 Normal range for pulse rate

Age	Range beat per minute
Adult	60 to 100
Children	70 to 150
Infant	100 to 160

1.1.4.C Skin condition

The condition of the patient's skin can tell you a lot about the patient's peripheral circulation and perfusion, blood oxygen level and body temperature. When assessing the skin condition, you should evaluate its color, temperature and moisture.

- **Color**
- **Temperature**
- **Moisture**

1.1.4. D Capillary refill

Capillary refill is evaluated to assess the ability of the circulatory system to restore blood to the capillary system.

Figure 17 Checking capillary refill

Capillary refill should be prompt and the nail bed color should be pink, with adequate perfusion, the color in the nail bed should be restored to its normal pink within 2 second. Or about the time it takes to say "capillary refill" at a normal rate of speech.

1.1.4. Blood Pressure

Blood pressure is the pressure of circulating blood against the wall of arteries A drop in blood pressure may indicate: Loss of blood, Loss of vascular tone and Cardiac pumping problem.

Normal blood pressure

Blood pressure level varies with age and gender. The normal ranges for blood pressure

a) **Adults: 90 to 140 mm Hg (systolic)/60 to 90 mm Hg (diastolic)**
b) **Children (1 to 8 years): 80 to 110 mm Hg (systolic)**
c) **Infants (newborn to age 1 year): 50 to 95 mm Hg (systolic)**

1.1.4. F. Level of consciousness (LOC)

Level of consciousness (LOC) should also be assessed as a vital sign. AVPU scale is a rapid method of assessing LOC. (See the previous session for detail)

A = Alert and awake

V = Response to verbal stimulus

P = Responsive to pain

U = Unresponsive

1.1.4. G. Pupils

The diameter and reactivity to light of the patient's pupil reflect the status of the brain's perfusion, oxygenation and condition.

On injury if the pupil reacts in any of the following ways:

- **Become fixed with no reaction to light**
- **Dilate with light and constrict when light is removed**
- **React sluggishly**
- **Become unequal in size**

- **Become unequal in size when a bright light is introduced into or removed from one eye**

Depressed brain function can be produced by the following situation

- **Injury to the brain or brain stem**
- **Trauma or stroke**
- **Brain tumor**
- **In adequate oxygen perfusion**
- **Drugs or toxins (Central nervous system depressant)**

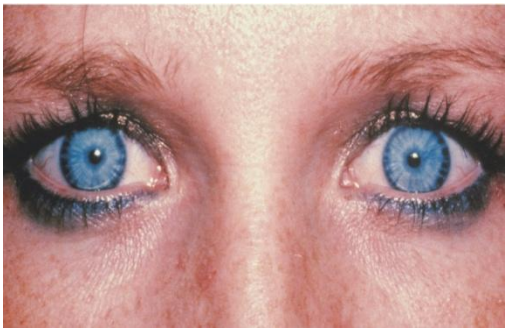


Figure 18 Constricted pupil

Figure 19 Dilated pupil

Figure 20 unequal size pupil

The letter PEARRL serves as a useful guide in assessing pupil. They stand for the following:

- **P = Pupils**
- **E = Equal**
- **A = And**
- **R = Round**
- **R = Regular in size**
- **L = react to Light**

If the casualty could not respond or he/she is not conscious, history can be taken from

1.2.5 History taking

For medical patients the history may be completed prior to the physical examination. History of the casualty can be taken from the casualty himself or herself.

a witness or bystander. Take "SAMPLE" history on: Signs / Symptoms, Allergies, Medications, Pertinent past History, Last Oral Intake, and Event.

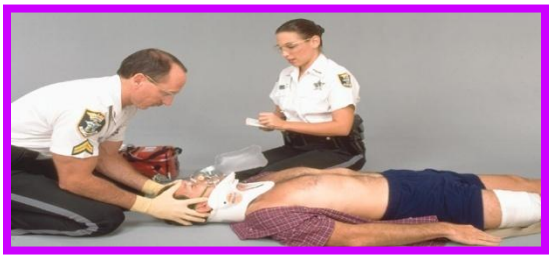


Fig. 21. Taking history

1.2.6 **Ongoing assessment**

While awaiting the additional EMS /Emergency Medical Service/ resources, the First Responder should continue to assess the patient.

- Repeat Initial Assessment
- Repeat Exam as needed
- Check Interventions
- Calm and Reassure
- Hand Off Report

Note: Repeat every 15 minutes for a stable Patient and repeat every 5 minutes for an unstable Patient.

Identification of the emergency and client condition

After the general assessment of the casualty's condition and the environment the first aider should identify the casualty's condition. If the first aider identifies a condition environment which is unsafe to provide the first aid, make it safe, Otherwise, **DO NOT ENTERS**.

If you identify the environment with an electric line cut, while trying to help someone with an electrical burn, **don't touch**, the person may still be in contact with the electrical source. Touching the person may pass the current through you. Turn off the source of electricity if possible.

Self-Check -2	**Written Test**

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List all assessment components
2. What will be assessed during initial assessment?
3. Which Vital signs assessment indicates bleeding emergency?
4. List Normal range of Blood purser for adult

Note: **Satisfactory rating - 2 points** **Unsatisfactory - below 2 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Everyone should have a well-stocked first aid kit at work place. For first aid kits in the workplace, there will be legislation which specifies what must be present; this will depend on the size and type of the workplace.

First aid kits should be

- **portable and be made of material that will protect the contents from dust, moisture and contamination**
- **clearly marked in the workplace,**
- **sufficient indication of the kit's location for those who are unfamiliar**
- **Kept well-stocked; supplies do expire, and must be replaced periodically.**
- **Checked regularly for that the kit is stocked, and**
- **Replaced for any expired items as required, available at every warehouse and**
- **Inspected regularly for proper storage and distribution**

The number of boxes required should be determined by the employer, taking the following into account:

The type of injuries that are likely to occur at a workplace

- **The nature of the activities performed and**
- **The number of employees employed at such workplace**

Contents of first aid kits should match the types of injuries and illnesses likely to occur in the workplace. Where a risk assessment shows there is a need for extra first aid kits and certain first aid requirements (e.g.

- **first aid rooms and/or first aid personnel) these should be made available. The minimum contents of a first aid box are:**

1) Wound cleaner / antiseptic (100ml)
2) Swabs for cleaning wounds
3) Cotton wool for padding (100g)
4) Sterile gauze (minimum quantity 10)
5) 1 pair of forceps (for splinters)
6) 1 pair of scissors (minimum size 100mm)
7) 1 set of safety pins
8) 4 triangular bandages

9) 4 roller bandages (75mm x 5m)
10) 4 roller bandages (100mm x 5m)
11) 1 roll of elastic adhesive (25mm x 3m)
12) 1 Non-allergenic adhesive strip (25mm x 3m)
13) 1 Packet of adhesive dressing strips (minimum quantity 10 assorted sizes)
14) 4 First aid dressing (75mm x 100mm)
15) 4 First aid dressings (150mm x 200mm)
16) 2 Straight splints
17) 2 Pairs large and 2 pairs medium disposable latex glove
18) 2 CPR mouth pieces or similar devices

Self-Check -3	**Written Test**

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List all first aid kits needed to provide first aid?
2. What determine the number of box needed for first aid

Note: **Satisfactory rating - 2 points** **Unsatisfactory - below 2 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information sheet 4	Implementing Organizational emergency procedures and policies

Policies and procedures for disasters and emergencies are essential for every organisation. They provide: a framework for action (within your organisation); decisions grounded in legitimate authority; written documentation so the organisation can keep track of what's agreed; and a starting point for building understanding for everyone in the organisation.The Disaster Plan can itself be a starting point for organisational policies and procedures. Further details may be needed in the organisation' s policy and procedures manuals.

Policies and Procedures for Disasters and Emergencies

Policies and procedures for disasters and emergencies are essential for every organisation.

Policies and procedures provide:

- a framework for action (within your organisation)
- decisions grounded in legitimate authority
- Written documentation so the organisation can keep track of what's agreed.
- a starting point for building understanding for everyone in the organisation

Policy creation is an ongoing process. It's never finished.

Policy creation in organisations also sits within legislative, contractual and other wider framework within which your organisation operate (awards, legislation, Government policy etc.).

In relation to disasters and emergencies every organisation needs policies that cover all the elements in the Disaster Plan:

Step 1: Leadership

- Mandate & approach
- Objectives to be achieved
- Roles: staff and volunteers

Step 2: Building Networks

- Local Emergency Management Committee & Plan & Emergency services
- Community organisations
- Identifying vulnerable clients

Step 3: Know Your Risks

- Past and possible future disasters and emergencies
- Risk register (resources)

Step 4: Manage Your Risks

- Prevention and Adaption
- Risk Register (your organisation)
- Business Continuity Plan
- Insurance
- Preparing for community recovery
- Disaster and emergency policies and procedures
- Triggers and key messages identified and communicated

Step 5: Preparing Others

- Staff and volunteer awareness and knowledge

Step 6: Learning and improving

- Testing, monitoring and reviewing
- Learning and sharing

The Disaster Plan can itself be a starting point for organisational policies and procedures. Further details may be needed in the

organisation's policy and procedures manuals. Useful polices can include:

- Organisational mandate for disaster resilience
- Objectives to be achieved in the face of disasters and emergencies
- Relationships with local emergency management and services and associated processes (committee memberships etc.).
- Identifying vulnerable clients - Processes and systems
- Staff and volunteer disaster and emergency training
- Client disaster preparedness

As these policies are developed further detail can be added, for example:

- emergency procedures, including: an effective response to an emergency
- evacuation procedures
- notifying emergency service organisations at the earliest opportunity
- medical treatment and assistance, and effective communication between the person authorised to coordinate the emergency response and all people at the workplace
- testing of the emergency procedures—including the frequency of testing, and
- information, training and instruction to relevant workers in relation to implementing the emergency procedures.

Emergency policies and procedures should include the following types of practical information:

- emergency contact details for key personnel who have specific roles or responsibilities under the emergency plan, for example fire wardens, floor wardens and first aid officers
- contact details for local emergency services, for example police, fire brigade and poison information centre

- a description of the mechanisms for alerting people at the workplace to an emergency or possible emergency, for example siren or bell alarm
- evacuation procedures including arrangements for assisting any hearing, vision or mobility-impaired people
- a map of the workplace illustrating the location of fire protection equipment, emergency exits, assembly points
- triggers and processes for advising neighbouring businesses about emergencies, and the post-incident follow-up process, for example notifying the regulator, organising trauma counselling or medical treatment.
- Procedures for testing the emergency plan including the frequency of testing must be included.

Self-Check -1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List all Emergency policies and procedures
2. List all the elements in the Emergency Plan

Note: **Satisfactory rating - 2 points** **Unsatisfactory - below 2 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information sheet 5	Applying Occupational health and safety procedures and working practices

. OCCUPATIONAL HEALTH AND SAFETY PROCEDURES

1. A planned system of working to prevent illness and injury where you work by recognizing and identifying hazards and risks.
2. A hazard is anything that could hurt you or someone else.
3. It means working out how likely it is that a hazard will harm someone and how serious the harm could be.
4. For example, you can pick up things from the floor and put them away to eliminate a trip hazard.
5. . A hazard is a situation in the workplace that has the potential to harm the health and safety of people or to damage plant and equipment.
6. One of the most common physical hazards
7. When working on electronic equipment always be alert
8. Always read the warnings and instructions on the label.
9. Inside computers and electronic equipment, there is a range of voltages from 3.3 volts to 25 volts, most of which are harmless.
10. Protect people from injury • Protect equipment from damage • Protect the environment from contamination
11. Know the location of fire extinguishers, how to use them and which to use for electrical fires and for combustible fires. • Find an escape route in case a fire gets out of control. • Know how to contact emergency services quickly • Keep the
12. workspace clean. • Keep most solvents in a separate area.

Self-Check -5	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. **what is hazard ?**
2. How we can prevent form hazars?

Note: **Satisfactory rating - 3 points** **Unsatisfactory - below 3 points**

Answer Sheet

Score = _____

Rating: _____

Instruction Sheet	LG64: Provide first aid service

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics –

- Basic anatomy and physiology related to first aid and emergency response
- Basic ABC rules of life Accidents
- Access and manage common emergency conditions

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to –

- 0Perate Clinical equipment correctly as required for client management according to local clinical guidelines and protocols
- Apply Basic ABC rules of life.
- Implement Client care techniques in accordance with procedures and techniques applicable to health post

Learning Instructions:

9. Read the specific objectives of this Learning Guide.
10. Follow the instructions described below
11. Read the information written in the “Information Sheets”. Try to understand what are being discussed. Ask your teacher for assistance if you have hard time understanding them.
12. Accomplish the “Self-checks”. In each information sheets.
13. Ask from your teacher the key to correction (key answers) or you can request your teacher to correct your work. (You are to get the key answer only after you finished answering the Self-checks).
14. If you earned a satisfactory evaluation proceed to “Operation sheets and LAP Tests if any”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity.
15. After You accomplish Operation sheets and LAP Tests, ensure you have a formative assessment and get a satisfactory result;
16. Then proceed to the next information sheet

Information Sheet- 1	Basic anatomy and physiology related to first aid and emergency response

1.1 Anatomy of the respiratory system

The airway is divided in to upper and lower airways. The upper airway consists of the nose, mouth, throat, and epiglottis. As air enters the two nares (nostrils) of the nose, which are separated by the nasal septum, small hairs called cilia clean, warm, and moisten it. From the oral and nasal cavity, air passes through the oropharynx and nasopharynx. The portion of the throat behind the nose is named the nasopharynx; the portion behind the mouth is the oropharynx.

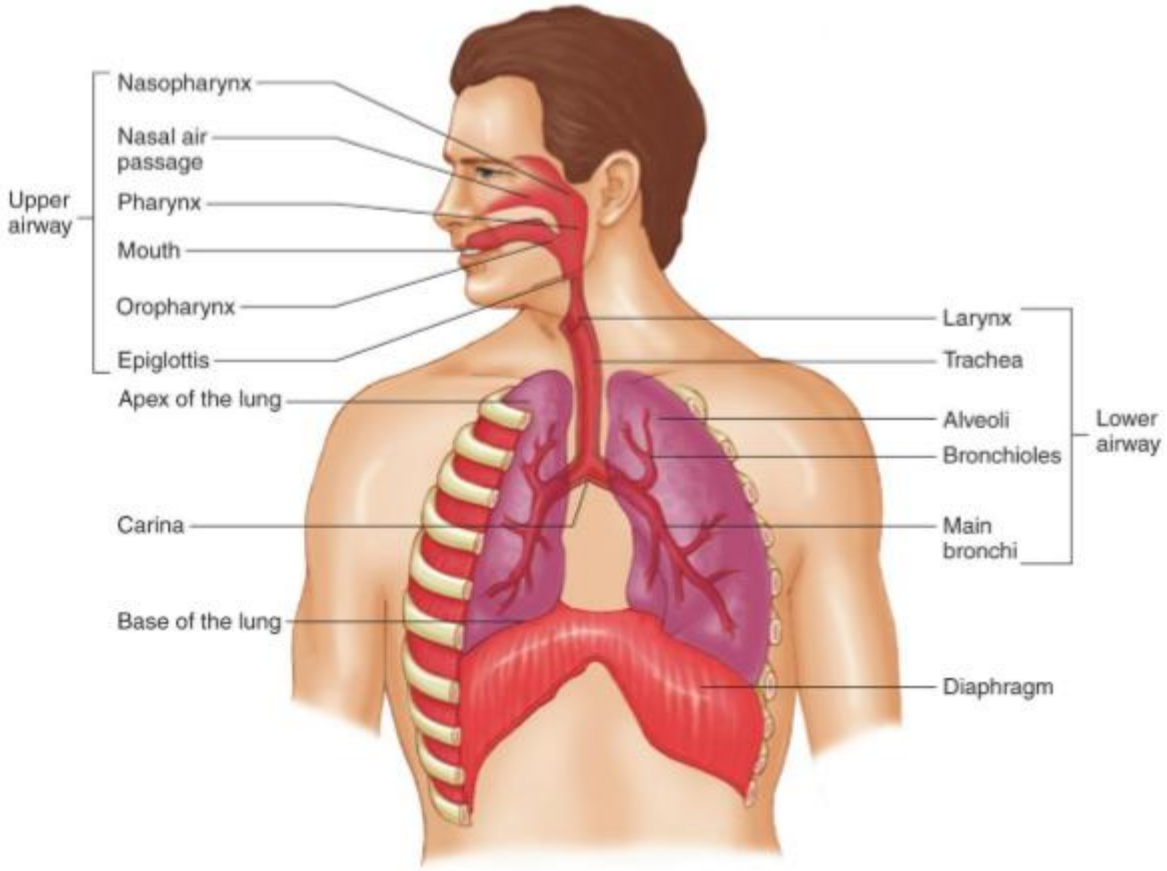
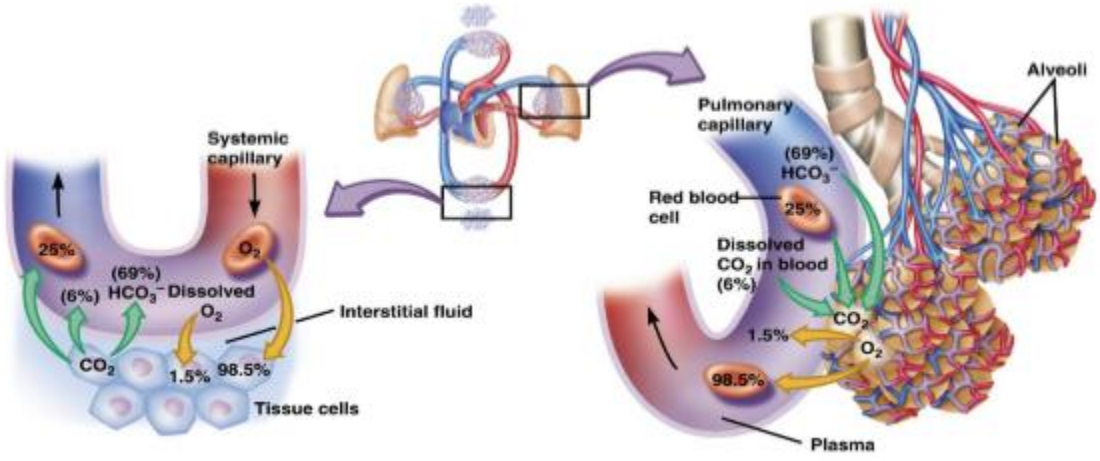


Figure 1.1. The Respiratory System

The lower airway consists of the larynx (voice box), trachea, bronchi, and alveoli. As you see in the picture 1.1

The lower airway begins with the larynx. It is composed of a number of cartilages which are joined together by ligaments. The three important cartilages composing the larynx are the thyroid, cricoids, and the epiglottis. The thyroid cartilage forming the superior portion of the larynx. The cricoids cartilage is a firm cartilage that forms the lower part of the larynx. The epiglottis is a leaf shaped structure above the larynx that prevents food from entering the larynx during swallowing

The trachea, or windpipe, lies within the space between the lungs. It extends from the larynx and divides, at its lower end (the carina), into two large air passages called the bronchi (sing., bronchus), each of which enters the lung adjacent to it—one to the left,
the other to the right. Inside the lung, each bronchus then divides into increasingly smaller branches, the smallest of which are the bronchioles.
These bronchioles branch to form microscopic ducts from which alveoli (sing., alveolus), millions of minute air sacs, arise. The alveoli are surrounded by very small blood vessels and capillaries. The actual exchanges of gas takes place across a thin membrane that separates the capillaries of the circulatory system from the alveoli of the lung. It is through the thin walls of the alveoli that oxygen moves into the bloodstream to be carried to tissues throughout the body and also through which carbon dioxide enters these air sacs to be exhaled.



The chest (thoracic cage) contains the lungs, one on each side. The boundaries of the thorax are the rib cages anteriorly, superiorly and posteriorly and the diaphragm inferiorly.
Structures of breathing
The diaphragm is considered as a specialized muscle because it functions as voluntary and an involuntary muscle.
The lungs consist of soft, spongy tissue, because they have no muscle tissue, cannot move on their own, they need the help of other structure to be able to expand and contract as we inhale and exhale.
Breathing process: Inhalation and exhalation
Inhalation: the active process, muscular part of breathing is called inhalation. During inhalation the diaphragm and intercostals muscles contract. When the diaphragm contract, it moves down slightly and increases the size of the thoracic cage from top to bottom. When the intercostals muscle contract, they lift the ribs up and out. As we inhale the combined action of these structures enlarge the thorax in all direction, allowing the lungs to expand.
The air pressure outside the body, called atmospheric pressure, is normally higher than the air pressure within the thorax. As we inhale and the thoracic cage expand, the air pressure within the thorax decreases, creating negative pressure within the thoracic cage causes air to enter through the nose or mouth and into the lungs until the pressure equalizes.

Exhalation: Unlike inhalation, exhalation does not normally require muscular effort therefore it is a passive process, during exhalation the diaphragm and intercostals muscles relax. In response, the thorax decreases in size, allowing the ribs and muscles to assume their normal resting position. When the size of the thoracic cage decreases, air in the lungs is compressed in to a smaller space. The air pressure within the thorax then become higher than the pressure outside and air is pushed out through the trachea

- **One respiratory cycle consists of one inhalation and one exhalation**

Accessory Muscles of inspiration

• Needed for forceful breathing

Key sign of respiratory distress

• Accessory muscles of inspiration increase the size of chest cavity by further lifting rib cage and increasing diameter

• Accessory inspiratory muscles – scalene (neck), sternocleidomastoids, parasternal (chest)

Accessory Muscles of Expiration

• Assist in forcefully evacuating air

• Pull down on ribs and compress abdominal contents into diaphragm

• Accessory expiratory muscles —internal intercostals and abdominal muscles

• Active accessories indicate respiratory distress, signs include bulging neck muscles, retraction between ribs, abdominal distention.

Physiology of the Respiratory System

To maintain life, all organisms must receive a constant supply of substance like food, water and oxygen. A person can live several weeks without food because the body can use nutrient it has stored. Although the body doesn't store as much water, it is possible to live several days without fluid intake. However, lack of oxygen, even for a few minutes can result in irreversible damage and death. Each cell in the body needs oxygen delivered and wastes eliminated. Some tissues may last hours without oxygen delivery. Cardiac and brain cells are very susceptible to damage without a constant supply of oxygen. The most sensitive cells in the human body are in the brain. Respiration is exchange of oxygen and carbon dioxide between an organism and the environment. There are two types of respiration. The first one is External respiration which refers to transfer of oxygen and carbon dioxide between inspired air and Pulmonary capillaries, while the second one is Internal respiration which refers to transfer of oxygen and carbon dioxide between peripheral blood capillaries and tissue cells.

Respiratory Volumes

Tidal volume Tidal Volume is the volume of air normally inhaled/exhaled during each respiratory cycle. It is estimated to be approximately 500 cc of air in an adult. Adequate tidal volume is vital when performing assisted ventilations for patients in severe respiratory distress and respiratory arrest.

Minute volume

Minute Volume is the amount of air delivered to the lungs each minute. Equals tidal volume times the number of breaths per minute. Tidal volume (approx 500 mL/breath) x respiratory rate (normal range is 12-20/minute). Example: MV = 500 mL/breath x 12 breaths/min or 6000 mL/min

Alveolar/capillary exchange

The main purpose of the respiratory system is to provide oxygen and to remove carbon dioxide from the red blood cell as they pass through the lungs. Oxygen-

rich air enters the alveoli during each inspiration. Oxygen-poor bloods in the capillaries passes into the alveoli. Oxygen enters the capillaries as carbon dioxide enters the alveoli by diffusion. Inhaled air contains approximately 21% oxygen. Exhaled air contains approximately 16% oxygen. Oxygen diffuses from higher concentration in the alveoli into lower concentration in the blood.

Infant and child anatomy considerations

a) Mouth and nose - in general: All structures are smaller and more easily blocked by secretions and airway swelling

b) Pharynx - infants' and children's tongues take up proportionally more space in the mouth than adults, and can block the upper airway

c) Trachea

- **Infants and children have narrower tracheas ,which is more flexible.**
- **Positioning the airway is different in infants and children, do not hyperextend the neck (consider use of a folded towel placed under shoulder blades to maintain a —sniffing-positionǁ)**

d) Cricoid cartilage - like other cartilage in the infant and child, the cricoid cartilage is less developed and less rigid

e) Diaphragm - chest wall is softer, infants and children tend to depend more heavily on the diaphragm for breathing

f) Infants are obligate nose breathers. Suctioning may aid to decrease breathing problems in infants.

g) Children can compensate well for short periods of time

h) Infants has lower tidal volumes

I) Infants more prone to gastric inflation

1.2 Anatomy and Physiology Cardiovascular System

Cardiovascular system (CVS)

Cardiovascular system is the system that deals with anatomy and physiology the heart, blood and blood vessels. It consists of the word "cardiac", which means the heart and "vascular", the term used to describe blood vessels. The functions of cardiovascular system are transportation and distribution of essential substances to the tissues, removal metabolic by-products, adjustment of oxygen and nutrient supply in different physiologic states, and regulation of body temperature

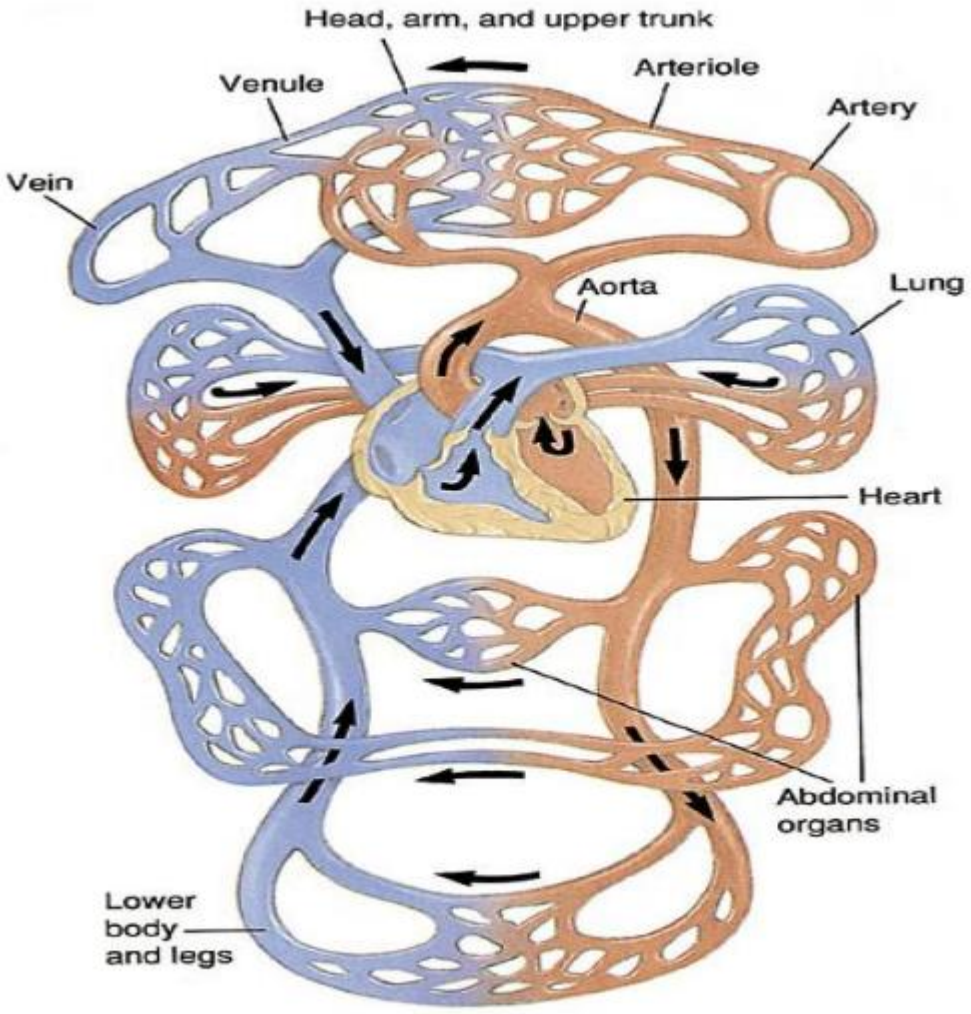


Figure1.1 The cardiovascular system

The heart is a hollow, muscular organ that is located in mediastinum, the space in the thoracic cavity. 2/3rdportion of the heart is located in the left side of the body andits apex touches the diaphragm and its base is the broad superior end where the great vessels arises.

The human heart consists of four chambers (fig 1.2), 2 thin walled atria (right and left) form the upper part of the organ and 2 thick walled ventricles (right and left) form the lower part. When the two atria contracts together, blood will follow from atrium to ventricles and when the two ventricles contracts together blood will follow from right atrium to pulmonary artery and from left ventricle to aorta. The two atria are separated by an inter atrial septum and the two ventricles by inter ventricular septum.

Blood returning from the systemic (body) circulation enters the right atrium (via the inferior and superior vena cave). From there, blood flows into the right ventricle, which then pumps blood to the lungs (via the pulmonary arteries, the only arteries that carry deoxygenated blood).

Blood returning from the lungs enters the left atrium (via pulmonary veins), then the left ventricle. The left ventricle pumps blood to the rest of the body (systemic circulation) via the aorta (the largest artery).

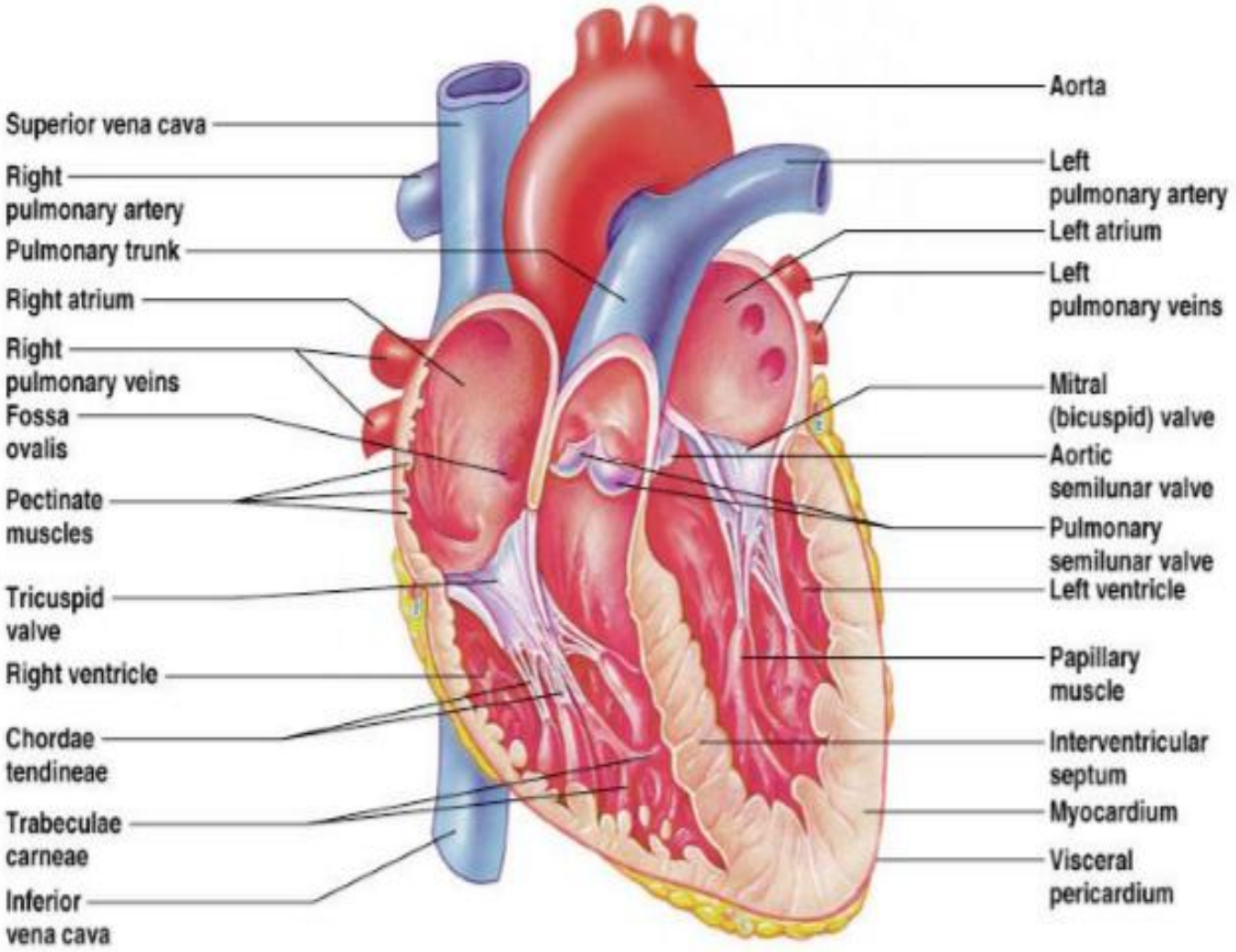


Figure.1.2 Gross Anatomy of the heart

Heart Valves: prevent back flow of blood and they function to maintain blood flow only in one direction

A) Atrioventricular (AV) valves - prevent backflow of blood from ventricles to atria during ventricular systole (contraction).The AV valves include tricuspid and bicuspid valves. Tricuspid valve - located between right atrium and right ventricle, hence prevent back flow from right ventricle to right atrium during ventricular systole. □ Mitral valve- located between left atrium and left ventricle, hence prevents back flow from left ventricle to left atrium (during ventricular systole)

B) Semi lunar valves - prevent backflow of blood from arteries (pulmonary artery and the aorta) to ventricles during ventricular diastole (relaxation)

- **Aortic valve - located between left ventricle and the aorta**
- **Pulmonary valve - located between right ventricle and the pulmonary artery The two circulatory routes of CVS are: 1) Pulmonary circulation: right ventricle ---- pulmonary artery---- lungs---pulmonary vein----- left atrium 2) Systemic circulation: left ventricle ----- aorta-----body------ superior and inferior vena cava----**

- **right atrium Coronary circulation is part of the systemic circulation and supplies blood to the heart tissues via coronary arteries and veins.**

Cardiac Electrical Conduction

Electrical impulses set the pace for heart rate, also called (normal) sinus rhythm. The initial electrical sign albegins in the right atrium at the sinoatrial (SA) node, sometimes called the natural pacemaker. This electric signal causes the atria to contract, and the signal is also passed on to the atrio ventricular (AV) node, the bundleof His (or atrio ventricular bundle), and into the Purkinje fibers, sending it through the right and left bundle branches in both ventricles. These fibers then stimulate the ventricles to contract, forcing blood out of the pulmonary arteries and aorta. Any deviation from this electronic signaling may lead to an abnormal heart rhythm, called an arrhythmia, or dysrhythmia.

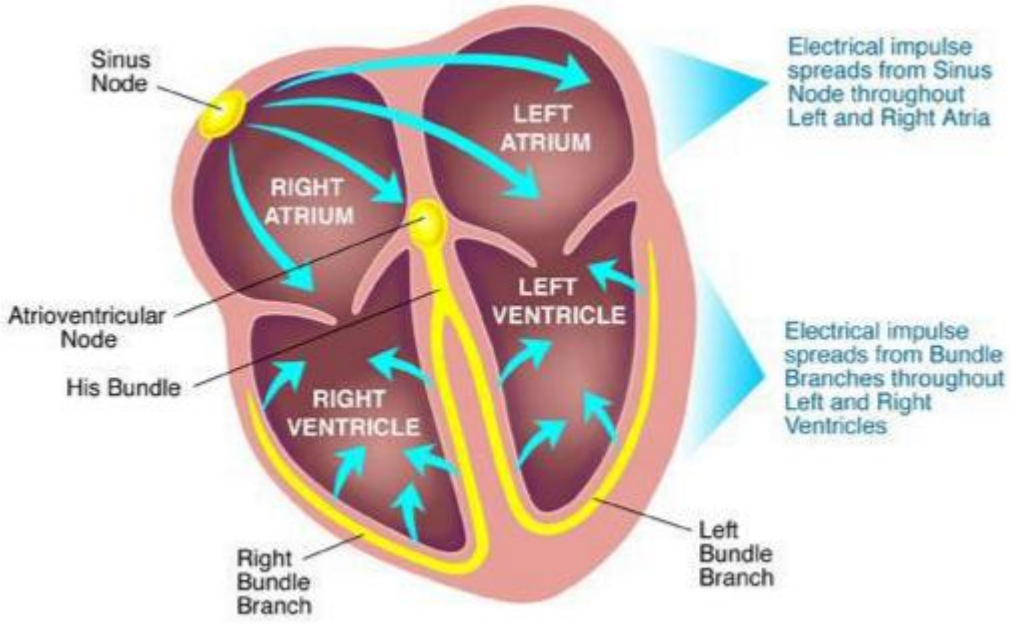


Figure.1.3. The heart and electrical conduction system

Blood vessels 1.2.1

Principal Arteries of the body

- **Aortic arch is a systemic vessel that ascends from the heart (left ventricle). Aorta arches to the left over the pulmonary artery to form the aortic arch. The three vessel that arise from the aortic arch are: The brachiocephalic artery, which is the 1st branch, supplies the upper limbs and head regions. Brachiocephalic artery bifurcates at the junction of the sternum and clavicle into theright common carotid artery (supplies the right side of hand and neck) and the subclavian artery (supplies the right upper limb) Left common carotid artery Left subclavian artery**
- **The left common carotid artery and the left sub clavian artery branch directly from the aortic arch.**

Arteries of the neck and head

Common carotid artery ascends upwards in the neck lateral to trachea and divides into the internal carotid artery and the external carotid artery slightly below the angle of the mandible. The brain is supplied by four arteries: paired vertebral arteries (i.e., right and left) and paired internal carotid arteries.

Arteries of the upper limbs

- **Radial artery- supplies muscles on the radial side of the forearm. It is the site of measuring pulse.**
- **Ulnar artery – supplies muscles on the ulnar side of the forearm.**

Branches of the thoracic portion of aorta

- **Pericardial artery – pericardium of heart Bronchial artery– systemic circulation to the lungs**

Arteries of the pelvis and lower limbs abdominal aorta terminate by bifurcating into right and left common iliac arteries in the posterior pelvic area. The common iliac artery divides into the internal iliac and external iliac. External iliac artery passes out of pelvis beneath the inguinal ligament to become the femoral artery. Femoral artery passes through the femoral triangle on the upper medial portion of the thigh. At this point it is close to the surface, hence for palpation and pressure. The femoral artery becomes the popliteal artery as it passes across the posterior aspect of the knee. The popliteal artery divides into the anterior tibial and the posterior tibial arteries which supply the muscles of the popliteal region, knee joint, leg and foot.

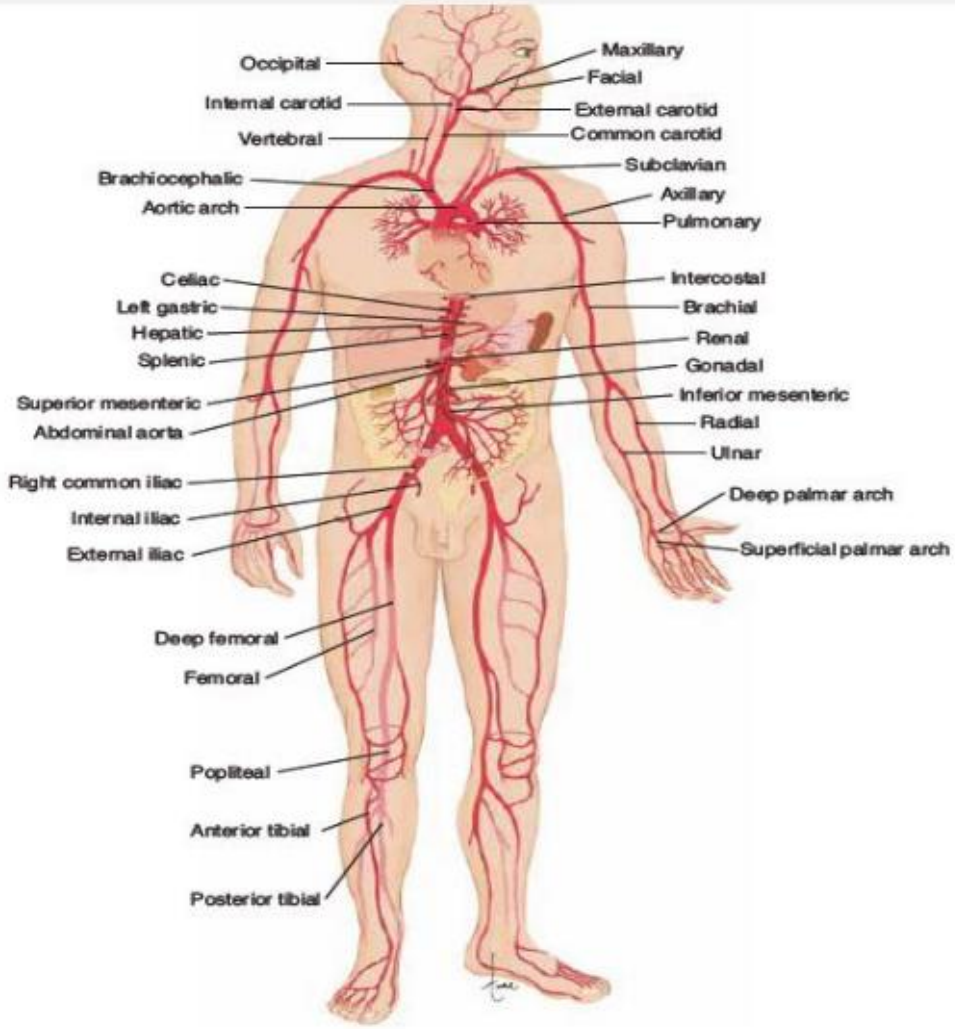


Figure. 1.4 Major arteries of the body

Venous drainage of the body Veins run parallel to arteries and most veins are named accordingly. Eg. Renal artery, Renal vein Veins Draining the neck and head

- **External jugular vein drains blood from scalp, portions of face, superficial neck region into right and left sub clavian vein.**
- **Internal jugular vein drains blood from brain, meninges, deep regions of face and neck. It is larger and deeper than the external jugular vein.**
- **Sub clavian vein and internal jugular unite to form the brachio cephalic vein. The two brachiocephalic veins merge to form the superior vena cava, which empties into the right atrium Veins of the upper extremity Consists of superficial and deep venous drainage system. Deep veins accompany the arteries and bear their names / region.**
- **Both Radial vein and Ulnar vein drain from deep and superficial palmararches. Radial and ulnar veins join in the cubital fossa to form the brachial vein, which continues up on t**
- **The medial side of the arm.**

The main superficial vessels are the basilic and cephalic veins. Basilic vein drains blood from ulnar side of forearm and medial side of arm and merges with brachial vein near the head of the humerus to form the axillary vein. Cephalic vein drains superficial region of hand and forearm on radial side and joins axillary vein in the shoulder region, which then joins subclavian vein → internal jugular → brachiocephalic Median cubital vein ascends from the cephalic vein to join basilic vein on radial side. It is a site of veni puncture Veins of the thorax

- **Superior vena cava receives blood from the right and left brachio cephalic veins, which drain head, neck, and upper limb as well as from azygous veins.**
- **The azygous veinextends superiorly along the dorsal abdominal and thoracic walls on the right sideof the vertebral columnjoins the superior vena cava at the level of thoracic vertabrae number 4 (T4). Its tributaries are ascending lumbar veins, intercostals veins and accessory hemiazygous Veins of the lower extremity Posterior and anterior tibial veins merge to form the popliteal vein. Politeal vein drains blood from the knee region and above the knee, it becomes the femoral vein**
- **Near the groin the femoral vein becomes the external iliac vein (as it passes under the inguinal ligament).**
- **At the level of the sacroiliac joint, the external iliac vein merges with the internal iliac vein to form the common iliac vein**
- **Great saphenous vein : longest vessel in the body, originates at the arch of the foot and ascends superiorly along the medial aspect of the leg and thigh before draining into the femoral vein. Veins of the Abdominal Region The inferior vena cava, largest vein in diameter of all vessels in the body, parallels the abdominal aorta on the right as it ascends through the abdominal cavity. It penetrates the diaphragm and empties into the right atrium. Tributaries of inferior vena cava are:**
- **4 paired lumbar veins**
- **Renal veins**
- **Right and left testicular veins.**
- **Right and left ovarian veins**
- **Right and left suprarenal veins.**
- **Inferior phrenic vein**
- **Right and left hepatic veins**

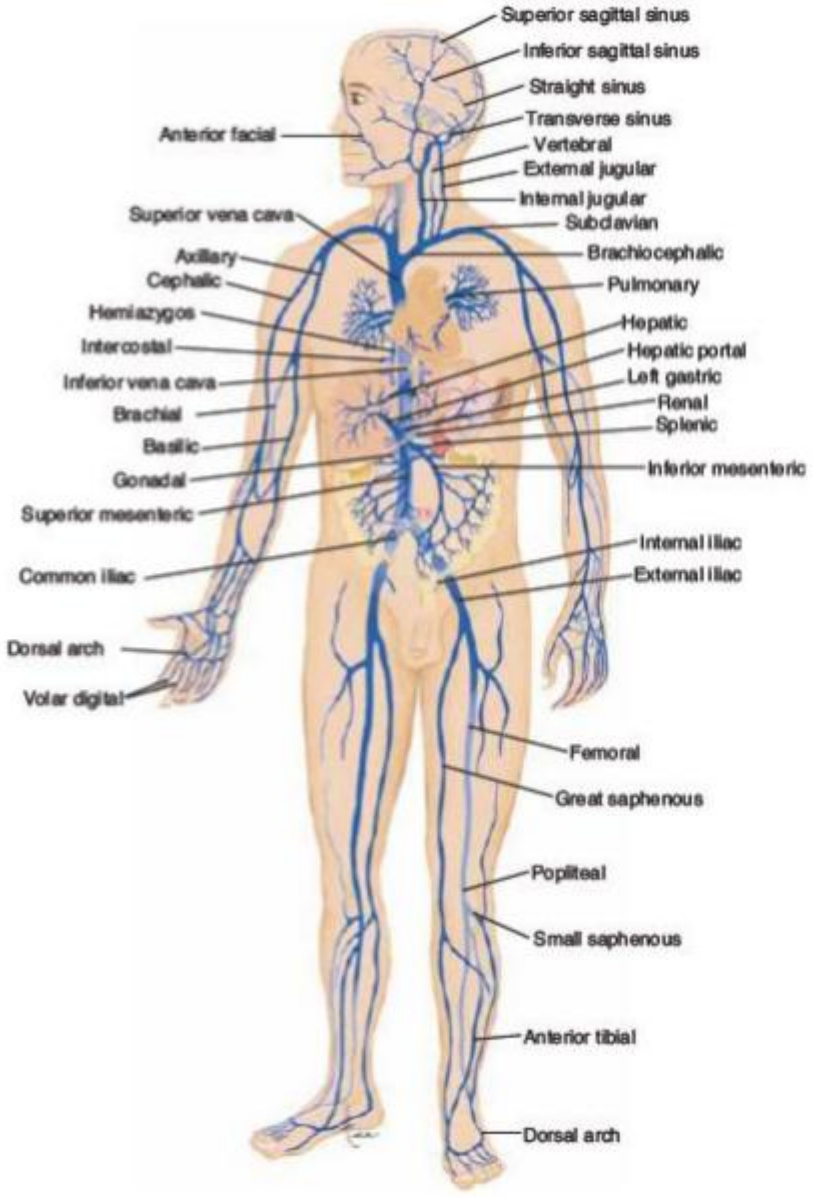


Figure 1.5 Major Veins of the body

Arterioles and venules dilate or contract to control the blood flow into and out of the capillary bed. Capillaries allow for the interchange of gases and the transfer of nutrients and waste products. Capillaries have very thin walls consisting of a single layer of cells only. They are semi-permeable to permit the passage of substances between the blood and the tissues

1.3 Blood

The general functions of blood are transportation, regulation, and protection. Materials transported by the blood include nutrients, waste products, gases, and hormones. The blood helps regulate fluid–electrolyte balance, acid–base balance, and the body temperature. Protection against pathogens is provided by white blood cells, and the blood clotting mechanism prevents excessive loss of blood after injuries.

Characteristics of blood Blood has distinctive physical characteristics: Amount—a person has 4 to 6 liters of blood, depending on his or her size. Of the total blood volume in the human body, 38% to 48% is composed of the various blood cells, also called formed elements. The remaining 52% to 62% of the blood volume is plasma, the liquid portion of blood. Color—you're probably saying to yourself, —Of course, it's red!‖ Mention is made of this obvious fact, however, because the color does vary. Arterial blood is bright red because it contains high levels of oxygen. Venous blood has given up much of its oxygen in tissues, and has a darker, dull red color. This may be important in the assessment of the source of bleeding. If blood is bright red, it is probably from a severed artery, and dark red blood is probably venous blood. PH—the normal pH range of blood is 7.35 to 7.45,which is slightly alkaline. Venous blood normally has a lower pH than does arterial blood because of the presence of more carbon dioxide. Viscosity—this means thickness or resistance to flow. Blood is about three to five times thicker than water. Viscosity is increased by the presence of blood cells and the plasma proteins, and this thickness contributes to normal blood pressure.

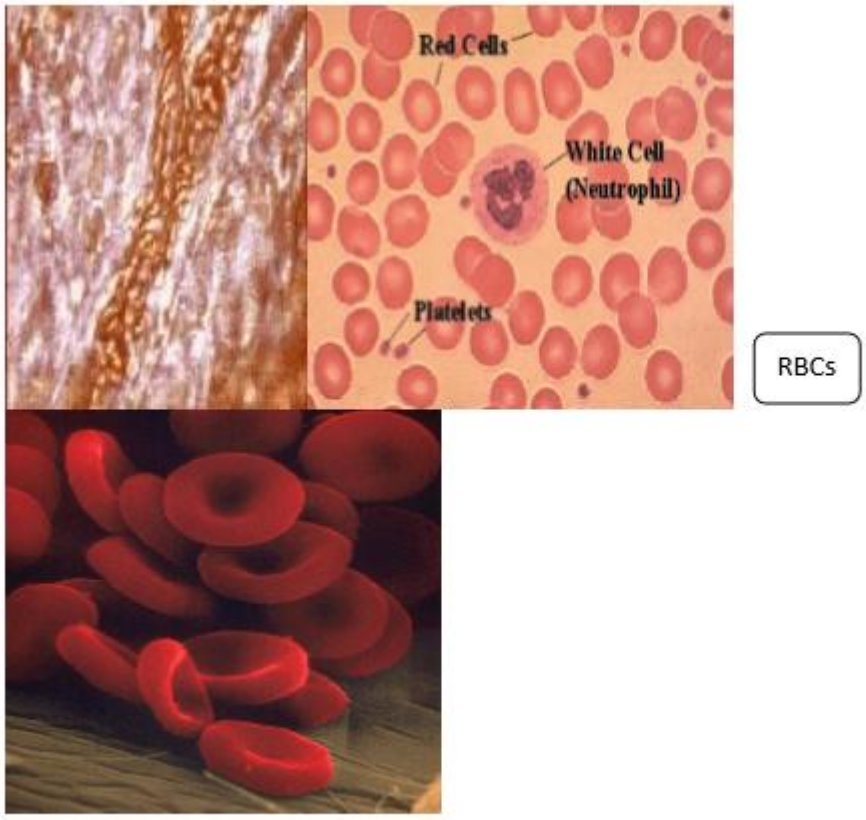


Figure1.6 Formed elements

1.3.1 Formed Elements

Red blood cells also called erythrocytes, red blood cells (RBCs) are biconcave discs, which means their centers are thinner than their edges. RBCs are by far the most abundant of the blood cells. Their nuclei disintegrate as the red blood cells mature and are not needed for normal functioning.

Red blood cells contain the protein hemoglobin(Hgb), which gives them the ability to carry oxygen. Each red blood cell contains approximately 300 million

hemoglobin molecules, each of which can bond to four oxygen molecules. In the pulmonarycapillaries, RBCs pick up oxygen and oxyhemoglobin is formed. In the systemic capillaries, hemoglobin gives up much of its oxygen and becomes reduced hemoglobin.

RBCs

Hemoglobin is also able to bond to carbon dioxide (CO2), and does transport some CO2 from the tissues to the lungs. But hemoglobin accounts for only about10% of total CO2 transport (most is carried in the plasma as bicarbonate ions).

Red blood cells live for approximately 120 days. As they reach this age they become fragile and are removed from circulation by cells of the tissue macrophage system (formerly called the reticuloendothelial or RE system), in the liver, spleen and red bone marrow.

White blood cells

White blood cells (WBCs) are also called leukocytes. Make up 1% of the total blood volume and less numerous than RBCs. White blood cells all contribute to the same general function, which is to protect the body from infectious disease and to provide immunity, the body's ability to resist or eliminate potentially harmful foreign materials or abnormal cells , to certain diseases.

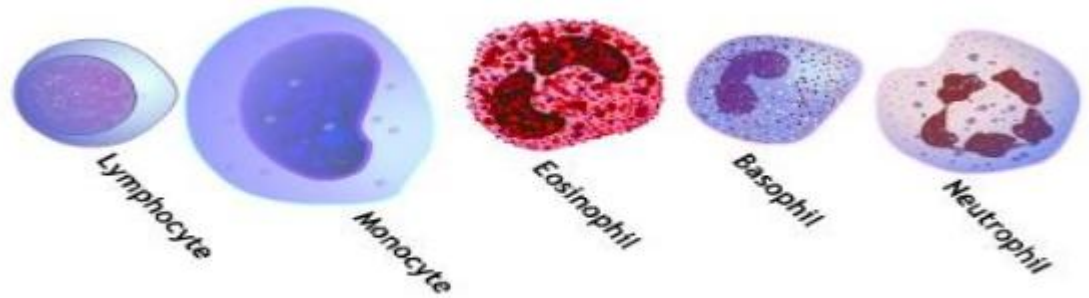


Figure 1. 5 The five types of WBCs

PLATELETS

The more formal name for platelets is thrombocytes, which are not whole cells but rather fragments orpieces of cells. Platelets are necessary for hemostasis, which means prevention of blood loss. Blood clotting mechanism involves Vascular spasm, Platelet plugs formation and Chemical clotting(involvement of clotting factors) BOX 11–4 LEUKEMI

1.3.2 Plasma

Plasma is the liquid part of blood and is approximately91% water. The solvent ability of water enables the plasma to transport many types of substances. Nutrients absorbed in the digestive tract, such as glucose, amino acids, and minerals, are circulated toall body tissues. Waste products of the tissues, such as urea and creatinine, circulate through the kidneys and are excreted in urine. Hormones produced by endocrine glands are carried in the plasma to their target organs, and antibodies are also transported inplasma Also in the plasma are the plasma proteins. The clotting factors prothrombin, fibrinogen, and others are synthesized by the liver and circulate until activated to form a clot in a ruptured or damaged blood vessel Plasma also carries body heat. Heat is one of the by-products of cell respiration (the production of ATP in cells). Blood is warmed by

flowing through active organs such as the liver and muscles. This heat is distributed to cooler parts of the body as blood continues to circulate.

1.4 Physiology of the Circulatory System

Pulse

The wave of blood through the arteries formed when the left ventricle contracts.

- **Can be felt where an artery passes near the skin surface and over a bone.**

Normal Heart Rates

Adults	**60 to 100 bpm**
Children	**70 to 150 bpm**
Infants	**100 to 160 bpm**

Blood Pressure

- **Amount of force exerted against walls of arteries.**
- **Systole: Left ventricle contracts.**
- **Diastole: Left ventricle relaxes. Perfusion**

The CVS's circulation of blood and oxygen to all cells in tissues and organs of the body in adequate amounts to meet the cells'needs for oxygen, nutrients, and waste removal. Some tissues and organs need a constant supply of blood while others can survive on very little when at rest. E.g. the heart demands a constant supply of blood, the brain and spinal cord can survive for 4 to 6 minutes without perfusion, the kidneys may survive 45 minutes and skeletal muscles may last 2

Self-Check -1	**Written Test**

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. **Mention the structure of the lower airways and upper airway**
2. **List and define types of respiration**
3. **What are the components of cardiovascular system ?**
4. **What function do platelets have in our body?**
5. **What is the function of Red blood cell in our body?**

Answer Sheet

Score = _____

Rating: _____

Name: _____ **Date:** _____

Information sheet 2	Basic ABC rules of life Accidents

At all levels of care. The ABC protocol exists to remind the person delivering treatment of the importance of airway, breathing, and circulation to the maintenance of patient life.

A; airway
B; breathing
C; circulation

Causes of airway obstruction:

1. **Anatomical obstruction- Most common cause of respiratory emergency**
   - **Back dropping of the tongue, Asthma, croup, Diphtheria, Laryngeal spasm, swelling after burns of the face, swallowing corrosive poisons, direct injury by blow.**
2. **Mechanical obstruction**
   - **Solid foreign objects lodging in the respiratory passage. E.g. Choking of food**
   - **Retro-pharyngeal abscess, Aspiration (inhalation of vomits, food particles)**
3. **Air depleted oxygen containing toxic gases**
   - **Asphyxia may occur due to decreased oxygen in the air or increased Carbon monoxide or other toxic gases. E.g. Mining area**
   - **Explosion hazard combustible gases that accumulate in confined spaces**
4. **Additional causes of respiratory failure**
   - **Drowning**
   - **Circulatory collapse (shock)**
   - **Heart disease**
   - **Strangulation**
   - **Compression of chest**
   - **Lung disease <u>e.g</u> Pneumonia**
   - **Poisoning of alcohol**

2.1.1.1. Artificial respiration:

It is a procedure for making air to flow in to and out of a person's lungs when individual's natural breathing is inadequate or ceased

The purpose of artificial respiration is to maintain open air way and restore breathing

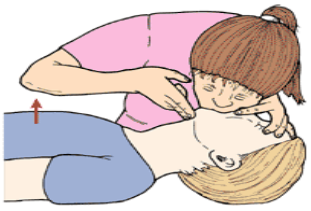
Artificial respiration should always be continued until the victim begins to breathe by him/her self.

Mouth to mouth /Mouth to nose/ method of artificial respiration:

The decision to perform mouth to mouth respiration by First Responders is a personal choice. Whenever possible, a barrier device should be used to prevent cross infection.

- **Determine consciousness of the victim**
- **Tilt the victims head back so that shin is pointing up ward.**
- **Look at the victim's chest if it moves for 5 seconds**
- **If no breathing – Pinch the victim's nostril**

- Open your mouth wide
- Take a deep breach
- Seal your mouth tightly around the victim's
- Initially give 4 quick full breaths



Look, listen & feel for exhalation of air and check for the pulse for at least 5 but not more than 10 seconds. If no pulse & breath, do cardio pulmonary resuscitation (CPR) If there is pulse and no breath, provide at least one breath every 5 seconds or 12 /minute for adults and this provides sufficient air.

Figure: 24. Mouth to mouth respiration for adult casualty

2.1.1.2. External cardiac massage or cardio pulmonary resuscitation (CPR): The aim of CPR is to compress the heart b/n sternum and the back bone (spine) thus literally squeezing blood out of it.

***Steps*- Lay the causality on a firm flat surface**

- **Kneel close to the side at right angles to him and alongside his/her chest.**
- **Press the lower third of the sternum with the heels of your hands**
- **Check the carotid pulse every few minutes**
- **Chest compression – ventilation 30: 2, for 5 cycles**

Figure 25: External cardiac compression

Reassessment has to be done after 5 cycles of compressions and 6 cycle of ventilations (30:2) and check for the return of carotid pulse and spontaneous breathing
According to the finding of the reassessment (after 2 minutes):
If there is pulse- place in the recovery position and monitor vital signs until Emergency Medical staff (EMS) arrives.
If there is pulse but no breathing- continue rescue breathing every 5- 6 seconds (10-12 breaths). Recheck pulse every 2 minutes, if no pulse or breathing- continue CPR 30:2 until provider arrives.
Repeat A– B- C to 5 cycle of compression and 6 cycles of breathing. (150:12)

For children, enough pressure is obtained by using the heel of only one hand.

For babies, use only two fingers.
When the casualty starts to breath by himself, put him in a recovery position.

Figure 26: External cardiac compression for an infant

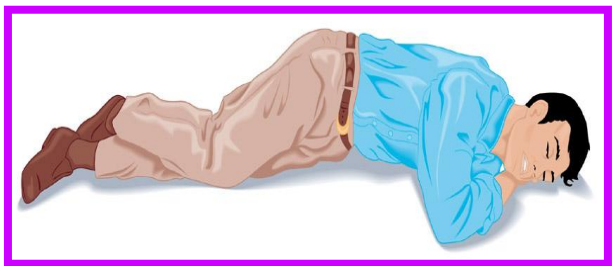


Figure 27: recovery position

CPR SUMMARY

	Hand Position	Compress	Breathe	Cycle	Compression Rate
Adult 	Two hands on the middle of the chest	At least 5 cm (about 2 in.)	Just enough volume to make the chest start to rise (1 second per breath)	30 compressions and 2 breaths	Rate of 100–120 per minute: 30 compressions in about 15–18 seconds.
Child 	Two hands on the middle of the chest	At least 1/3 of the chest's depth	Just enough volume to make the chest start to rise (1 second per breath)	30 compressions and 2 breaths	Rate of 100–120 per minute: 30 compressions in about 15–18 seconds.
Baby 	Two fingers on the middle of the chest (just below the nipple line)	At least 1/3 of the chest's depth	Gently, with just enough volume to make the chest start to rise (1 second per breath)	30 compressions and 2 breaths	Rate of 100–120 per minute: 30 compressions in about 15–18 seconds.

Self-Check -2	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. **What is ABC of life?**
2. **List common cause of air way obstraction.**
3. **What is CPR?**
4. **What is the first step to perform CPR?**

Note: **Satisfactory rating - 3 points** **Unsatisfactory - below 3 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ **Date:** _____

Information sheet 3	Access and manage common emergency conditions

1.1 Suffocation (Asphyxia) is caused by creating a condition of severely deficient supply of oxygen to the body. an example of asphyxia is choking. Asphyxia causes generalize hypoxia. Which primarily affect the tissues and organs.

Everyone knows the unpleasant sensation when holding a breath for a long time.

This sensation is not caused by lack of oxygen, the main factor build up of Co2 in blood. Even if our body needs oxygen, it does not have mechanism to measure oxygen levels, it relies on CO2 reflex to avoid asphyxia .

Under normal conditions, this reflex works reliably to protect us from high CO2 levels and from lack of oxygen at the time ;so if we are body constantly produces CO2 so if we are unable to breath or in area with not enough

ventilation ,CO2 levels rise causing unpleasant sensation.

There is one special situation though; when we are able to freely breath and exhale CO2, but there is no or not enough oxygen in the mix we inhale. our body is not built to handle this situation well. when this situation is happen Breathing a gas mix with low oxygen,

The main hazard of this asphyxia is the possibility of brain damage .if the process is interrupted due to intervention ,running out of gas ,or tearing or removing gas mask ,plastic bag , or tube tent while unconscious .using a high concentration can maximize this anoxic gas, which causes most raped loss of consciousness .

1.2 Strangulation is compression of the neck that may lead to unconsciousness or death by causing an increasingly hypoxic in the brain . fatal strangling occurs in cases of violence ,accidents, and is one of two main ways that hanging causes death.

1.3 Chocking ***When small piece of food or foreign body may be inhaled in to the windpipe when eating in which some times help is needed***

First aid management N.B. Do not try to hook the foreign body out with your fingers. This is likely to push it further down.

For babies and small children: Hold the baby upside-down by the feet and beet him/her timely between the shoulder blades. Lie the child face down over your knee or arm and beet them sharply between the shoulder blades.

For adults: there are two methods depending up on your knowledge and practice "Methods A" stand behind the patient and hold around the chest just under the chest hone Give a short sharp hear hug

ƒ "Method B" Tell the patient to lean over the back of a chair holding on to the seat and the tenanting him/her sharply 3 to 4 times between his shoulder blades which ever the method you use the foreign body should be coughed out

ƒ If the breathing has stopped begin mouth to- mouth respiration After you have done the above, refer to the nearest hospital or health the Center

Give a short sharp hear hug

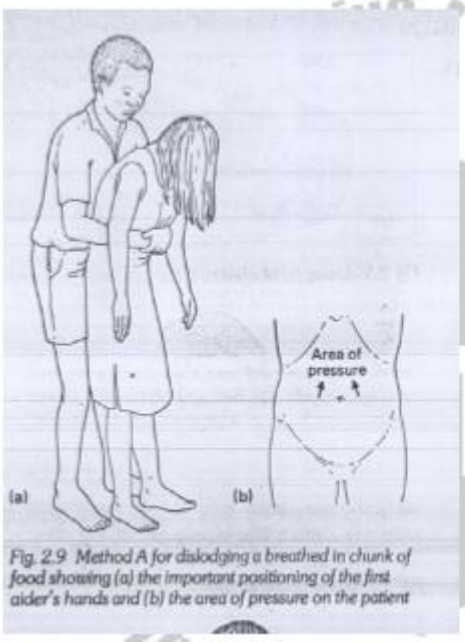


Fig. 2.9 Method A for dislodging a breathed in chunk of food showing (a) the important positioning of the first aider's hands and (b) the area of pressure on the patient

Fig. 2.10 Method B for dislodging breathed in chur food

1.4 Drowning

Definition Death caused by water reaching the lungs and either causing lung tissue damage or spasms of the air way that prevents the inhalation of air.

Drawing can happen in many different places, Lake, swamp and spring, rivers etc

First aid Management: You should begin artificial respiration as soon as possible ƒ

Do not wait to get water out of the patient's chest first ƒ If you can not get air into his/her lungs, quickly turn the patient on his/her side, putting his head lower than the leg and push the body Then give mouth-to-mouth artificial respiration. If the condition of the victim is not improving refer the victim to the next health facility.

1.5 Unconscious causality

- **Definition: victim is said to be unconscious when the patient is asleep, he/she cannot speak and has no control over his movement. Victim also cannot respond to place, people and time (PPT)Cause of unconsciousness**
- **Head injury (bleeding)**
- **Fainting**
- **Heart attacks**
- **Asphyxia**
- **Poisoning**
- **Shock**
- **Epilepsy**
- **Diabetes**

Aim of giving first aid

1. To find out the cause of the condition and manage it as quickly as possible

2. To refer to Hospital

Level of unconsciousness
– Alertness: the patient can speak, answers, questions and feels pain
– Lethargy :the patient is awoke but answers questions slowly- he may be confused about what is happening and where he is
– Drowsiness: the patient is sleep of ht is unable to concentrate on what we are saying
– Semi-consciousness: the patient is very sleep of and has great difficulty in speaking and in answering your questions –
Unconsciousness: the patient is sleepy we can not speak and has no control his movements Treatment of unconscious Patient During treatment of unconscious patient follow principles of A,B,C,D, i.e.
• Assessing air way
• check breathing
• check circulation using or by taking Vital sign
• check for any bleeding and attempt to stop bleeding
• If the victim is improving place in Recovery position
• Do not give to an unconscious victim any thing by mouth • Establish level of responsiveness, check pulse, breathing rate and record any observations
• Give priority to respiratory problems and hert beat.

1.6 shocks
Definition: The reaction of the body to the failure of the circulatory system to provide enough blood to all-the vital origins of thebody.
Cause:-

- **-Trauma**
- **- Heart failures**
- **Severbleeding Loss of plasma – in burns or crushing injures**
- **-Allergy -Loss of body fluid- recurrent vomiting from any cause**

Symptoms of shock • General body weakness – the most significant symptoms • Nausea with possible vomiting
• Thirst • Dizziness • Restlessens, and fear /sign of shock/
• Fast breathing and shallow • pulse – rapid and weak
• Pupils - dilated • Face – pale •Lips-blue
•Restlessness, become unresponsive • Skin- cool and clammy- eyes-lack luster • Breathing – rapid and shallow
First aid management of shock - Have the patient lie down and stay at rest
- Keep the air way open and preventing the forward tilting of the head
- Control external bleeding
- Keep the patient warm by covering with blanket or sheet
- Properly position the patient
- Open air way and alert for vomiting If there is no spinal injuries use one of the following positions

- Elevate the lower extremities, place patient place patient
-flat, face up, and elevate the legs 8 to 12 inches
- Do not tilt the patient's body
- Don not elevate any fractured limb unless they have been properly splinted
- Do not elevate the leg if there are fractures to the pelvic
- Nothing by mouth (NPO)
- Monitor the patient vital signs
- Refer the patient to Hospital

1.6 Controlling external bleeding

Definition: Defusing or oozing of blood from blood vessels (Hemorrhage)

Types of bleeding

- ***Arterial bleeding- bright red in color, flow from the wound inside Blood loss***
- ***Venous bleeding – dark red in color, flow is steady Capillary bleeding – oozing from bed of capillaries, red in color, usually less bright than arterial blood with slow flow.***

• Methods of controlling bleeding externally Direct pressure- using compresses - Pressure bandage can be placed to hold pads of cloth. - Put a thick pad of cloth held between the hand and wound.
• Elevation The injured part of the body should be raised about the victim's heart
• Applying pressure on the supplying artery specially on brachial artery in severe bleeding,
• Apply tourniquet in severe bleeding

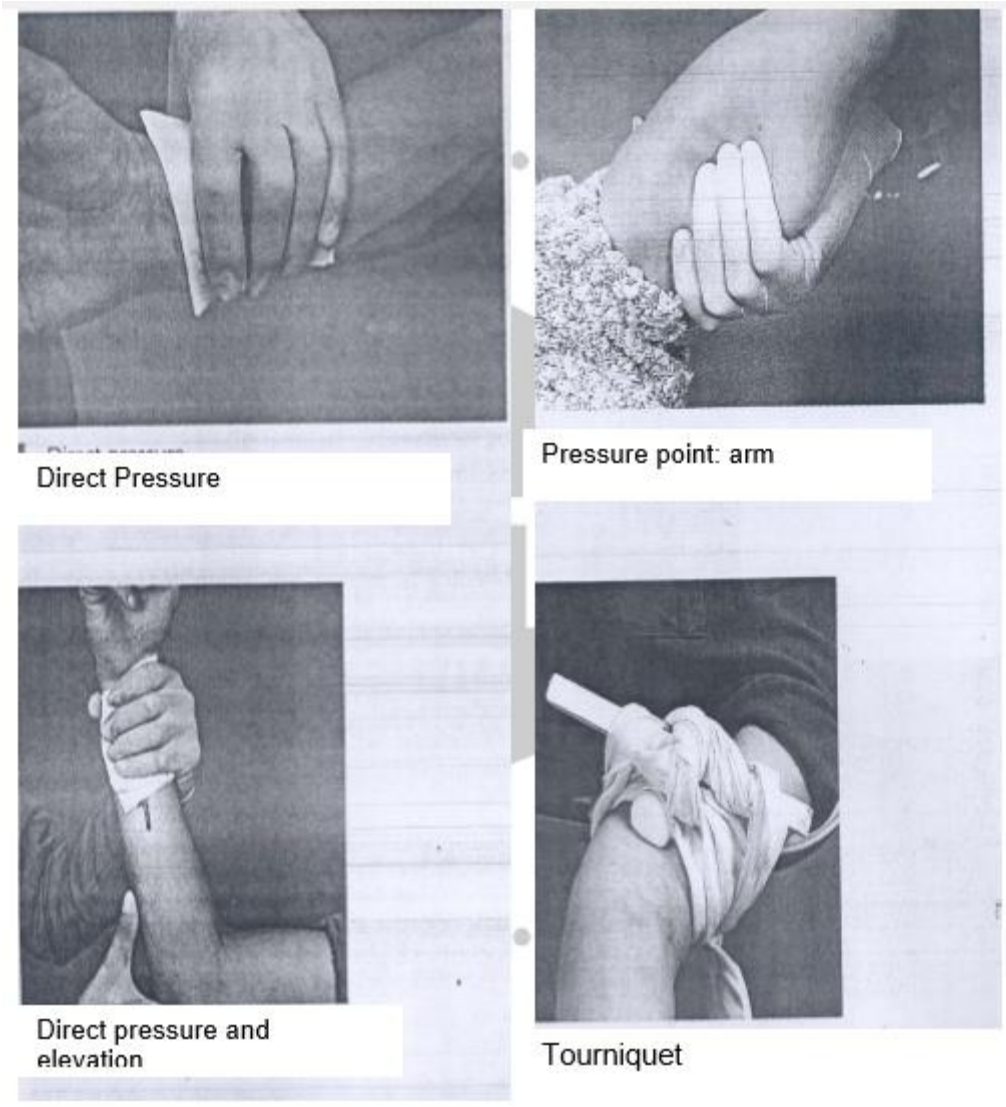


Fig .5. Methods of controlling Bleeding

1.7 Burns ***Fire is an accident that causes great damage to life and properties. Children are the most vulnerable to burn. Burns that occur around the mouth and nose and in general in the face are more dangerous and can cause death.***

Causes of burns:

- ***Fire,***
- ***boiled water,***
- ***steam,***
- ***boiled oil and milk etc;***
- ***Sun-rays;***
- ***Electric and thunder accidents; and***
- ***Different chemicals;***

Effects/hazards of the burn accident:-

Immediate effects/hazards:-

- ***Burns and wounds of the body;***
- ***Severe pain;***

• Oozing and reduction of body fluid from the wound;
• Difficulty in breathing because of suffocation from smoke, severe burns around the throat and face;
• Drowsiness, restlessness and unconsciousness.
Delayed effects/hazards:
• Infections of the wound, septicemia, and high fever;
• Disability; • Scar; • Contracture; and • Tetanus infection
Classification of burns:
Burns are usually classified in three levels based on the depth or degree of skin damage. These are:-
• First degree burn; • Second degree burn, and • Third degree burn.
1st degree burn:
• Redness or discoloration; • Mild swelling and pain; and • Rapid healing.
2nd degree burn:
• Greater depth than first degree burns; • Redness and mottled appearance; • Blisters; • Severe pain; • Swelling; and • Prone to infection.
3rd degree burn:
• Deep tissue distraction; • White appearance; • No pain and blisters; and • Complete loss of all layers of skin.
This type of burn results in severe disability and/or death.
First-aid measures:
If the victim is burned with fire apply cold applications, immerse the burned area in cold water role the burned person on the ground, or cover with water socked thick cloth or blanket and put out the fire. If the accident is of electric source, quickly disconnect at the electric meter or check point, or use rope wooden stick, dried cloth etc. to disconnect; Move the victim from the accident place to avoid further injury; Loosen and/or remove burned dresses and lay down the victim on his/her back and let him/her breathe fresh air and ensure that no foreign objects have entered and blocked the passage of the respiratory system; If the victim is not breathing properly, initiate mouth to mouth artificial respiration; Thoroughly check the wound to determine the size, and the degree of burn;
Measures for 1st degree burn
• Apply cold water application or submerge the burned area in cold water; • If the wound is minor and small, clean daily the area with boiled cold water cover it with clean cloth to prevent contact with flies, if the wound located is in a joint, immobilize the joint area until the wound is cured; • If the wound is from boiled water, chemical (acid), take out his/her dress and cover it with clean cloth.
2nd and 3rd degree burn:-
• Cover the wound with clean cloth; • If the victim is conscious, his/her respiratory parts such as mouth, nose and throat are free from burn injury and give him/her frequently plenty of liquid such as ORS or similar solution (prepare the solution from eight tea spoons of sugar, one spoon salt in one liter of boiled cold water). If the victim is a child below two years old give it one spoon every two minutes and if the child is over two years give it with a cup or glass in small amount every two minutes; • Advise the victim or his family to get tetanus toxoid vaccine; • Refer the victim to the nearest health facility.

• Take immediately to a nearby health facility burn victims with the following signs: • First degree burn with sizeable area; • 2 nd and 3rd degree burns; • If the victim is drowsy, restless and has breathing problem;

• If the victim has burns on his face, eye, extremities, joints and around genital organs;

1.8.1 Specific injuries

Head injury:

- **Do not try to clean scalp wound**
- **Control /Check bleeding**
- **Place sterile dressing**
- **Apply bandage to secure dressing**

Bleeding from the nose, ear canal or mouth is indicator of intracranial bleeding or skull fracture. The primary measure for head injury is immediate referral.

- **Sit with the head well for ward**
- **Loosen any fight clothing around the neck & chest**
- **Advise to breathe through the mouth & to pinch the nose**
- **Tell the causality to spit out any blood in the mouth**
- **Release the pressure after 10 minutes**
- **Do not let the causality raise the head**
- **Advise not to blow the nose (avoid exertion)**
- **If after 30 minutes the bleeding persists seek medical care.**

Eye Injuries

Foreign objects are often blown or rubbed in to the eyes causing irritating and scratching the surface of the eye.

Signs and symptoms include

- **Redness of the eye**
- **Burning sensation**
- **Pain, headache**
- **Over production of tears**
- **Swelling and wound**
- **Presence of foreign body**

Precautions

- **Keep the victim from rubbing his eye**
- **Wash your hands thoroughly before examining the victim's eye.**
- **Do not attempt to remove a foreign object by inserting a match stick tooth pick, or any other instrument**
- **Refer the victim if something is embedded in the eye; or if something is thought to be embedded but cannot be located.**

Injury of the eye lid

- **Stop hemorrhage by gently applying direct pressure**
- **Clean the wound and apply a sterile or clean dressing seek medical help without delay**
- **Bruises above and below the eye should be treated by immediate cold application to lessen bleeding and swelling**

Blunt injury of the eye:

A contusion occurs from direct blow, such as fist, a vehicle accident or explosions that results in black eye. A dry sterile or clean dressing should be applied and the victim should be, transported lying flat and refer.

Removal of foreign body from the surface of the eye ball

- **Pull down the lower lid to determine the object lies on the inner surface**
- **Lift it gently with the corner of clean handkerchief or tissue paper**
- **Flash the eye with water**
- **Apply dry dressing and send to hospital if the object is not removed**

Penetrating injuries of the eye:

- **Can cause blindness**
- **Don't try to remove the objects or to wash the eye**
- **Cover the eyes with a sterile or clean dressing to avoid movements of the affected eye**
- **Keep and transport the victim by stretcher**

Removing of foreign objects:

- **Remove any superficially embedded objects safely.**
- **Deep embedded foreign objects should be left for removal by health professionals.**

Choking (ingested & inhaled objects):

Foreign body (Pieces of food, bone, any other solid or liquid) Substance may enter into the wind pipe. Do not try to hook the foreign body out with your fingers; this may push it further down.

The first aid measure for choking is:

- **For babies & small children hold the baby upside down & smack(cuff) him firmly b/n his shoulder blades**
- **For children- lie the child face down over your knee or arm and smack them sharply between their shoulder blades**
- **For adults- Stand behind Causality and grasp them around the chest just under the chest bone (Sternum). Give a sharp bear hug.**

Injuries produced by animal or human bites may cause punctures, laceration or avulsion.

A. Human bite – The mouth is heavily contaminated

- Clean the wound with clean H_20 and cover it with clean cover

B. Dog bite – Keep the animal under observation

- Clean the wound with clean water & soap and clean cover

C. Snake bites – Lay the casualty down

- Immobilize the affected part

- Keep it below the level of the heart

- Wash the wound with clean H^2o

- Take to hospital

Wounds of the chest:

Penetrating chest & back wounds

- **Seal the opening with the palm immediately.**
- **Put in a half sitting position with the head & shoulder supported**
- **Gently cover the wound with a sterile unmediated dressing as soon as possible**
- **If possible form air tight seal.**
- **Take to hospital immediately**

Don't try to remove deeply embedded foreign body

Abdominal wound:

- **Control bleeding**
- **Place in a half sitting position with the knee bent up**
- **Apply dressing & secure with bandage and Keep NPO**
- **Remove to hospital immediately**

If part of the intestine is protruded through the wound (eviscerated wound):

- **Control bleeding**
- **Cover with a damp sterile dressing or clean cloth and secured with a loose bandage**
- **Support the wound while coughing or vomiting**
- **Take to hospital immediately**

Shock:

It is a condition resulting from a depressed state of many vital body functions due to decreased tissue perfusion that could threaten life as a result of severe pain (Neurogenic shock), electric burn (electric shock), massive bleeding (hemorrhagic shock), massive fluid loss (hypovolmic shock), hypersensitivity reaction (anaphylactic shock) , etc.

Sign and symptom of shock:

Pale or bluish skin /Mucus membrane

Cold extremities to touch

Moist and clammy skin

Rapid and weak pulse

Rapid and shallow breathing /especially in abdomen & chest injuries)

Low B/P and may be unresponsive

First aid management of shock

Body positioning /lying down to improve circulation

Keep the head lower and turned on the side

Body positing depends on the site & type of injury

E.g. If the injury is on the neck & spine, do not move the victim until he is Prepared for transport

Keep the causality warm

Loosen any tight clothing /assists breathing/

Don't give fluid by mouth /moisten the lips

1.9 Bites and Stings

A. Snake Bite

Signs and symptoms

- ***Disturbed vision***
- ***Feel nauseated or vomiting***
- ***One or two small puncture***
- ***wounds with sharp pain and local swelling***
- ***Symptoms and sign of shock***
- ***Sweating and salivation in advanced stages of venom reaction***

First aid management

- ***Lay the victim down and advise not to move***
- ***Calm the victim***
- ***Immobilized the affected part and keep it below the level of the heart***
- ***Wipe the wound of venom***
- ***Apply firm cord just above the bite This must be removed in 15 minutes if you are sure that anti venoum has been injected and you can not get the victim to hospital in time. If there is no antivenoum do the following: Tie a cord tightly around the limb just above the bite.***

Using a razor blade or a clean knife make a cut 1 cm deep Suck the liquid which is coming out of the wound Continue to suck and dispose for 5-10 minutes Loosen the cord around the patients limb Disinfect the wound Refer to hospital for anti- venom injection.

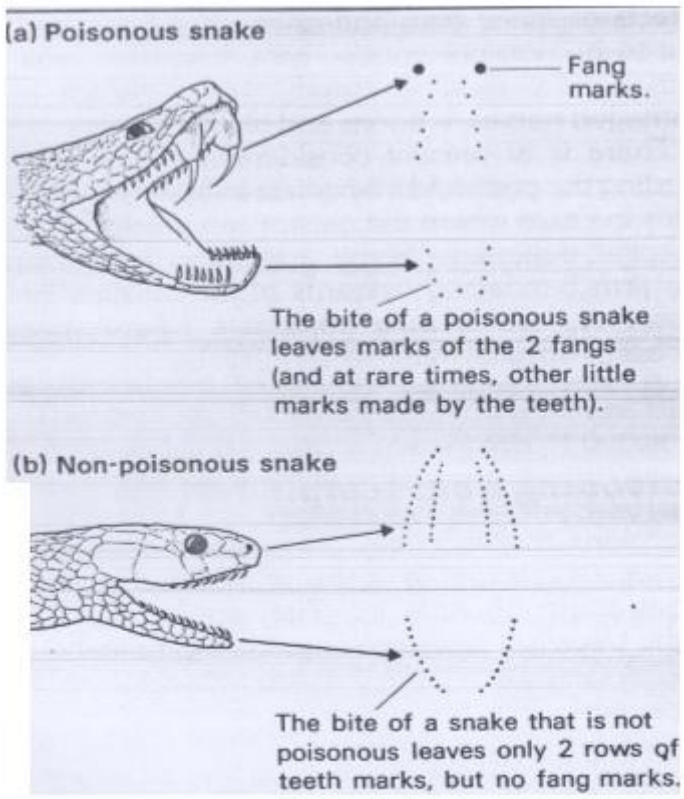


Fig .11. Snake bite

B. Dog bite

Rabies is a sickness due to an infection from an animal usually a rabid dog, cat, fox, wolf, and bats. The infection grows in the animal's nerves, may develop the disease, if the saliva enters a wound or scratch on a human being.

Signs and symptoms of a rabid dog

- ***has difficulty in swallowing***
- ***rarely bites Is lethargic /lazy/***
- ***hides it self***
- ***does not want food, but swallows, pieces of wood stone etc***
- ***barks in unusual way and never stop barking***
- ***Saliva runs out of its mouth***

First aid management

1. Clean the wound with soap and water

2. Cover the wound with dressing ointment/powders

3. Find out if anyone knows the dog that bit the patient

4. If the dog known, ask its owner to watch the dog carefully for lodges and to let you know it shows any of the above sign and symptoms in that time - See, during that time, it begins to show any of the above signs and symptoms - get the dog Killed - Send the person to hospital or Health center immediately for anti rabies vaccination

1.10 Poison

Definition: Any substance that, if taken in to the body in sufficient quantity, can cause temporary or permanent damage.

Note: get the poisoned to the hospital or health center immediately.

The extent of danger depends upon: The amount and type of poison the age of the person whether the person vomits where the accident takes place.

There are different types of poisons:

- Acids - Insecticides - Alkalis - Drugs given for allergy (antihistamines) -Aspirin over dose in children - sleeping pills (sedatives) - Iron - mercury - lead - paraffin, petrol (Gasoline) - Lysol

General signs and symptoms

- Nausea
- ***Vomiting***
- ***Abdominal***
- ***pain***
- ***Change in consciousness***
- ***Change in vital signs***
- ***Change in pupils***

Poisons enter the body either accidentally or intentionally through

- ***Ingestion (through the mouth)***

- ***Inhalation (by breathing in)***
- ***Absorption (through the skin) through contact with poisonous sprays, pesticide, and insecticide***
- ***Injection into the skin as the result of bites from some animal, insects, poisonous fish or by syringe***

Steps to treatment of poison:

- ***Remove the poison from the body***
- ***Give the patient the antidote***
- ***Treat symptoms***
- ***Give comfort and confidence***

How to remove the poison from the body

- ***Make the victim vomit it***
- ***Give plenty of tape water. If it is a child give them syrup or water.***
- ***Repeat the procedure***
- ***Refer the victim if it is not improving***
- ***NB. Do not make patient vomit if the poison e.g. parafin or kerosene***
- ***Do not make the patient vomit if unconscious For poisoning by acid, give alkali, anti acids***

Self-Check -3	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. **What is the cause of Suffocation (Asphyxia)?**
2. **How we can stop external bleeding?**
3. **The common cause of shock?**
4. **What is First aid for snack bite?**

Note: **Satisfactory rating - 3 points** **Unsatisfactory - below 3 points**

Answer Sheet

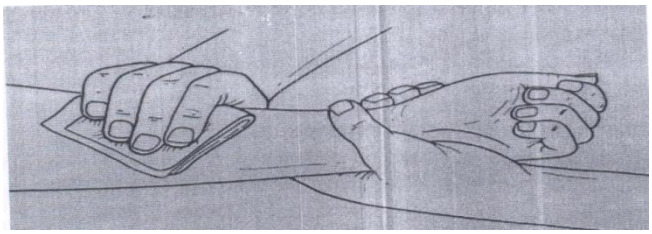
Score = _____

Rating: _____

Name: _____ **Date:** _____

0pration sheet 1	Bleeding control

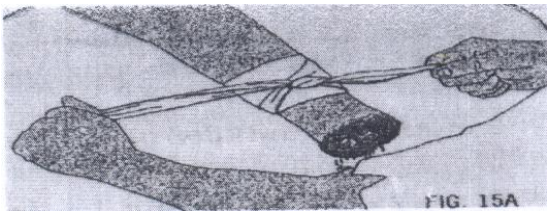
1. Assess for :
   - The surrounding for farther risk of injury
   - General appearance of the victim
   - "ABC".
     - ✓ A - airway
     - ✓ B - Breathing
     - ✓ C - circulation
   - Level of Orientation
2. Wash your hands and prepare all the necessary materials.
3. Direct pressure
   - Is the application of pressure on the wound and around the wound.
   - Wear your surgical gloves
   - First assess the site for any foreign body embedded.
   - Prepare a pad of gauzes and put over the bleeding sit.
   - Apply a steady and firm pressure over the bleeding sit with your palm of hand



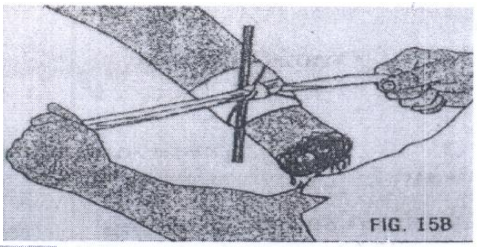
   - After certain (usually 5min) slightly release and observer for condition of bleeding.
     - ✓ If the gauze pad fully stocked and bleeding continues, add another piece of gauze over the previous one. Then apply sufficient pressure over the new pad applied on the bleeding site.
     - ✓ if the bleeding is getting minimized, then apply a rolled pressure bandage over the gauze pad
   - If the is not sufficient enough to stop the bleeding, then it can be supported with elevation.
4. Elevation
   - Unless there is evidence of a fracture a severely bleeding open wound of the hand and legs should be elevated. i.e the injured part of the body should be raised above the level of the victim's heart.
   - Elevation uses the force of gravity to help reduce bleed pressure in the injured area and thus aids in slowing down the loss of blood through the wound.
5. Indirect Pressure (Use of Tourniquet)
   - If the bleeding can't be controlled by applying a direct pressure and elevation.
   - Usually used to arrest arterial bleeding. So should be used only for sever, life threatening bleeding that can't be controlled by other means.

   Steps

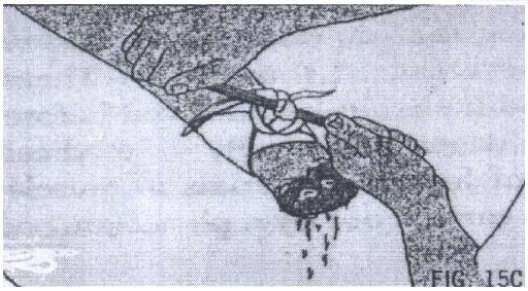
1. **Place the Tourniquet just above the wound. Do not allow it to touch the wound edges.**
2. **Wrap the Tourniquet band tightly around the limb twice and tie a half knot**



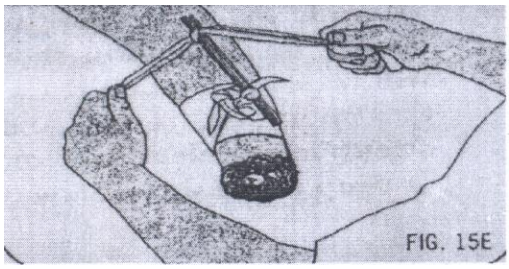
3. **Place a short, strong stick or similar object that will not break on the over head of the knot and then tie two additional knots on the top of the stick.**



4. **Twist the stick in place with the loose ends of the Tourniquet.**



5. **secure the stick in place with the loose ends of the Tourniquet with a strip of cloths**



Note:

- **A Tourniquet should applied above and close to the wound**
- **Don't use rope, wire, string which may cut in the flash body.**
- **Never cover a Tourniquet**
- **Make a written note of the location of the Tourniquet, the time it was applied and attach the note to the victim's cloth**
- **check vital sign victim of the**
- **Victim s**
- **hold be referred to nearest health center or hospital immediately.**

Operation sheet 2	CPR

If one First Aider

1. Shout for help

2. Establish unresponsiveness and alert for emergency medical service and Position the causality.

3. Establish an open airway.

4. Look, Listening, and feel for breathing (3-5 seconds).

5. Ventilate twice (1 to 2 seconds) per breath.

6. If no pulse (5-10 seconds)

7. Locate Compression site

8. Position your hands

9. Began compressions

10. Ventilate twice

11. Recheck pulse after 6 cycles of ventilation and 5 cycles compression, then every few minutes.

12. Put in recovery poison if the victim has plus and breath by him /her self.

If two first aider rescuer CPR

1. Determine unresponsiveness

2. Open the air way, look, listen, (feel 3-5 seconds)

3. Ventilate twice (1 -2 seconds per breath).

4. Determine no pulse and locate CPR compression site

5. Say "No pulse." Begin compressions

6. Ventilate once (1-2 seconds) stop mouth-to-mouth ventilation.

7. Continue with one ventilation every fifteen compressions.

8. After 10 cycles, reassess breathing and pulse. No pulse says, "Continue CPR." Pulse- says, "Stop CPR." NOTE: Assess for spontaneous breathing and pulse for 5 seconds at the end of the first minute, then every few minutes thereafter.

Operation Sheet 3	Chocking

A. ***With the victim standing or sitting (Back Slap) Position yourself at his side and slightly behind.***

1. ***Place one hand high on the chest for support***
2. ***Position pt head at chest or lower level to utilize the effect of gravity***
3. ***Slap with the heel of your hand over the supine b/n shoulder blades. (Use a series of hard blows. Administer the blows as rapidly as possible***

Fig.6. Back slapping method of dislodging FB

B) For Abdominal thrust

1. ***Stand behind the victim***
2. ***Wrap your arms around the waist***
3. ***Place the thumb side of your fist against the abdomen slightly above the navel***
4. ***Grasp your fist with your other hand and press it into the victim's abdomen with four quick upward thrust.***

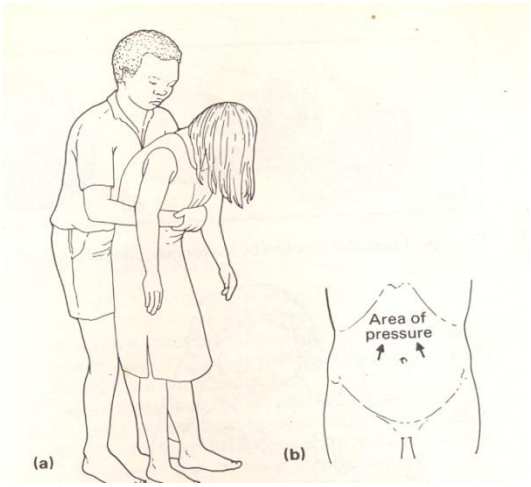


Fig.7 Abdominal thrust method of dislodging FB

C) If these all are ineffective, you must repeat the sequence

- ***Four quick back blows***
- ***Four quick upward thrusts***

If you are chocking and there is no one around to offer assistance

- ***Lean forward and press your abdomen quickly over any firm objects such as the back of a chair the edge of a sink***
  - ✓ ***Whilst carrying out artificial respiration, check the pt's pulse every 2 or 3 min***
  - ✓ ***Continue the breathing procedure at a rate of 12 to 18 breaths per min until the chest is rise for an adult for children at a rate of 25 breath per minute***

LAP Test	Practical Demonstration

Name: _____ Date: _____
Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within --- hour.

Task 1. Perform CPR for a patient in emergency situation
Task 2. Control bleeding for a victim with external bleeding on left leg.
Task 3. Manage chock for a patient with aspiration after assess the situation

Instruction Sheet	LG65: Prepare, evaluate and act in an emergency

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics –

- Introduction to Emergency and emergency intervention
- Preparing emergency Plan
- Emergency response team
- Assess the extent and degree of damage
- Evaluation of client psychology
- Response activities
- Occupational health and safety procedures
- Emergency supplies
- Documenting and reporting potential hazards

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to –

- **Identify Options for action in cases of emergency and group control strategies for evacuation**
- **Implement Occupational health and safety procedures and policies correctly**
- **Remove Clients and other individuals from danger.**
- **Report and document Assessed and evaluated potential hazards are reported and documented**

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below
3. Read the information written in the “Information Sheets”. Try to understand what are being discussed. Ask your teacher for assistance if you have hard time understanding them.
4. Accomplish the “Self-checks”. In each information sheets.

5. Ask from your teacher the key to correction (key answers) or you can request your teacher to correct your work. (You are to get the key answer only after you finished answering the Self-checks).
6. If you earned a satisfactory evaluation proceed to “Operation sheets and LAP Tests if any”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity.
7. After You accomplish Operation sheets and LAP Tests, ensure you have a formative assessment and get a satisfactory result;
8. Then proceed to the next information sheet

Introduction to Emergency Management

Developing appropriate emergency management and response capabilities is one of nine elements in the RBPS pillar of ***managing risk***.

What Is It?

Emergency management includes

(1) planning for possible emergencies

(2) providing resources to execute the plan,

(3) practicing and continuously improving the plan,

(4) training or informing employees, contractors, neighbors, and local authorities on what to do, how they will be notified, and how to report an emergency

(5) Effectively communicating with stakeholders in the event an incident does occur.
The scope of the *emergency* element extends well beyond "putting out the fire." This chapter focuses on three aspects of emergency planning and response:

- Protecting people, including people who are onsite, offsite, and emergency responders.
- Responding to catastrophic accidents involving explosions, large releases of chemicals, or other larger eleases of energy.
- Communicating with stakeholders, including neighbors and the media.

Why Is It Important?

The consequences of any particular incident can be significantly reduced with effective emergency planning and response. Failure to establish and enforce a perimeter to keep bystanders and non responders at a safe distance from the *Grand camp* on April 16, 1947, directly contributed to several hundred fatalities. Even if no one is killed or seriously injured by an incident, the facility's license to operate within the community may come into question, and the answer will be strongly influenced by the public's perception of the competence of emergency response activities. Effective emergency management saves lives, protects property and the environment, and helps reassure stakeholders that, in spite of the incident, the facility is well managed and should be allowed to continue to operate.

Where/When Is It Done?

Emergency management activities typically occur at the facility and in the community where the accident might occur. These activities include

(1) Planning and training, which occur frequently,

(2) Drills an exercises, which typically occur once or more each year

(3) Actual responses, which should occur rarely if other RBPS elements are effectively implemented. Activities also include coordination with local authorities, for example, by attending monthly meetings of the local emergency planning committee (LEPC).

Who Does It?

Emergency planning is typically performed by specialists, both within and external to the facility. Planners consult with the operations group and review work products from the *risk* element to identify and select planning scenarios. Emergency response plans should be developed in concert with potentially involved or affected work groups, and they should be frequently reviewed with all potentially involved or affected workers. The operations group is typically responsible for immediate emergency response activities, such as shutting down the process and isolating hazardous material inventories, and they are assisted as quickly as possible by specially trained teams whose activities are coordinated by an incident commander. These teams often include facility-sponsored response teams, outside agencies, including fire departments, medical responders, hazardous material (HAZMAT) teams, and, in some locations, mutual aid response teams from nearby facilities. Crisis management.

What Is the Anticipated Work Product?

Effective emergency management should reduce the magnitude of effects of an incident, including any loss of good will with stakeholders. An intermediate, more tangible work product is effective and tested emergency response plans, trained and equipped response teams, and effective methods of protecting (1) personnel who could otherwise be harmed by the incident (including emergency response personnel), (2) the environment, and (3) property, both offsite and onsite. Emergency management is closely linked to the risk element. In fact, risk was considered in emergency planning long before risk was proposed as a basis for developing any management system. When developing emergency plans, one intuitively asks the three fundamental risk questions:

- What can go wrong – What types of emergencies should we plan for?
- How bad could it be – Will operators be able to put out the fire with portable extinguishers or do we need professional firefighters with a pumper truck?
- How often might it happen – Is the likelihood of a particular accident scenario high enough to justify in house response capability or should we depend on local authorities?

Effective emergency response also requires trained personnel and dependable equipment; it is very dependent on the training and asset integrity elements.

How Is It Done?

Emergency management activities are largely “done” well in advance of an incident. They include:

- Thorough planning.
- Effective training.
- Realistic drills.
- Effective two-way communication with stakeholders.
- Establishing the culture and operational discipline needed to ensure that personnel adhere to emergency
- Plans and procedures.

If all of these pieces are in place when an incident occurs, emergency management activities will be based on carefully developed plans, proper training, and well defined roles and responsibilities. Failure to plan for emergencies, or failure to execute the plan when required, can quickly transform an accident into a

Self-Check -1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Emergency management includes
2. List Emergency management activities

Note: **Satisfactory rating - 3 points** **Unsatisfactory - below 3 points**

Answer Sheet

Score = _____

Rating: _____

First Aid for Emergency Situations

When an emergency strikes, there's no time to start researching how to respond. For your own safety and the safety of your friends and family, it's a good idea to learn about emergency protocol and first aid methods. By learning in advance, you'll ensure that you can respond quickly and appropriately if there's ever an emergency situation. From natural disasters to traffic accidents, you never know when a situation will arise that will demand quick thinking, cool nerves, and a little bit of know-how.

Be Prepared for an Emergency

The first step you can take towards emergency preparedness is education. Take time to learn about the most common emergency situations that could affect you and your loved ones. Research which types of natural disasters are most likely to affect your community, whether it's hurricanes, floods, or tornadoes. Consider, too, which extra risk factors may particularly affect you and your family. For example, if you have small children and you live near a body of water, you should make sure you understand what to do in cases of drowning.

Types of Emergencies

While each person runs into slightly different risks, depending on lifestyle and geography, many of the most common emergency situations can happen to anyone. Health-related emergencies, such as sudden heart attacks or strokes, can affect a surprisingly wide cross-section of the population. Automobile accidents are extremely common cause of injury. Whether an accident results in minor whiplash or more serious injuries, it's important to learn how to respond quickly. Many emergency situations involve threatening situations with other people. It's worth learning what to do in cases of muggings, home burglaries, and other scenarios where your personal safety may be endangered.

Injury Prevention

Naturally, taking preventative steps to avoid injury is far better than trying to mend the problem afterward. In many cases, a few common sense practices

can go a long way. Follow the same simple safety rules you were taught as a child, and teach them to any children you might have, as well. For example, every child learns to look both ways before crossing the road, but many grow up to be inveterate jaywalkers as adults. When driving, abstain from imbibing any alcohol, instead, use a "designated driver" system or plan to take a taxi when appropriate. Finally, learn to trust your gut. If you're walking down a dark street in a shady part of town and you begin to question your safety, follow your instinct and find a better means of getting wherever you need to go.

Emergency Action Steps

In emergency situations, it is important to respond quickly. A clear emergency action plan is a good way to streamline your responses. If you break down your plan into steps, you'll be sure to know exactly what to do. For example, your family might draw up an emergency action plan in case of a house fire. First, each family member would find the safest route out of the house. Next, everyone would gather at a certain point, a good distance from the house.

First Aid

In many emergency cases, the best thing you can do is to stay calm and collected. Heightened emotions tend to hamper your critical thinking skills and your ability to think quickly. In addition to staying "cool under pressure", several concrete skills can make the difference in life-and-death situations. For example, any adult and even older children should be able to apply pressure to a wound, administer CPR, check for signs of obstructed breathing and perform a few other basic measures. Just knowing what to do is often the hardest part. In addition, though, it's a good idea to put together a first aid kit, so you'll have any item you need on hand. Depending on the circumstances, the kit may include bandages, clean water, an antiseptic, and other critical supplies. A first aid kit for your car might include a blanket, while a home first aid kit may include more medical supplies.

Self-Check -2	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What is The first step you can take towards emergency preparedness
2. the best thing you can do In many emergency cases

Note: **Satisfactory rating - 3 points** **Unsatisfactory - below 3 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information sheet 3	Response activities

Introduction

First aid provides the initial attention to a person suffering an injury or illness. First aid in the workplace has a number of benefits including:

- saving lives,
- preventing permanent disablement,
- providing immediate support to the injured person
- Improving safety awareness and preventing injury and illness in the workplace, and assist in the early return to work and rehabilitation.

First Aid Officers are responsible for:

- providing first aid to people who are injured or ill in the workplace,
- maintaining first aid kits after utilization in a medical emergency,
- recording treatments and reporting treatment and incidents,
- maintaining a current first aid qualification, and
- Participating in refresher training and competency development activities.

Role of first aid officers

In a first aid emergency a first aid officer is expected to take charge and may direct others on the scene to assist with managing the emergency until Emergency Services or more qualified personnel take over.

The role of the first aid officer is to initiate:

- the emergency treatment of injuries and illness;
- arranging prompt and appropriate referral of casualties to medial aid if required;
- coordinate emergency services response if required
- recording treatments and reporting incidents
- the maintenance of first aid equipment, and keeping clean, checking and restocking first aid kits if utilised.

First aid officers undertake regular refresher training. Refresher training includes practical components, such as Cardio-Pulmonary Resuscitation (CPR) practice and use of the Automated External Defibrillators (AEDs).

Legal protection of first aid officers

First aid officers are protected by vicarious liability when acting in good faith and discharging their responsibilities in accordance with their training. Vicarious liability means that employers are generally held responsible for the acts and omissions of their employees. The University appoints first aid officers to act on its behalf and discharge its responsibilities in relation to providing first aid. It is clear that in most situations where first aid officers render first aid in the workplace or otherwise in the course of their duties, they will be doing so as employees of the University and vicarious liability will apply.

In addition, at common law, people giving medical treatment to an injured person at an accident site in an emergency (a circumstance in which immediate medical treatment is required to save someone's life or prevent serious injury to health) cannot be sued for "assault". Permission to treat an injured person must always be obtained prior to treatment unless the person is unconscious.

Note, however, that protection from personal liability is not available if persons:

- render first aid when their judgement is impaired by drugs (including medications) or alcohol and they fail to exercise reasonable care and skill;
- caused the injury or risk in the first place; or
- Impersonate an emergency services worker or falsely represent their skill or expertise in responding to the situation.

First response emergency medical action

As referred to in the USC Emergency Procedures:

- check the immediate area for signs of danger and remove or control it (if safe to do so) to avoid further risk to the casualty and yourself
- do not move casualty unless they are exposed to life-threatening situation
- notify Safe USC, Ext 1168
- in emergency situations contact the ambulance services by dialing 000 then ring Ext 1168 to inform Safe USC
- remain with the casualty and administer first aid (if currently trained to do so) until assistance arrives
- follow the instructions of the relevant Emergency Services personnel or first aid officer
- incident report completed

- review and accident investigation conducted by Human Resources, Health, Safety and Wellbeing.

Debriefing following first aid treatments

First aid treatment may be traumatic or confronting for the person providing the treatment and or for bystanders witnessing the incident or injury. Anyone involved in a first aid incident who feels uncomfortable with the experience should be given the opportunity to debrief after the incident. Employee assistance counseling is available for staff by contacting Human Resources. Student Wellbeing provides counseling to students.

Self-Check -3	**Written Test**

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. what **is the role of the first aider**?
2. List responsibilities of first Aid Officers

Note: **Satisfactory rating - 3 points** **Unsatisfactory - below 3 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information sheet 4	Emergency response team

Emergency response team is responsible in patient assessment and immediate care and the detail is given below.

a. **Assessing patient**
   As the first one on the scene, you need to assess the scene before moving to patient assessment. Once you are sure that the scene is safe, and then you need to assess the patient and provide immediate care for injuries that may endanger patient's life. Your initial assessment begins with your initial impression and then proceeds through the order of level of consciousness (responsiveness), and air way, breathing and circulation.
b. **Providing immediate medical care**
   The immediate care given will depend on the initial assessment. The order of management includes air way, breathing and circulation.
c. **Assigning medical priority**
   After fixing life threatening problems, we can proceed to assigning medical priority to the given patient depending on the impact on the patient out come.
d. **Continuing care up on removal**
   In emergency, continuous patient follow up is one of the requirements. This is because sometimes conditions may change abruptly and my ends in fatal outcome.
e. **Packaging and transporting patient to medical facility**
   Packaging begins once the victim is free from entrapment and terminates when the victim is ready to be removed from the wreckage. The principle of the package depends on the scene condition. Depending on the outcome or the injury type, you need to arrange different tools during transferring to the ambulance and move him/ her to the health facility for definitive management and care.

Self-Check -4	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. **List responsibility of first aid team?**
2. **What you have to be do before moving patient?**
3. **What will be done first during providing first aid?**

Note: **Satisfactory rating - 2 points** **Unsatisfactory - below 2 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information sheet 5	Emergency supplies

First Aid Kit - Make sure you have a well stocked first aid kit, which are commonly sold at drugstores and back country stores. With your kit, be sure to include a generous supply of Ibuprofen (pain reliever and fever reducer), and antiseptic spray for burns, stings, and cuts. Rubbing alcohol and hydrogen peroxide are also recommended by some, for washing out wounds, in preparation for bandaging. Anti-diarrhea medication is also recommended; as there is a chance you may eat contaminated food or drink contaminated water at some point, and suffer from it. (Don't hesitate to add a few personal extras as well to your first aid kit. For example, an extra set of toe nail clippers and finger nail clippers, as well as Chap Stick, can go a long ways in an extended emergency.)

Self-Check -5	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. **What are First aid supply needed to provide first aid?**
2. **Which types of drugs are given to the victim In emergency situation**

Note: **Satisfactory rating - 3 points** **Unsatisfactory - below 3 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Instruction Sheet	LG66: Refer client requiring further care

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics –

- The role of the health extension worker in referral system
- Documenting relevant client history
- Ensuring documentation for referral procedures
- Transferring referral information
- Maintaining Client confidentiality

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to –

- Document Relevant client details according to Health post standard guidelines.
- Maintain client confidentiality at all times and levels.
- Ensure documentation for referral procedures.
- Convey appropriate information to individuals involved in referral to facilitate understanding and optimal care.
- Maintain client care until responsibility over by staff of the receiving health institutions during referral.

Learning Instructions:

1.Read the specific objectives of this Learning Guide.

2. Follow the instructions described below

3. Read the information written in the “Information Sheets”. Try to understand what are being discussed. Ask your teacher for assistance if you have hard time understanding them.

4. Accomplish the “Self-checks”. In each information sheets.

5. Ask from your teacher the key to correction (key answers) or you can request your teacher to correct your work. (You are to get the key answer only after you finished answering the Self-checks).

6. If you earned a satisfactory evaluation proceed to “Operation sheets and LAP Tests if any”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity.
7. After You accomplish Operation sheets and LAP Tests, ensure you have a formative assessment and get a satisfactory result;
8. Then proceed to the next information sheet

Information Sheet-1	The role of the health extension worker in referral system

1. Referral of casualty

After the required first aid service is provided, according to the condition of the casualty and degree of the injury referral should be considered. During the referral of casualty, written document / profile that explains about the casualty's Age and Sex, Chief Complaint, Responsiveness, Airway and breathing status, Circulation status, Physical findings, SAMPLE history and Interventions provided is mandatory to enable the health care providers provide quick and comprehensive

The profile of Hand off Report has to contain the followings:

- Age and Sex
- Chief Complaint
- Airway and breathing status
- Circulation status
- Responsiveness
- Physical findings
- SAMPLE history
- Interventions provided

Communication and Documentation

The emergency service provider should communicate with the patient, bystanders, family members and other member of the public safety community. Once you have completed first aid care, it is important to document the condition of the patient and treatment given to the patient.

A competent pre hospital report documents the nature and extent of emergency medical care. Well prepared reports are an important medical/legal document. "If it isn't written down, it wasn't done," and "If it wasn't done, don't write it down‖. Health care providers use the information from the report to trend changes in patient condition. In particular, the trending of mental status and vital signs is extremely important to physicians and nurses who assume care. The information on the report can also be used in quality assessment of emergency medical care.

Once your role in treating the patient is finished, it is important that you record your observation about the scene, the patient's condition, and the treatment you provided. Documentation should be clear, concise, accurate and according to the accepted policies of your organization. This documentation is important because you will not be able to remember the treatment you give to all patients. It is also serves as a legal record of your treatment and may be required in the event of a lawsuit. Documentation also provides a basis to evaluate the quality of care given.

The minimum data set to be maintained in the documentation process are:

1. Patient information gathered at time of emergency service provider's initial contact with patient on arrival at scene, following all interventions and on arrival at facility.

a. Chief complaint

b. Level of consciousness (AVPU) - mental status

c. Systolic blood pressure

d. Skin perfusion (capillary refill) for patients less than 6 years old

e. Skin color and temperature

f. Pulse rate

g. Respiratory rate and effort

2. Administrative information

a. Time incident reported

b. Time unit notified

c. Time of arrival at patient

d. Time unit left scene

e. Time of arrival at destination

f. Time of transfer of car

Self-Check -1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List all contents written during referral

2. Patient information gathered at time of emergency service?

Note: **Satisfactory rating - 3 points** **Unsatisfactory - below 3 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____