

**Ministry of Higher Education & Scientific Research
Al-Hadi University College**

**Learning Package
In Field of**

Fundamental Nursing

Theory & Practical

**Presented to the 1st class students
Of**

**Al-Hadi University College
Nursing Department**

**Designed by
Ali Abdul Razzaq**

2022-2023

UNIT ONE

A: Overview:

1- Target population :

This learning package had been designed to the first class students at Nursing Department in Al-Hadi University College.

2-Rationale:

This (Unit) will aid those who want to learn the basic nursing that apply to the health field. It is also intended for students who have little or no science background.

The study of nursing, is a fascinating topic to those of us who feel its importance in our daily lives.

There is a need for a “simplified “nursing basics and first aid presents the major concepts clearly for people entering the health occupations.

The student will discover, the concise nature of this unit has made each sentence significant. Thus, the reader will be intellectually challenged to learn each new concept as it is presented.

It is my hope that the students will enjoy their study of nursing and first aid and be motivated to further explore this fascinating field, especially as it relates to their occupations.

B: Performance Objectives:

After studying this modular unit, you should be able to:

- 1- Recognize the nursing history, and definitions of nurse, hospital, health, and patient.
- 2- List of nursing process.

Pre-test :

- Q1. What do we mean by nursing?
- Q2. Define health?
- Q3. Write down about nursing process.

C: The Modular unit of this Package:

Definitions

- **Nursing:** The unique function of the nurse is to assist the individual, sick or well, in the performance of those activities contributing to health or its recovery that he would perform unaided if he had the necessary strength, will or knowledge. And to do this in such a way as to help him gain independence as rapidly as possible.
The real goal of nursing is: "to put the patient in the best condition for nature to act upon him".
- **Nurse:** A nurse is a person who has completed a program of basic nursing education and is qualified and authorized in her country to practice nursing.
- **Hospital:** Place where people are treated for, nursed through, their illness or injuries.

- **Patient:** An individual who require assistance to achieve health and independence or peaceful death.
- **Health:** A state of complete physical, mental, and social well being and not merely the absence of disease and infirmity.

The nursing process:

1. Assessment:

- History taking.
- Physical exam.
- Nursing diagnosis.

2. Planning:

- Setting priorities.
- Establishing goals for nursing action.
- Establishing expected outcomes.
- Team planning.

Formulating the nursing care plan

3. Implementation:

- Nursing assurance.
- Outcome criteria.

4. Evaluation:

- Quality assurance.
- Outcome criteria.

UNIT TWO

Medical Record

Performance Objectives:

After studying this modular unit, you should be able to:

1. Describe purpose and limitations of medical chart
2. Explain sections and components of medical chart

Medical record:

A **medical record**, **health record**, or **medical chart** is a systematic documentation of a patient's medical history and care. The term 'Medical record' is used both for the physical folder for each individual patient and for the body of information which comprises the total of each patient's health history. Medical records are intensely personal documents and there are many ethical and legal issues surrounding them such as the degree of third-party access and appropriate storage and disposal. Although medical records are traditionally compiled and stored by health care providers, personal health records maintained by individual patients have become more popular in **recent** years.

Purpose:

The information contained in the medical record allows health care providers to provide continuity of care to individual patients. The medical record also serves as a basis for planning patient care, documenting communication between the health care provider and any other health professional contributing to the patient's care, assisting in protecting the legal interest of the patient and the health care providers responsible for the patient's care, and documenting the care and services provided to the patient. In addition, the medical record may serve as a document to educate medical students/resident physicians, to provide data for internal hospital auditing and quality assurance, and to provide data for medical research.

Personal health records combine many of the above features with portability, thus allowing a patient to share medical records across providers and health care systems.

Format:

Traditionally, medical records have been written on paper and kept in folders. These folders are typically divided into useful sections, with new information added to each section chronologically as the patient experiences new medical issues. Active records are usually housed at the clinical site, but older records (e.g., those of the deceased) are often kept in separate facilities.

Contents of chart:

Types of sheets:

1. Admission sheet identifying information, Insurance information, Contact information (name, age, sex, job, marital status,...etc)
2. Graphic sheet (vital signs sheet).
3. Medical history sheet.

History of present illness (HPI)

- Past medical history (PMH)
- Physical examination (PE)
- Assessment, including differential
- Diagnosis (diff dx)
- Plan for evaluation (work

4. Intake and output sheet.
5. Treatment sheet.
6. Physical examination sheet.
7. Nurses notes sheet.
8. Laboratory and x-ray sheet.
9. Operative permit.
10. Anesthesia sheet.
11. Operative sheet.
12. Discharge sheet.

UNIT THREE & FOUR

Physical examination

Performance Objectives:

After studying this modular unit, you should be able to:

1. To determine the patient's level of health or physiological function
2. To know the basics of the examination in order to have the appropriate equipment and supplies on hand, and so that you may place the patient in the proper position and drape him correctly.

PURPOSES FOR PERFORMING A PHYSICAL EXAMINATION:

The physical examination can be performed by the following health care providers: a physician, nurse practitioner, or physician assistant. The health care provider makes specific and general observations as he examines the patient from head to toe. The exam should include the eyes, ears, nose, mouth, throat, neck, chest, breasts, abdomen, and extremities. A vaginal or rectal examination is performed if indicated. The purposes for performing a physical examination are:

- a. To determine the patient's level of health or physiological function.
- b. To arrive at a tentative diagnosis when there is a health problem or disease.
- c. To confirm a diagnosis of disease or dysfunction.
- d. To evaluate the effectiveness of prescribed medical treatment and therapy.

Physical examination:

1. Inspection method: e.g. Color of the skin, shape of the body, walking., etc.(By the eye).
2. Palpation method: e.g. temp., pulse.
3. A stethoscope auscultation method (by listening to the voices) e.g. heart beat, abdomen...
4. Percussion method (by hands and fingers).

Positions of patient during examination:

Patients are put in special positions for examination, for treatment or test, and to obtain specimens. You should know the positions used, how to assist the patient, and how to adjust the drapes.

- a. Horizontal Recumbent Position. Used for most physical examinations. Patient is on his back with legs extended. Arms may be above the head, alongside the body or folded on the chest.

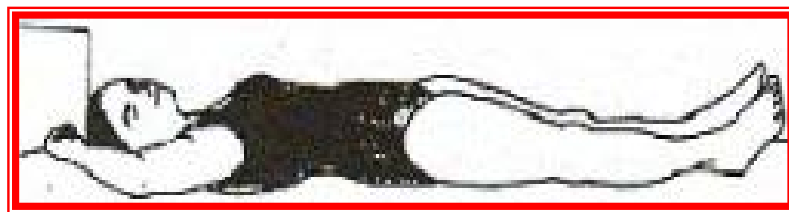


Figure 1-1. Horizontal recumbent position

- b. Dorsal Recumbent Position. Patient is on his back with knees flexed and soles of feet flat on the bed. Fold sheet once across the chest. Fold a second sheet crosswise over the thighs and legs so that genital area is easily exposed.

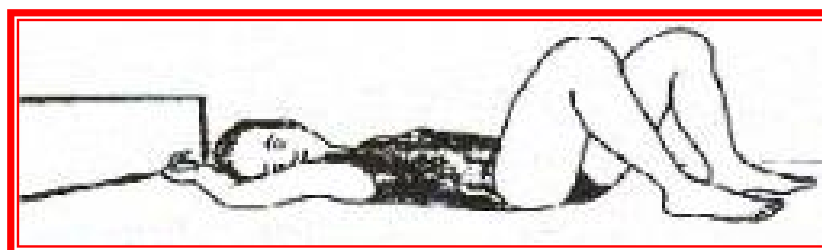


Figure 1-2. Dorsal recumbent position.

c. Fowler's Position. Used to promote drainage or ease breathing. Head rest is adjusted to desired height and bed is raised slightly under patient's knees

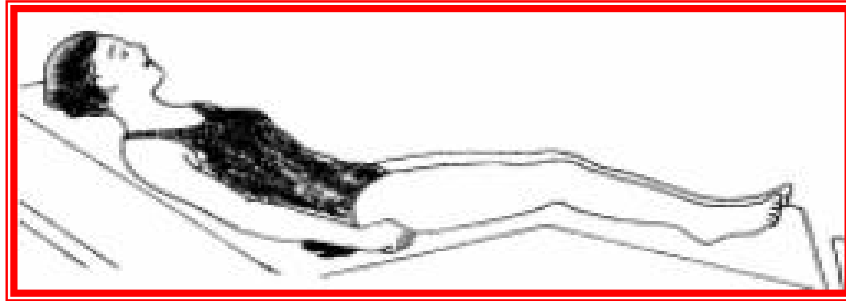


Figure 1-3. Fowler's position.

d. Dorsal Lithotomy Position. Used for examination of pelvic organs. Similar to dorsal recumbent position, except that the patient's legs are well separated and thighs are acutely flexed. Feet are usually placed in stirrups. Fold sheet or bath blanket crosswise over thighs and legs so that genital area is easily exposed. Keep patient covered as much as possible.

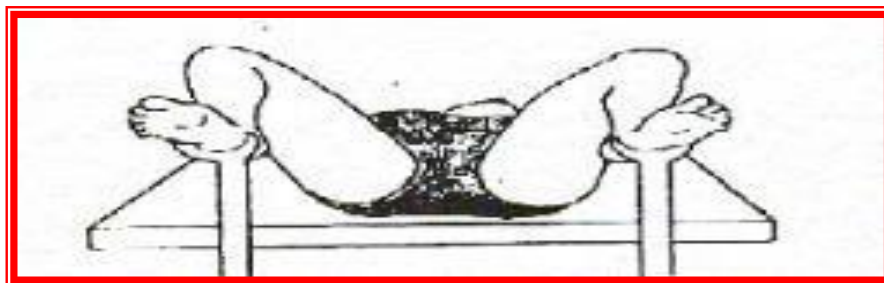


Figure 1-4. Dorsal lithotomy position.

e. Prone Position. Used to examine spine and back. Patient lies on abdomen with head turned to one side for comfort. Arms may be above head or alongside body. Cover with sheet or bath blanket.

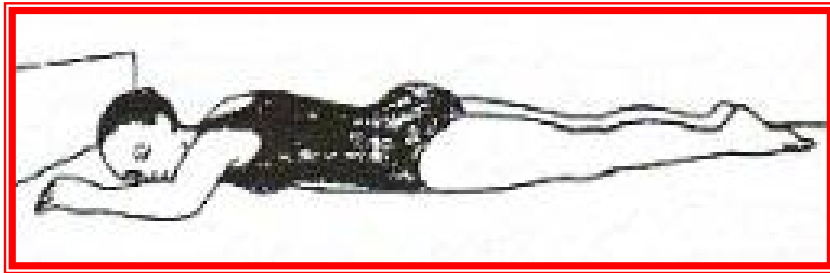


Figure 1-5. Prone position.

f. Sim's Position. Used for rectal examination. Patient is on left side with right knee flexed against abdomen and left knee slightly flexed. Left arm is behind body; right arm is placed comfortably.

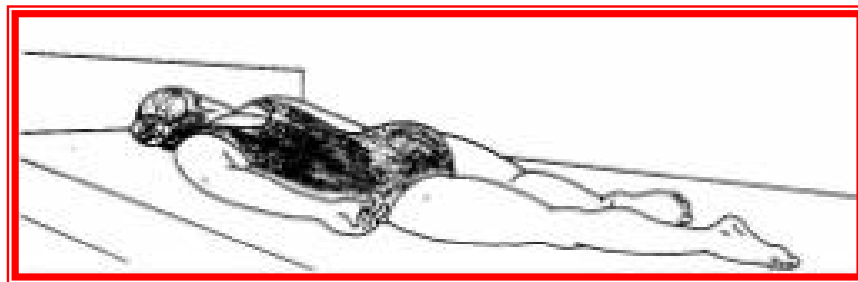


Figure 1-6. Sim's position

g. Knee-Chest Position. Used for rectal and vaginal examinations and as treatment to bring uterus into normal position. Patient is on knees with chest resting on bed and elbows resting on bed or arms above head. Head is turned to one side. Thighs are straight and lower legs are flat on bed.



Figure 1-7. Knee-chest position.

Post Examination

Q1. Enumerate positions of the patient during physical exam.

Q2. What is the purpose of performing physical exam.

UNIT FIVE

Disinfection and sterilization

Performance Objectives:

After studying this modular unit, you should be able to:

Differentiate between disinfection and sterilization, and know the methods of sterilization.

Disinfection and sterilization:

Disinfection and antisepsis: are process by which disease inducing organisms are killed or their growth is prevented.

A disinfectant: is an agent, usually chemical, that kills many forms of pathogenic microorganisms but not necessarily the more resistant forms, such as spores.

An antiseptic: prevents the growth and activity of microorganisms but does not necessarily destroy them.

Sterilization: killing of all forms of bacteria, spores, fungi and viruses.

Disinfection and antisepsis: are process by which disease inducing organisms are killed or their growth is prevented.

A disinfectant: is an agent, usually chemical, that kills many forms of pathogenic microorganisms but not necessarily the more resistant forms, such as spores.

An antiseptic: prevents the growth and activity of microorganisms but does not necessarily destroy them.

Sterilization: killing of all forms of bacteria, spores, fungi and viruses.

The Two General Methods of Sterilization:

There are two major methods of sterilization.

- A) Physical

1. Plasmolysis or Plasmoptysis (eg. the use of salt).

Concentrated solutions destroy microorganisms by withdrawing water from their cells (plasmolysis) , e.g., in the preservation of food by concentrated salt or sugar solutions.

2. Desiccation.

3. Heat:

- (a) Dry heat; (hot air oven) at 160°C for 1-2 hrs.

- (b) Moist heat (autoclave) steam under pressure..

- (c) Boiling water.

4. Light or Cold sterilization (includes UV ultraviolet light):

Certain rays of light, the blue, violet and ultraviolet in particular are destructive to living cells. It is to these rays that sun light owes its disinfecting action.

5. Sterilization by gas (for the sterilization of masks, heart and kidney machines).

6. Filtration (usually used at the micron level for bacteria).

7. Dialysis.

8. Comminution.

Comminution or the actual crushing of the microbial cells is resorted to for demonstrating intracellular enzymes.

- B) Chemical.

1. Disinfectants, Chloroform, ether, toluol, oil of garlic or mustard, etc.
2. Sterilization by Antiseptics

The mouths of test tubes, fermentation tubes, pipettes, etc., are ordinarily plugged with cotton before sterilization. For this purpose cotton is ideal as it is cheap and adaptable, serves to filter out microorganisms from the air, while allowing the ready diffusion of gases, and after once used it may be burned.

Paper (ordinary newspaper) may be used to wrap glass ware as Petri dishes, deep-culture dishes, pipettes, etc., which one wishes to store in a sterile condition and for which cotton is not adaptable

UNIT SIX

Vital Signs

Performance Objectives:

After studying this modular unit, you should be able to:

Learn further information about the patient's health status which is obtained by taking his vital signs.

Vital signs:

Further information about the patients health status is obtained by taking his signs normally:

- 1. Temperature.*
- 2. Pulse.*
- 3. Respiration.*
- 4. Blood pressure.*

1. Body temperature:

Is maintained by a balance between heat production and heat loss. The normal degree of body temperature about 37°C (98.6°F).

Thermometers are calibrated in either degrees Fahrenheit (°F) or degrees Celsius (°C), depending on the custom of the region

Methods of measuring body temp.:

1. Orally method.
2. Axillary method.
3. Rectal method.

Pyrexia (fever): an elevation in normal body temp. is the result of a direct action on temp. regulating center in the hypothalamus.

- **Oral method:**

The purpose is to measure body temp. by putting thermometer under the tongue for (5) minutes.

Contraindications:

1. For unconscious patient.
2. Infants.
3. Patient who breath through their mouths.
4. For patient with disease of the oral cavity or surgery of the nose or the mouth.

- **Axillary method:**

By putting thermometer in axilla for 10 minutes. It's used only when both oral and rectal method are contraindications.

Note: add $1/2^{\circ}\text{C}$ to the recorded temp.

- **Rectal method:**

Rectal temp. is more accurate than oral or an axillary temp.

Procedure:

Check thermometer to see that reading is down to 96°F . apply lubricant to the thermometer, have patient turn on to side as necessary, insert thermometer into anus, hold thermometer in place for 5 minutes, remove and wipe thermometer, read and record temp.

Note: minimize $1/2^{\circ}\text{C}$ from the recorded temp.

Germicidal solution for thermometer:

1% Iodine + 99% Alcohol (70% concentrated).

UNIT SEVN

Vital Signs

2.Pulse:

Is the expansion of the arterial walls occurring with each ventricular contraction. The pulse rate of the average healthy adult male is approximately 60-100 beats / minute.

Pulse Measurement:

Your pulse is the rate at which your heart beats. Your pulse is usually called your heart rate, which is the number of times your heart beats each minute (bpm). However, the rhythm and strength of the heartbeat can also be noted, as well as whether the blood vessel feels hard or soft. Changes in your heart rate or rhythm, a weak pulse, or a hard blood vessel may be caused by heart disease or another problem.

Notes in taking pulse:

1. Pulse rate.
2. Rhythm of the pulse.
3. Volume of the pulse.
4. The arterial wall.

Sites of taking pulse:

1. Temporal artery.
2. Carotid artery.
3. Radial artery.
4. Brachial artery.
5. Femoral artery.
6. Pedis dorsal artery.

7. Facial artery.

Taking a pulse (heart rate):

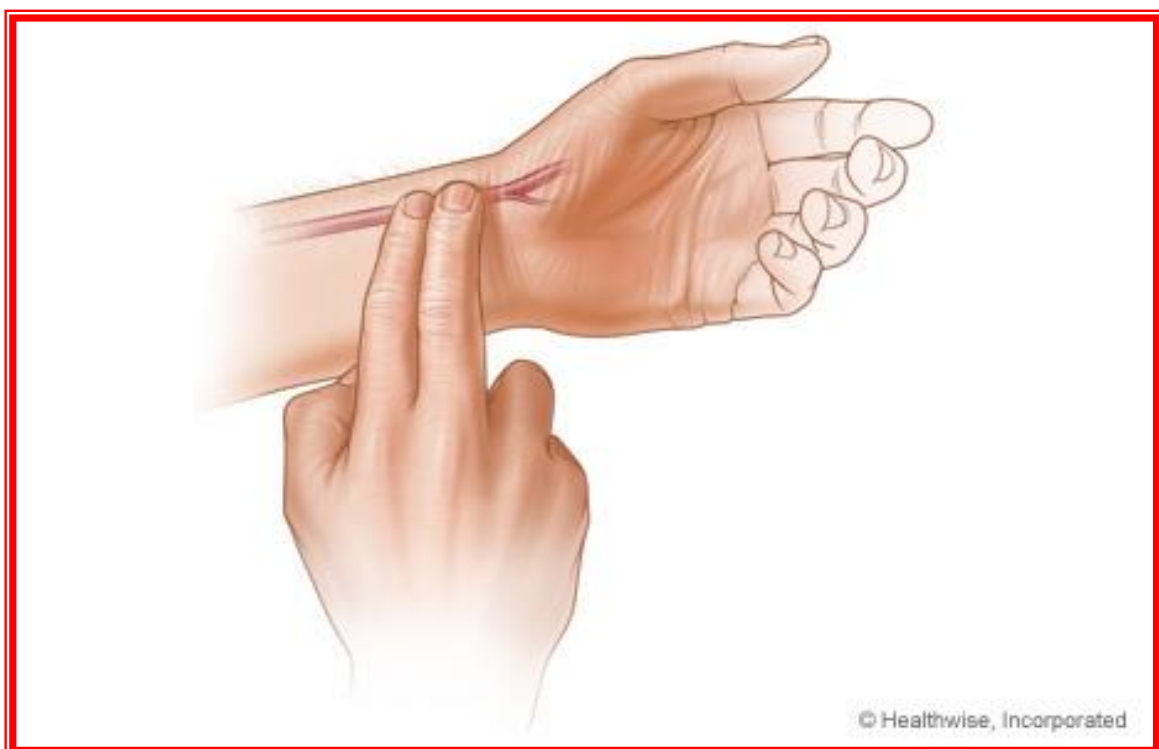
Principle guiding in obtaining the radial pulse rate:

The purpose is to count the number of times the heart beats per minute, and to obtain an estimate of the quality of the heart action.

Your pulse is the rate at which your heart beats. As your heart pumps blood through your body, you can feel a pulsing in some of the blood vessels close to the skin's surface.

The usual resting pulse for an adult is 60 to 100 beats per minute. Certain illnesses can cause your pulse to change, so it is helpful to know what your resting pulse is when you are well. To find your resting pulse, count your pulse after you have been sitting or resting quietly for at least 10 minutes. You can easily check your pulse on the inside of your wrist, below your thumb.

- Gently place 2 fingers of your other hand on this artery.
- Do not use your thumb because it has its own pulse that you may feel.
- Count the beats for 30 seconds; then double the result to get the number of beats per minute.



© Healthwise, Incorporated

You can also check your pulse in the carotid artery. This is located in your neck, on either side of your windpipe. Be careful when checking your pulse in this location, especially if you are older than 65. If you press too hard, you may become lightheaded and fall.



Tachycardia: the pulse rate is over 100 beats/minute.

Bradycardia: the pulse rate is below 50 beats/minute.

Arrhythmia: irregular pulse rhythm.

UNIT EIGHT

Vital Signs

3. Blood pressure: (BP)

The pressure is exerted on the wall of the arteries when the left ventricle of the heart pushes blood into the aorta.

The maximum pressure is called **systolic pressure**.

The minimum pressure is called **diastolic pressure**.

For each heartbeat, BP varies between systolic and diastolic pressures. Systolic pressure is peak pressure in the arteries, which occurs near the end of the cardiac cycle when the ventricles are contracting. Diastolic pressure is minimum pressure in the arteries, which occurs near the beginning of the cardiac cycle when the ventricles are filled with blood

Pulse pressure: the difference between systolic and diastolic pressure. Normally body blood pressure 120/80 systolic/diastolic.

Factors maintaining normal arterial pressure:

1. Cardiac output.
2. peripheral resistance.
3. The quantity of blood.
4. The viscosity of blood.
5. The elasticity of the vessel walls.

Hypertension: blood pressure is above normal (120/80mm.Hg).

Hypotension: blood pressure below average (120/80mm.Hg).

Arterial blood pressure: the purpose is to measure the patient's systolic & diastolic pressure by an indirect method.

Measurement:

Equipments:

1. Sphygmomanometer.
2. Stethoscope.

The *auscultatory* method (from the Latin word for *listening*) uses a stethoscope and a sphygmomanometer. This comprises an inflatable cuff placed around the upper arm at roughly the same vertical height as the heart, attached to a mercury manometer.

A cuff of appropriate size is fitted smoothly and snugly, then inflated manually by repeatedly squeezing a rubber bulb until the artery is completely occluded. Listening with the stethoscope to the brachial artery at the elbow, the examiner slowly releases the pressure in the cuff. When blood just starts to flow in the artery, the turbulent flow creates a "whooshing" or pounding. The pressure at which this sound is first heard is the systolic BP. The cuff pressure is further released until no sound can be heard, at the diastolic arterial pressure.



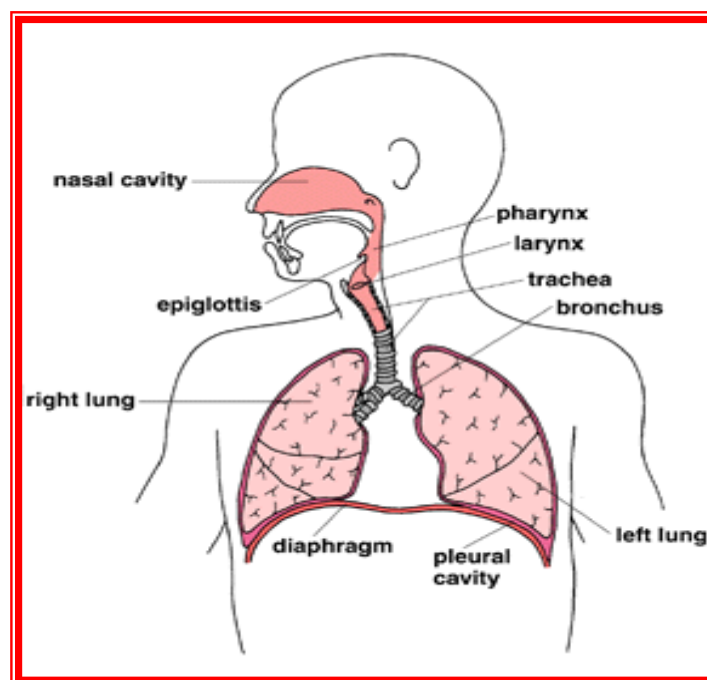
UNIT NINE

Vital Signs

Respiration

Respiratory System:

- Primary function is to obtain oxygen for use by body's cells & eliminate carbon dioxide that cells produce
- Includes respiratory airways leading into (& out of) lungs plus the lungs themselves
- Pathway of air: nasal cavities (or oral cavity) > pharynx > trachea > primary bronchi (right & left) > secondary bronchi > tertiary bronchi > bronchioles > alveoli (site of gas exchange).

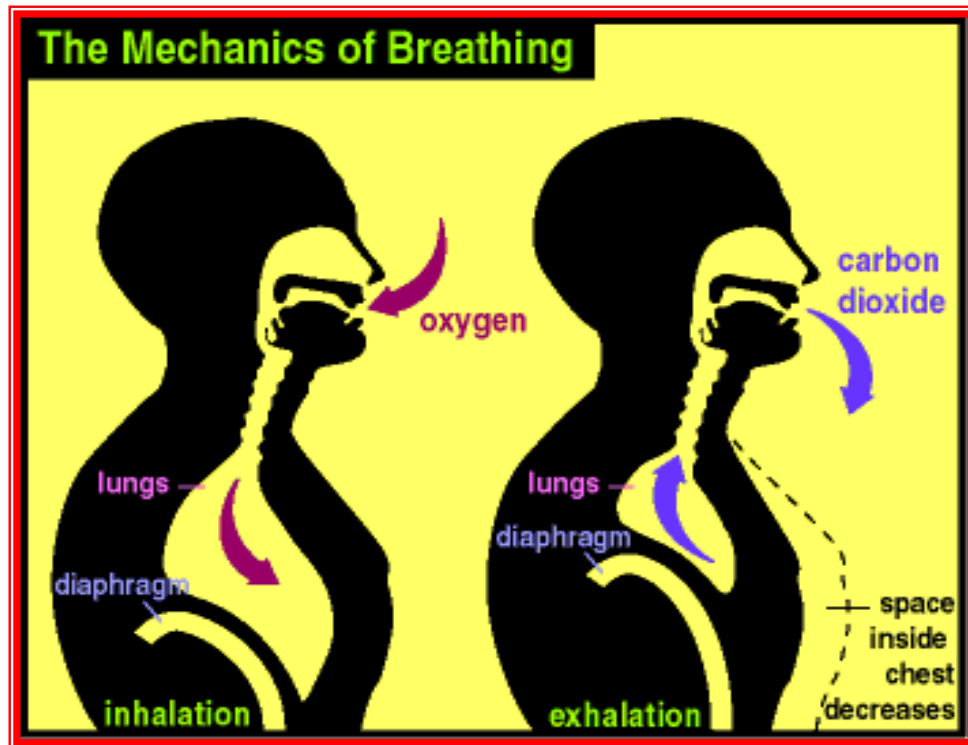


4. Respiration:

Is the process by which oxygen and carbon dioxide (CO₂) are interchanged, normally adult breath's (15-20 times/ minute).

External respiration: delivery of O_2 to the blood and the removal of CO_2 from the blood via the respiratory and the circulatory systems.

Internal respiration: process by which O_2 from the blood is made available to cells in the body and CO_2 is removed from the tissue into the blood.



Notes in observed respiration:

1. Respiratory rate.
2. Total volume.
3. Respiratory depth.
4. Nature of respiration (noiseless).

What is the respiration rate?

The respiration rate is the number of breaths a person takes per minute. The rate is usually measured when a person is at rest and simply involves counting the number of breaths for one minute by counting how many times the chest rises. Respiration rates may increase with fever, illness, and with other medical conditions. When checking respiration, it is important to also note whether a person has any difficulty breathing.

Normal respiration rates for an adult person at rest range from 15 to 20 breaths per minute. Respiration rates over 25 breaths per minute or under 12 breaths per minute (when at rest) may be considered abnormal.

Polypnea: increased rate of respiration.

Hyperpnea: increased depth of respiration.

Dysnea: difficult breathing.

Apnea: no breathing.

Procedure:

The purpose is to obtain the respiratory rate/ minute and an estimate of the patient respiration status.

Note:

The rise and fall of the patient's chest with each inspiration and expiration is a complete cycle of respiration.

UNIT TEN

Methods of giving oxygen:

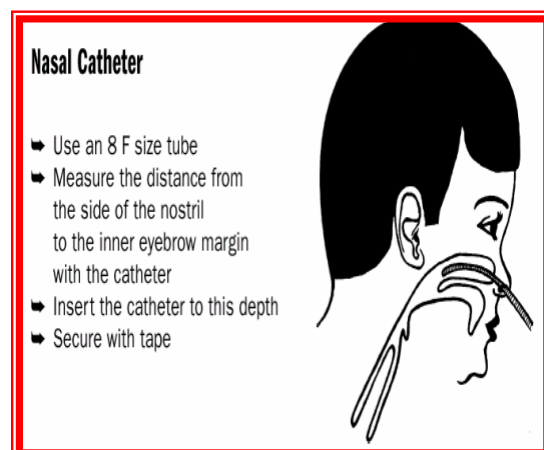
Methods of giving oxygen:

1. Nasal catheter.
2. By mask.
3. By tent.

1. Nasal catheter:

Rubber tube length 8 inches and have 6-8 opened. Give oxygen from nose to oropharynx.

Nasal catheters may be used when more prolonged oxygen delivery is desired than can be achieved with flow-by or face mask techniques. Other advantages of nasal catheter delivery of oxygen are that it permits access to the patient without loss of the oxygen-rich environment and it is well tolerated in most patients. When necessary, bilateral catheters can be placed. The appropriate oxygen flow rate is based upon assessment of the degree of respiratory distress, the patient's respiratory rate and pattern, and the patient's size. Although high gas flow rates can be administered through a single nasal catheter, these high flow rates may be associated with patient discomfort. In such cases, administering oxygen through bilateral nasal catheters may be justified.



2. By mask:

Oxygen masks are devices that are constructed to supply oxygen or other gases to an individual. Masks of this type fit snugly over the nose and mouth, and are equipped with a tube that connects the oxygen mask to a storage tank where the oxygen is contained. The mask may be constructed of rubber, silicone, or plastic. There are a number of different types of oxygen masks in use. Some are designed for use in medical facilities while others are routinely part of the support equipment supplied to firemen, the military, and members of several other professions.

- a. Mask which covering nose and mouth.
- b. Mask which cover nose only and connect with oxygen cylinder.



3. By tent:

The purpose is to prepare place and manage an oxygen tent so that the patient receives a therapeutic concentration of oxygen.

An oxygen tent is a device that can be used when administering oxygen to a patient. The tent might extend over the body, the head and shoulders, or some devices cover only a part of the face. Typically, oxygen at higher than normal concentration is released inside the enclosure. This form of treatment is often prescribed in conditions where people have difficulty breathing. An oxygen tent can be used in either a hospital setting or outside a healthcare facility, and can be recommended for short- or long-term therapy.

UNIT ELEVEN & TWELVE

Administration and storage of drugs

Performance Objectives:

After studying this modular unit, you should be able to:

Learn about drug, factors affecting on the drug activity, how to storage drugs and methods of drugs administration.

Administration and storage of drugs:

Drug: chemical substances used for:

1. Diagnosis of disease.
2. Treatment of disease.
3. Cure disease.
4. Vaccination (prevention).

Factors affecting on the drug activity:

1. Age.
2. Weight.
3. Sex.
4. Physical condition.
5. Methods of drug administration.
6. Excretion of drugs.
7. Tolerance.
8. Habituation.
9. Addiction.
10. Idiosyncrasy.
11. Direct effect.

Methods of drug administration:

Drug administration: A **route of drug administration** is the path by which a drug or other substance is brought into contact with the body. Drugs are introduced into the body by several routes. When administering a drug, the nurse should ensure that the pharmaceutical preparation is appropriate for the route specified.

1. Orally.
2. Rectally.
3. Vaginally.
4. Urethral.
5. Inhalation.
6. Instillation.
7. Insufflations.
8. Inunction.
9. Parenteral (injection):
 - a. Subcutaneously.
 - b. Intradermally.
 - c. Intramuscularly.
 - d. Intravenously.
 - e. Intraspinally.
 - f. Intraperitoneally.

Route	Advantages	Disadvantages
Oral	<ul style="list-style-type: none"> · Most convenient · Usually least expensive · Safe, does not break skin barrier · Administration usually does not cause stress 	<ul style="list-style-type: none"> · Inappropriate for patients with nausea and vomiting · Drug may have unpleasant taste or odor · Inappropriate when gastrointestinal tract has reduced motility · Inappropriate if patient cannot swallow or is unconscious · Cannot be used before certain diagnostic tests or surgical procedures · Drug may discolor teeth, harm tooth enamel · Drug may irritate gastric mucosa · Drug can be aspirated by seriously ill patients
Sublingual	<ul style="list-style-type: none"> · Same as oral route, plus · Drug can be administered for local effect · More potent than oral route because drug directly enters the blood and bypasses the liver 	<ul style="list-style-type: none"> · If swallowed, drug may be inactivated by gastric juice · Drug must remain under tongue until dissolved and absorbed · Drug is rapidly absorbed into the bloodstream

Buccal	<ul style="list-style-type: none"> · Same as sublingual 	<ul style="list-style-type: none"> · Same as sublingual
Rectal	<ul style="list-style-type: none"> · Can be used when drug has objectionable taste or odor · Drug released at slow, steady rate 	<ul style="list-style-type: none"> · Dose absorbed is unpredictable
Vaginal	<ul style="list-style-type: none"> · Provides a local therapeutic effect 	<ul style="list-style-type: none"> · Limited use
Topical	<ul style="list-style-type: none"> · Provides a local effect · Few side effects 	<ul style="list-style-type: none"> · Maybe be messy and may soil clothes · Drug can enter body through abrasions and cause systemic effects
Transdermal	<ul style="list-style-type: none"> · Prolonged systemic effect · Few side effects · Avoids gastrointestinal absorption problems 	<ul style="list-style-type: none"> · Leaves residue on the skin that may soil clothes
Subcutaneous	<ul style="list-style-type: none"> · Onset of drug action faster than oral 	<ul style="list-style-type: none"> · Must involve sterile technique because breaks skin barrier · More expensive than oral · Can administer only small volume · Slower than intramuscular administration · Some drugs can irritate tissues and cause pain · Can produce anxiety
Intramuscular	<ul style="list-style-type: none"> · Pain from irritating drugs is minimized 	<ul style="list-style-type: none"> · Breaks skin barrier · Can produce

	<ul style="list-style-type: none"> · Can administer larger volume than subcutaneous · Drug is rapidly absorbed 	<ul style="list-style-type: none"> · anxiety
Intradermal	<ul style="list-style-type: none"> · Absorption is slow (this is an advantage in testing for allergies) 	<ul style="list-style-type: none"> · Amount of drug administered must be small · Breaks skin barrier
Intravenous	<ul style="list-style-type: none"> · Rapid effect 	<ul style="list-style-type: none"> · Limited to highly soluble drugs · Drug distribution inhibited by poor circulation
Inhalation	<ul style="list-style-type: none"> · Introduces drug throughout respiratory tract · Rapid localized relief · Drug can be administered to unconscious client 	<ul style="list-style-type: none"> · Drug intended for localized effect can have systemic effect · Of use only for the respiratory system

UNIT THIRTEEN & FOURTEEN

- **Oral administration:**

Oral medications are absorbed chiefly in the small intestine, or absorbed in the mouth and stomach. Medications administered sublingually are absorbed through the capillaries under the tongue.

Types of oral drugs:

- Tablets.
- Capsules.
- Liquids.
- Powders.
- Torches (sucked).



Advantages of oral method:

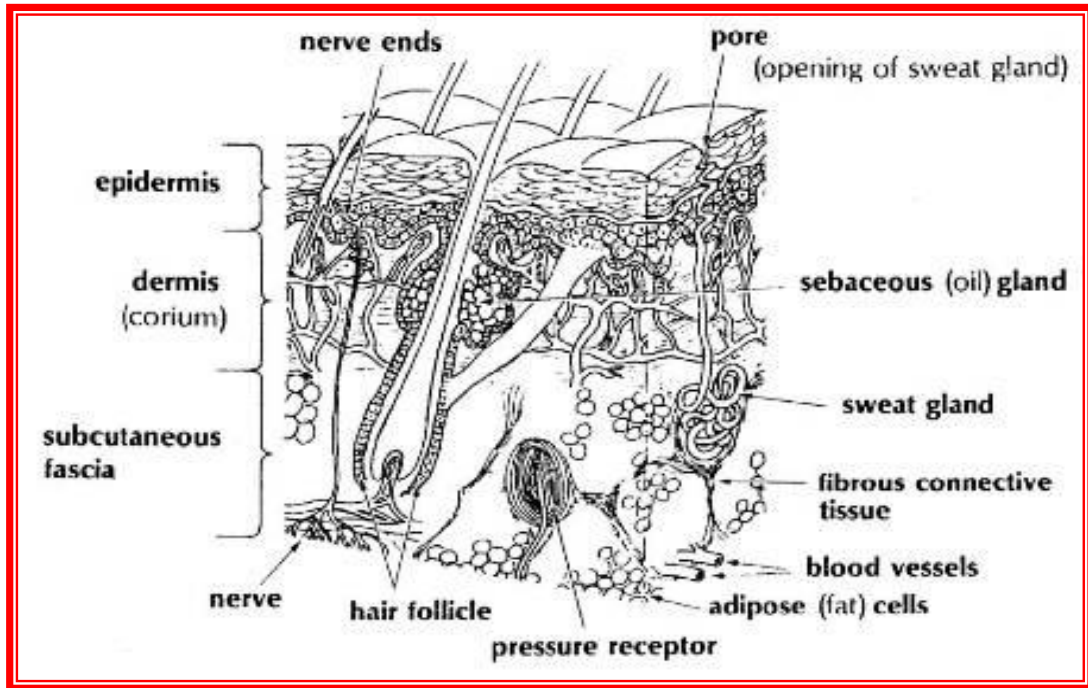
1. Convenience: it's a simple method of administration.
2. Economy: oral preparations usually cost less to manufacture than many other preparations.
3. Safe: its administration doesn't involve breaking through any of the body defenses.

Disadvantages of oral method:

1. Unpleasant tasting can stimulate nausea and vomiting.
2. Irritating to the gastric mucosa.
3. Some drugs are harmful to the teeth.
4. Inaccurate measure of absorption.
5. Limited use in patients who cannot swallow or have surgery or unconscious, or in infants and children.

- **Injection method:**

- 1. Subcutaneous injection:**



Advantages and disadvantages:

Some medications are best administered into the subcutaneous tissue by a needle. This route has the advantage to almost complete absorption, provide that the patient's circulation is good; therefore an accurate measure of the amount of drug absorbed is possible.

Medicines administered in this manner are not affected by gastric disturbances, nor is their administration dependent upon the consciousness or rationality of the patient.

The chief disadvantage of this method is that by introducing a needle through the skin one of the body's barriers against infection is broken. It's therefore important that aseptic technique be used for all needle injections.

Site of injection:

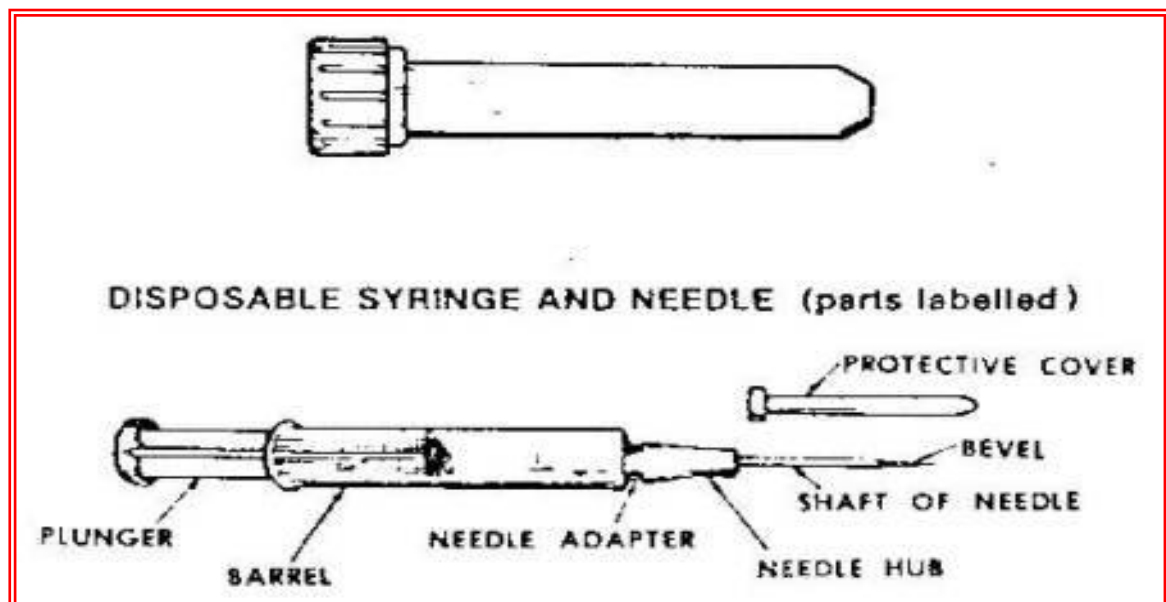
The subcutaneous tissue is just below the cutaneous or skin. It has fewer sensory receptors than the skin itself; therefore once a needle is through the skin an injection is relative painless. Areas of the upper arms, anterior and lateral aspects of the thigh, and the lower ventral abdominal wall are suggested, subscapular area of the back.

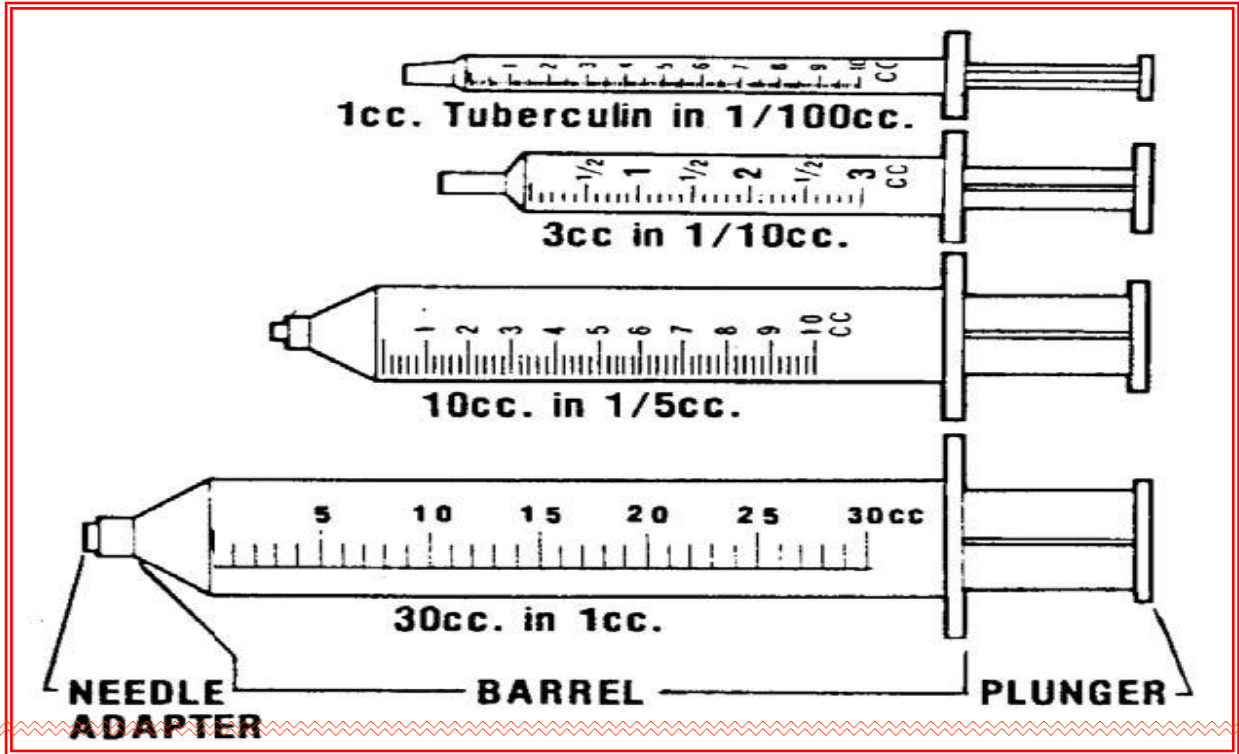
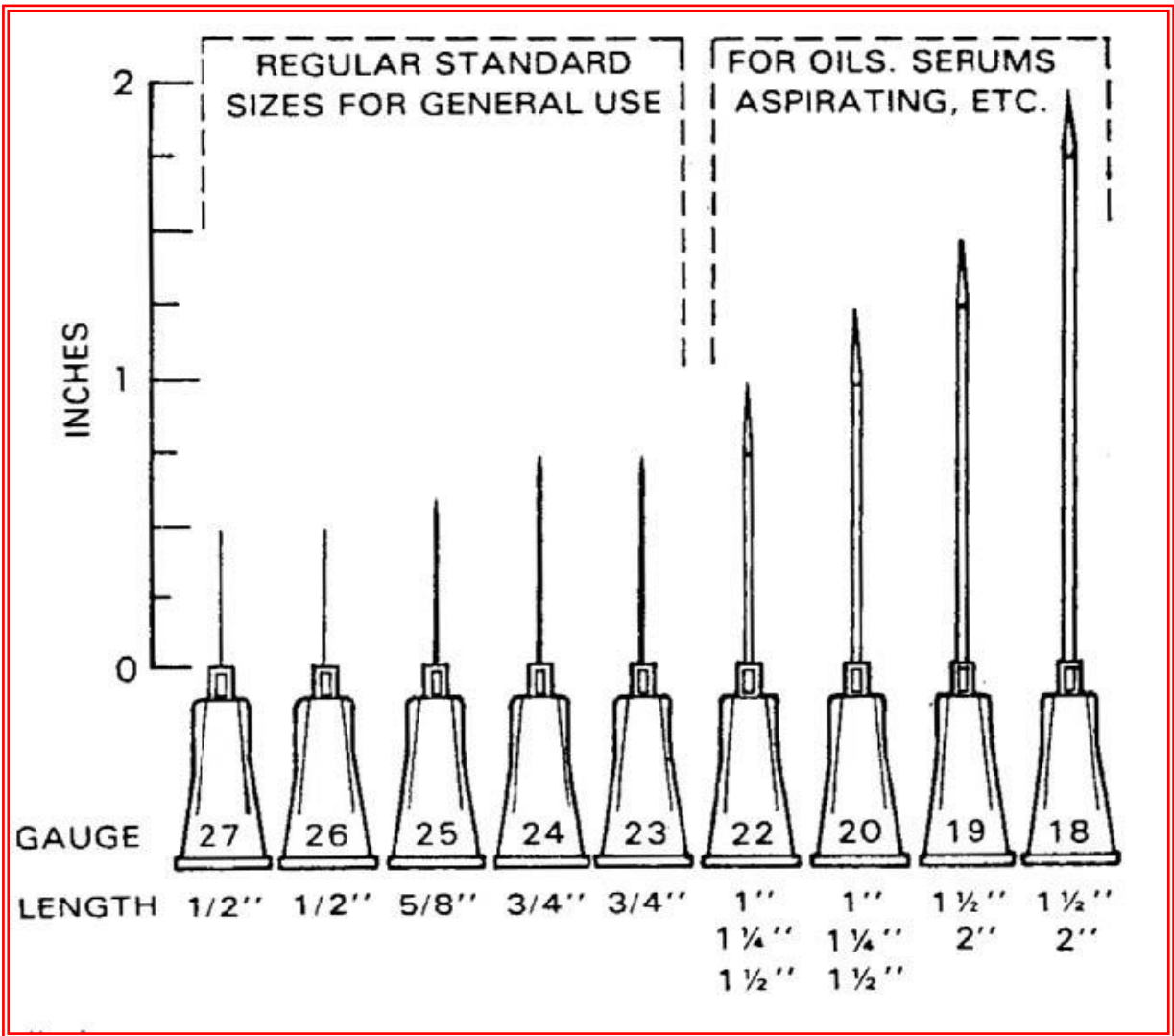
Equipments:

Subcutaneous injection involves the use of sterile equipments and supplies. These include a syringe, a needle, the medication, a swab and a disinfectant to clean the skin.

Syringes vary in size from 1-5 ml, the 2 ml syringe commonly used for subcutaneous injections, is calibrated in cubic centimeters. For the administration of insulin, special 1 ml syringes are often used.

A syringe has 2 parts, the **barrel or outer part**, and the **plunger or inner part**, and the **needle**. The syringes made of glass or plastic. The maximum volume of solution that can be given comfortably by this route is thought to be 20 minims (less than 1.5 ml).





Certainly anything greater than 2 ml will cause pressure on surrounding tissues and therefore be painful.

The needle for a subcutaneous injection is usually 24, 25, or 26 gauges. The length that required varies from 1-2.5 cm depending upon the amount of subcutaneous fat and the degree of hydration of the patient.

Preparation:

Medication for injection come in liquid and powder forms. All these forms must kept sterile during preparation and administration.

Administration:

1. A site is selected and cleansed with an antiseptic solution.
2. The antiseptic solution is allowed to dry on the skin surface prior to insertion of the needle to prevent local irritation at the site of the injection.
3. Air is expelled from the needle.
4. The needle is inserted through the skin, the angle of insertion depends on the size of the needle used.
5. If a 1.2 cm (1\2 inch) needle is used, its inserted at a 90° angle, that is perpendicular to the skin surface. Injections with 1.5 cm (5\8 inch) needle are inserted at a 45° angle.
6. After the needle is withdrawn the area is massaged gently with an antiseptic sponge to facilitate dispersion of the solution.



UNIT FIFTEEN

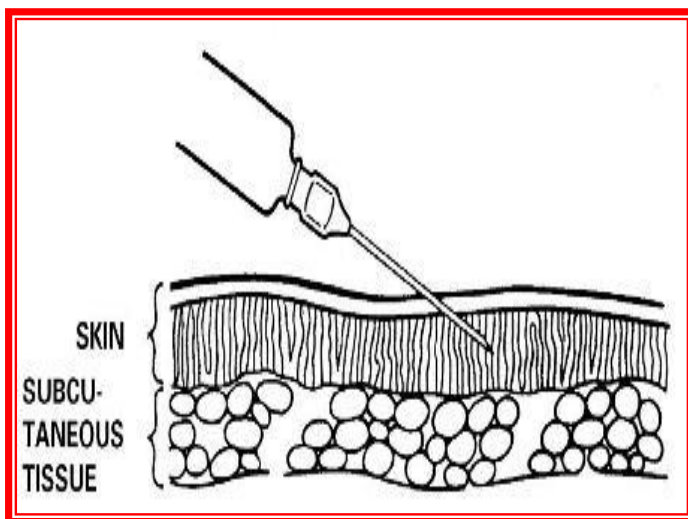
2. Intradermally injection:

An intradermally injection is the injection of small amount of fluid into the dermal layer of the skin. It is frequently done as a diagnostic measure as in tuberculin testing and allergic testing.

Site of injection:

The areas of the body commonly used the medial aspect of the forearm and the subscapular region of the back. A 1 ml syringe (or a tuberculin syringe) and a 26 gauge needle 1 cm (3\8inch) in length are commonly used. A tuberculin syringe is calibrated in tenths and hundredths of a cubic centimeter in order that minute doses can be measured.

The needle is inserted at a 15 degree angle with the bevel up, and the fluid is injected to produce a small bleb just under the skin.



3. Intramuscular injection:

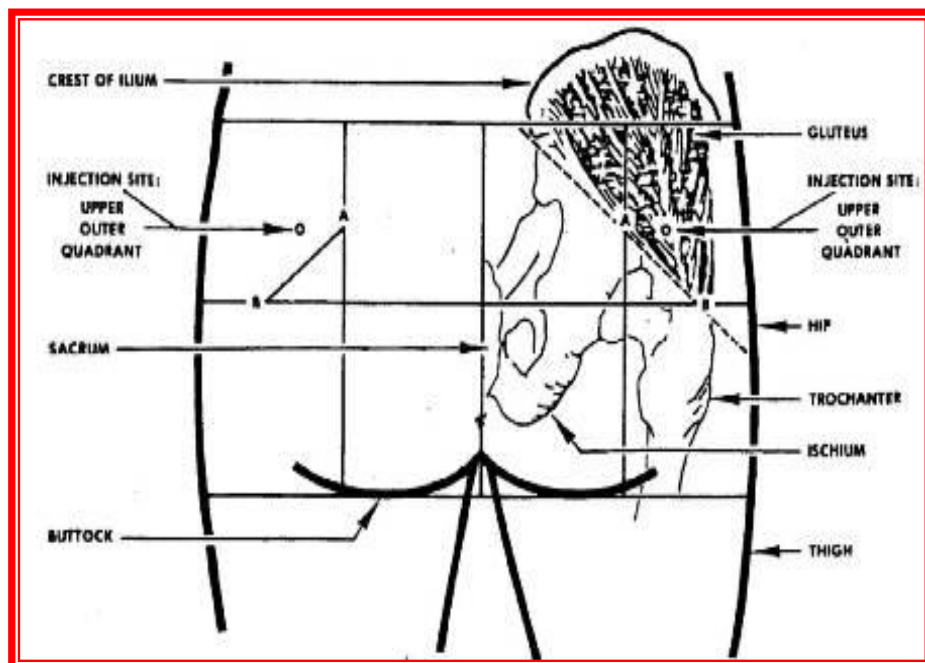
Advantages and disadvantages:

1. I.M. injection is the method of choice for the administration of some medications.
2. Drugs which are irritating to subcutaneous tissue are often given by this route.

3. A large amount of fluid can be injected into muscle tissue than into subcutaneous tissue.
4. Absorption through a muscle is faster than through S.c. tissue because of the vascularity of the muscle area.

Disadvantage: the danger of damaging nerves and blood vessels, however is greater

Site of injection:



The selection of an area for I.M. injection depends on a number of factors:

1. The size of the patient and the amount of muscle tissue available for injection.
2. The proximity of nerves and blood vessels.
3. The condition of the skin around the area.
4. The nature of the drug to be administered.
5. The site should be anatomically safe; that is an area should be chosen where the danger of hitting a nerve or large blood vessel is minimal. The tissue in the area should be free of bruising or soreness, there

should be no abrasions on the skin, and areas with hardened tissue (such as scar tissue) should be avoided.

6. Various sites are suitable for I.M. injections, areas in the buttocks, the thigh, and the upper arm are used most frequently.

Equipment:

Similar to that used for a S.c. injection. The quantity of solution to be administered varies from 2-10 ml nurses are permitted to inject no more than 5 ml, in any one injection therefore if more than 5 ml is ordered the amount is given into two injections.

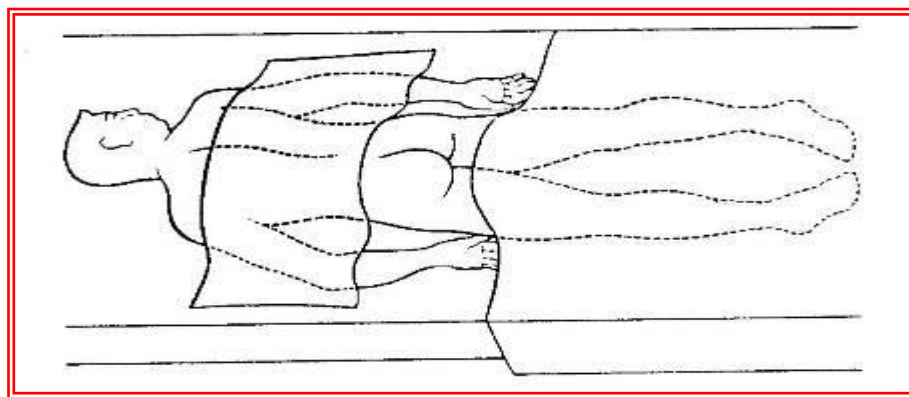
Syringe is used with a No. 19-22 gauge needle, 2.5-5 cm (1-2 inches) long.

Preparation:

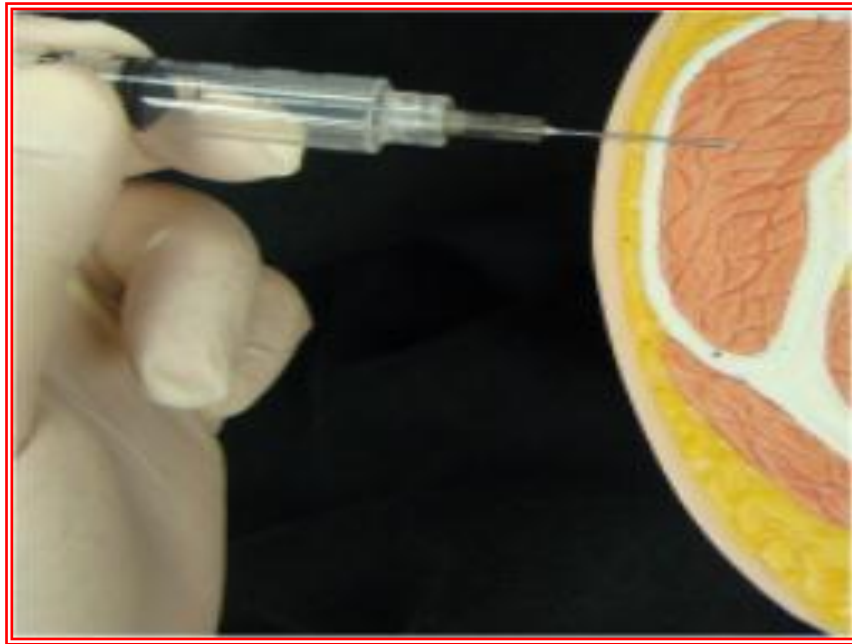
The drug is prepared for administration in the same way as for a S.c. injection.

Administration:

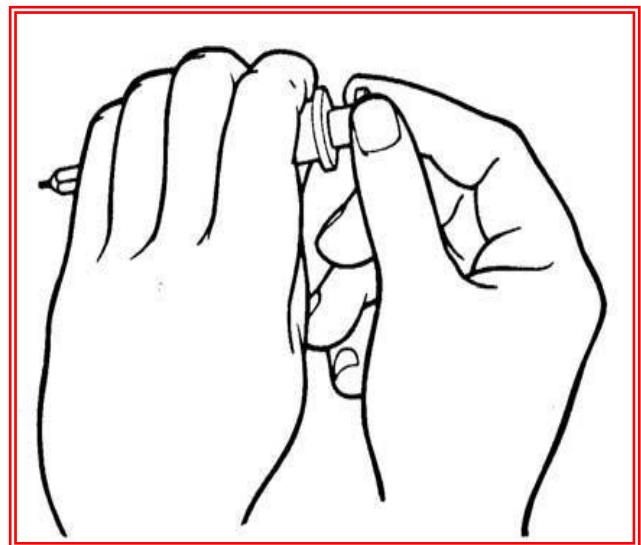
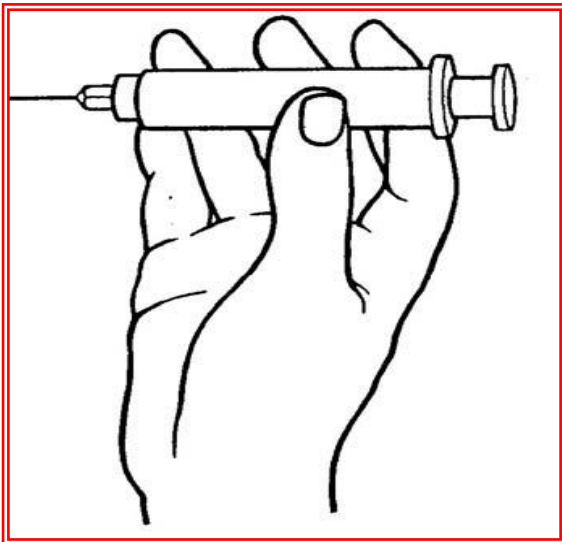
1. For an I.M. injection to the gluteal muscle, the patient lies in a prone position, in this position the gluteal muscle are relaxed and there is good visualization of the injection site.



2. The muscle is palpated and the skin is wiped as for a S.c injection.
3. The skin is held tent and the needle is inserted at a 90 degree angle to the distance required to reach the center of the muscle.



4. When the needle is inserted smoothly and firmly, the skin is then released and the plunger is withdrawn in order to make sure the needle has entered a blood vessel.



5. Keeping the needle in place, the solution is injected slowly into the muscle tissue.
6. The needle then removed quickly and the area is massaged gently with the disinfectant sponge to aid in dispersion of the solution.

UNIT SIXTEEN

4. Intravenous infusion:

Advantages:

1. The infusion fluids directly into the peripheral veins are often indicated when a patient is unable to take fluids orally.
2. Infusion permits the patient to obtain many fluids, electrolytes, and nutrients that necessary to life.
3. Rapid absorption, which is particularly important in the administration of some medications.

Site of injection:

The choice of site for I.V. infusion is dependent upon a number of factors. The condition of the patient's veins as well as his comfort must be considered. The veins in the inner aspect of the elbow are used most frequently.

Equipments:

I.V. flask attached with tubing. Sterile precautions are taken throughout this procedure in order to protect the patient from the infection. The nurse requires a tourniquet, an antiseptic swab, a sterile syringe, a standard to hold the flask, and a receptacle for the discarded fluid.



Administration:

1. After the tubing has been attached to the I.V. flask the flask is hung upon the standard and the fluid is then run through the tubing.

2. Air is removed so that it will not be introduced into the patient's vein.
3. Air injected into the vein can result in an **air embolus**.



Embolus: is a clot or plug that has been transported by a blood from larger blood vessel to a smaller one, which can result in the blocking of blood flow.

4. A tourniquet is applied to the patient's arm above the I.V. site. At the same time the patient clenches and unclenches his fist to make the veins in his arm more accessible for vein puncture.
5. Injection site cleansed with antiseptic.
6. A sterile needle (No. 18-21) is then attached to the syringe and inserted at a 45 degree angle, bevel up into the vein.
7. The plunger of the syringe is drawn back to ascertain that the needle is in the vein (indicated by obtaining blood).
8. The syringe is disconnected, and the tubing is attached to the needle, the rate of flow is then established.

UNIT SEVENTEEN

First aid

First aid: is the first assistance or treatment given to a casualty for any injury or sudden illness before the arrival of an ambulance or qualified medical expert. It may involve improvising with facilities and materials available at the time.

Medical aid: indicates treatment by a doctor at a hospital or surgery or at the scene.

First aider: any person who has received certificate from an authorized association that he or she is qualified to render first aid. It was first used in this way in 1894 by the voluntary first aid organization.

Aims of first aid:

1. To preserve life.
2. To prevent the condition worsening.
3. To promote recovery.

The responsibilities of the first aider:

1. **Assess** the situation.
2. Identify the disease or condition (**Diagnosis**).
3. Give immediate, appropriate and adequate **treatment**.
4. Arrange without delay the **disposal** of a casualty to a doctor.

1. Assessment and initial action:

- a. Be calm, take charge, give confidence to the conscious casualty.
- b. Check safety of casualties and of yourself.

2. Diagnosis:

- a. History of the incident must be taken into consideration (from casualty and from a witness).
- b. Signs: variation from normal, as ascertained by the first aider (pallor, blueness of face, lips, inner sides of eye lids or of nail beds of fingers and toes) (evidence of poisoning).
- c. Symptoms: sensations described by the casualty (I feel pain, I'm cold, my arm is numb).

Level of consciousness:

Any change of level is important:

1. **Full conscious:** able to speak and answer questions normally.
2. **Drowsiness:** easily roused, but lapses into unconsciousness.
3. **Stupor:** can be roused with difficulty, the casualty is aware of painful stimuli e.g. pin prick but not other external events e.g. being spoken to.
4. **Coma:** cannot be roused by any stimuli.

Action: if the cause of condition is still active remove it.

3. **Treatment:**

Give the treatment you consider essential (sustain life, control bleeding and shock, prevent the condition from becoming worse).

4. **Disposal:**

- a. The first aider will ensure that the casualty is conveyed without delay to his home, hospital.
- b. A brief written report should accompany the casualty.

Action at emergency:

Priorities: the first aider must first reduce to a minimum any danger to the casualty or to himself.

Urgent needs of the casualty:

1. Breathing.

2. Unconsciousness (recovery or prone position).
3. Bleeding.

UNIT EIGHTEEN

Dressings & Bandages

A **dressing** is an adjunct used by a person for application to a wound to promote healing and/or prevent further harm. A dressing is designed to be in direct contact with the wound, which makes it different from a bandage, which is primarily used to hold a dressing in place.

A dressing is a protective covering applied to a wound to:

1. Prevent infection.
2. Absorb discharge.
3. Control bleeding.
4. Avoid further injury.

The dressing itself must be:

1. Germ free (sterile).
2. Have a high degree of porosity (if sweat cannot evaporated through it, the skin becomes moist which encouraging the growth of bacteria).

Types of dressings:

1. **Adhesive dressings:** sterile, of different kinds and consist of a pad of absorbent gauze or cellulose, with an adhesive backing which allows sweat to evaporate through it. The surrounding skin must be dry before application sterile adhesive dressings or supplied sealed in paper or plastic covers.



2. **Non-adhesive dressings:** this sterile dressing consists of layers of gauze covered by a pad of cotton wool with an attached roller bandage to hold it in position.
3. **Improvised dressings:** these can be made by using the inner surface of a clean handkerchief, a freshly laundered towel, a clean paper handkerchief or from other clean absorbent material, they should be covered and retained in position by such materials are available.

Bandages:

A **bandage** is a piece of material used either to support a medical device such as a dressing or splint, or on its own to provide support to the body. Bandages are available in a wide range of types, from generic cloth strips, to specialized shaped bandages designed for a specific limb or part of the body, although bandages can often be improvised as the situation demands, using clothing, blankets or other material.

In common speech, the word "bandage" is often used to mean a dressing, which is used directly on a wound, whereas a bandage is technically only used to support a dressing, and not directly on a wound.

These are made from flannel, elastic net or special paper.

Bandages are used to:

1. Maintain direct pressure over a dressing to control bleeding.
2. Retain dressing and splint in position.
3. Prevent or reduce swelling.
4. Provide support for a limb or joint.
5. Restrict movement.
6. Assist in lifting or carrying casualties.



UNIT NINETEEN

Wounds & Bleeding

a wound is an abnormal break in the continuity of the tissue of the body which permits the escape of blood, externally or internally, and may allow the entrance of germs causing infection.

Types of wounds:

1. **Incised or clean cut:** caused by a sharp instrument such as a knife or razor. They may bleed profusely.
2. **Lacerated or torn:** caused by such things as machinery, claws of an animal or barbed wire. The edges of the and usually bleed less freely than incised wound. Dirt is more likely to be present.



3. **Contused or bruised:** caused by a blow from a blunt instrument, fall against a hard surface or by crushing.



4. **Punctured or stab:** caused by a sharp pointed instrument such as a dagger, garden fork needle, these wounds have comparatively small openings but may be deep, causing serious injury.
5. **Gunshot wounds:** a small entry may be associated with extensive internal injuries and with a large exit wound.
6. **Abrasion: A scraping or scratching. Generally quite superficial, and affecting only the surface layers of the epidermis. No internal organs, nerves, or blood vessels other than capillaries, are affected. This may be the result of a fall, or of sliding (friction) against rough surfaces. The *road rash* often suffered by falling motorcyclists is an example of this type of wound.**



Bleeding: bleeding may occur externally or internally and may vary from trivial to severe or fatal.

Signs & symptoms of severe loss of blood:

1. Face and lips pale.
2. Cold skin.
3. Patient dizzy.
4. Pulse rapid becoming weaker.
5. Thirst.
6. Feeling sick.
7. Air hunger (breathing becomes shallow).

Treatment of wounds with slight bleeding:

1. Reassure casualty.
2. Place him at rest.
3. Apply dressing with a pad and bandage firmly in position.
4. Raise the injury part and support it in position.
5. Wash the wound if it is dirty.

Treatment of wounds with severe bleeding:

1. Apply direct pressure with the fingers to the bleeding point, over a dressing if immediately available for (5-15) minutes.
2. Lay casualty down in a suitable and comfortable position, and lower the head if possible.
3. Raise the injured part and support it in position.
4. Carefully remove from the wound any foreign bodies which are visible.
5. When a dressing is available, applies it directly over the wound and presses it firmly, cover it with a pad, retain the dressing and pad in position with a firm bandage.
6. Remove carefully to hospital as soon as possible.

UNIT TWENTY

Shock

Shock can refer to a range of related medical conditions in which the victim's heart, lungs and blood cannot deliver oxygen to the body properly. Shock is not a diagnosis or condition, it is always a symptom of a larger problem, and is a medical emergency that requires immediate attention.

Types of shock

- **Hypovolaemic shock** - Caused by the rapid loss of blood from the blood vessels, either inside or outside the body.
- **Cardiogenic shock** - Caused by failure of the heart to move blood adequately. This is typically caused by damaged heart muscle due to a heart attack.
- **Anaphylactic shock** - Caused by an allergic reaction which forces fluid out of the blood vessels
- **Septic Shock** - Caused by a severe infection which poisons the blood vessels, causing them to enlarge
- **Neurogenic Shock** - Caused by a spinal cord injury, preventing the brain from communicating with blood vessels.

Recognition:

The sooner that shock is recognized, the better the victim's outcome will be. Although signs of shock can range greatly, some common signs are:

Early Phases

- A fast pulse
- Pale, cool, clammy skin
- Sweating
- Flushed face
- Anxiety or agitation

Developing phase

- Ashen or blue skin on lips and nail beds
- Cold, damp skin
- Weakness and dizziness
- Nausea and possibly vomiting
- Thirst
- Rapid, shallow breathing
- Weak, very rapid, "thready" pulse
- Confusion, disorientation

Advanced phases

- Lack of pulse in wrists or feet
- Restlessness and aggressiveness
- Yawning and gasping for air
- Unconsciousness

Final phase

- Multiple organ failure
- Cardiac arrest

Treatment:

The most important treatment for shock of any variety is to try and maintain the blood flow to the body's vital organs (brain, heart, and lungs). To do this, lie the patient flat on the floor and **raise their legs** about 6-12 inches (15-30cm) off the ground. Do not incline the victim's head, chest, or pelvis, as this brings no improvement and can cause harm.



*A healthcare provider checks the carotid pulse of a victim in the **recovery position**.*

Warmth
ABCs (Airway, Breathing, Circulation.)
Rest & Reassurance
Treatment of underlying cause.

Treatment for Shock

A good rule to follow is to anticipate that shock will follow an injury and to take measures to prevent it before it happens.

- Putting a victim in a lying-down position improves circulation.
- If the victim is not suspected of having head or neck injuries, or leg fractures, elevate the legs.
- If you suspect head or neck injuries, keeps the victim lying flat. If the victim vomits, turn on their side.
- If victim is experiencing trouble breathing, place them in a semi-reclining position. Maintain the victim's body temperature, but do not overheat.

UNIT TWENTY ONE & TWENTY TWO

Burns

Definition:

Burns are injuries to tissue that can be caused by fire, the sun, chemicals, heated objects or fluids, electricity, or other means. Burns can be minor medical problems or life-threatening emergencies.

Burn treatment depends on the severity and size of the burn. You can treat most minor burns at home using first-aid measures, such as cooling the skin and applying an anesthetic cream or aloe gel to the burn. Deep or widespread burns need immediate medical attention.

You can reduce your risk of common household burns by being prepared and taking precautionary steps, such as keeping lighters and matches out of the reach of children and checking your smoke detectors yearly.

Signs and symptoms of burns include:

- Red, swollen skin
- Pain, which may be severe
- Wet or moist-looking skin
- Blisters
- Waxy white, leathery or tan skin
- Blackened or charred skin, in severe cases

Classifications of burns:

Burns don't affect the skin uniformly, so a single injury can reach varying depths. Distinguishing a minor burn from a more serious burn involves determining the degree of damage to the tissues of the body. The following are four classifications of burns:

- **First-degree burn.** This minor burn affects only the outer layer of the skin (epidermis). It causes redness and pain and usually resolves with first-aid measures within several days to a week.
- **Second-degree burn.** These burns affect both the epidermis and the second layer of skin (dermis), causing redness, pain and swelling. A second-degree burn often looks wet or moist. Blisters may develop and pain can be severe. Deep second-degree burns can cause scarring.



- **Third-degree burn.** Burns that involve the epidermis and the dermis and reach the tissue underneath them (subcutaneous tissue) are called third-degree burns. The skin may appear stiff, waxy white, leathery or tan. Third-degree burns can destroy nerves, causing numbness.



- **Fourth-degree burn.** The most severe form of burn reaches beyond the subcutaneous tissue and into the nerves, muscle and bones that lie beneath. The skin may appear blackened or charred. If nerve damage is substantial, you may feel no pain at all.

Causes:

Burns occur when the skin is exposed to high temperatures — greater than 140 F (60 C). Many substances can cause burns, including:

- Fire
- Hot liquid or steam
- Hot metal, glass or other objects
- Electrical currents
- Radiation, such as from X-rays or radiation therapy to treat cancer
- Sunlight or ultraviolet (UV) light from a sunlamp or tanning bed
- Chemicals, such as strong acids, alkalis (such as lye or cement), paint thinner or gasoline
- Friction.

Burns first aid:

To distinguish a minor burn from a serious burn, the first step is to determine the extent of damage to body tissues. The three burn classifications of first-degree burn, second-degree burn and third-degree burn will help you determine emergency care:

First-degree burn

The least serious burns are those in which only the outer layer of skin is burned, but not all the way through. The skin is usually red, with swelling, and pain sometimes is present. Treat a first-degree burn as a minor burn unless it involves substantial portions of the hands, feet, face, groin or buttocks, or a major joint, which requires emergency medical attention.

Second-degree burn

When the first layer of skin has been burned through and the second layer of skin (dermis) also is burned, the injury is called a second-degree burn. Blisters develop and the skin takes on an intensely reddened, splotchy appearance. Second-degree burns produce severe pain and swelling.

If the second-degree burn is no larger than 3 inches (7.6 centimeters) in diameter, treat it as a minor burn. If the burned area is larger or if the burn is on the hands, feet, face, groin or buttocks, or over a major joint, treat it as a major burn and get medical help immediately.

For minor burns, including first-degree burns and second-degree burns limited to an area no larger than 3 inches (7.6 centimeters) in diameter, take the following action:

- 1. Cool the burn.** Hold the burned area under cool (not cold) running water for 10 or 15 minutes or until the pain subsides. If this is impractical,

immerse the burn in cool water or cool it with cold compresses. Cooling the burn reduces swelling by conducting heat away from the skin. Don't put ice on the burn.

2. Cover the burn with a sterile gauze bandage. Don't use fluffy cotton, or other material that may get lint in the wound. Wrap the gauze loosely to avoid putting pressure on burned skin. Bandaging keeps air off the burn reduces pain and protects blistered skin.

3. Take an over-the-counter pain reliever. These include aspirin, ibuprofen

Minor burns usually heal without further treatment. They may heal with pigment changes, meaning the healed area may be a different color from the surrounding skin. Watch for signs of infection, such as increased pain, redness, fever, swelling or oozing. If infection develops, seek medical help. Avoid re-injuring or tanning if the burns are less than a year old — doing so may cause more extensive pigmentation changes. Use sunscreen on the area for at least a year.

Caution:

- **Don't use ice.** Putting ice directly on a burn can cause a burn victim's body to become too cold and cause further damage to the wound.
- **Don't apply butter or ointments to the burn.** This could cause infection.
- **Don't break blisters.** Broken blisters are more vulnerable to infection.

Third-degree burn

The most serious burns involve all layers of the skin and cause permanent tissue damage. Fat, muscle and even bone may be affected. Areas may be charred black or appear dry and white. Difficulty inhaling and exhaling, carbon monoxide poisoning, or other toxic effects may occur if smoke inhalation accompanies the burn.

For major burns, until an emergency unit arrives, follow these steps:

1. **Don't remove burned clothing.** However, do make sure the victim is no longer in contact with smoldering materials or exposed to smoke or heat.

2. **Don't immerse large severe burns in cold water.** Doing so could cause a drop in body temperature (hypothermia) and deterioration of blood pressure and circulation (shock).
3. **Check for signs of circulation (breathing, coughing or movement).** If there is no breathing or other sign of circulation, begin CPR.
4. **Elevate the burned body part or parts.** Raise above heart level, when possible.
5. **Cover the area of the burn.** Use a cool, moist, sterile bandage; clean, moist cloth; or moist towels.

Get a tetanus shot. Burns are susceptible to tetanus. Doctors recommend you get a tetanus shot every 10 years. If your last shot was more than five years ago, your doctor may recommend a tetanus shot booster.

Complications:

Deep or widespread burns can lead to many complications, including:

- **Local infection.** Burns can leave skin vulnerable to bacterial infection, particularly staphylococcus infection, and increase your risk of sepsis, a serious infection that travels through your bloodstream and affects your whole body.
- **Widespread infection (sepsis).** Sepsis occurs when bacteria from an infection enter your bloodstream and spread throughout your body. Sepsis is a rapidly progressing, life-threatening condition that can cause shock and organ failure.
- **Low blood volume (hypovolemia).** Burns can damage blood vessels and cause fluid loss. This may result in low blood volume (hypovolemia). Severe blood and fluid loss prevents the heart from pumping enough blood to the body.
- **Dangerously low body temperature (hypothermia).** The skin helps control the body's temperature, so when a large portion of the skin is injured, you lose body heat. This increases your risk of hypothermia — when the body loses heat faster than it can produce heat, causing a dangerously low body temperature.
- **Breathing (respiratory) problems.** Breathing hot air or smoke can burn airways and cause breathing difficulties. Smoke inhalation damages the lungs and can cause respiratory failure.

- **Scarring.** Burns can cause scars and keloids — ridged areas caused by an overgrowth of scar tissue.
- **Bone and joint problems.** Deep burns can limit movement of the bones and joints. Scar tissue can form and cause contractures, when skin, muscles or tendons shorten and tighten, permanently pulling joints out of position.

UNIT TWENTY THREE

Poisoning

Poisoning first aid:

Many conditions mimic the signs and symptoms of poisoning, including seizures, alcohol intoxication, stroke and insulin reaction.

Signs and symptoms of poisoning:

- Burns or redness around the mouth and lips, from drinking certain poisons
- Breath that smells like chemicals, such as gasoline or paint thinner
- Burns, stains and odors on the person, on his or her clothing, or on the furniture, floor, rugs or other objects in the surrounding area
- Empty medication bottles or scattered pills
- Vomiting, difficulty breathing, sleepiness, confusion or other unexpected signs

When to call for help:

If the person is:

- Drowsy or unconscious
- Having difficulty breathing or has stopped breathing
- Uncontrollably restless or agitated
- Having seizures

What to do while waiting for help:

- If the person has been exposed to poisonous fumes, such as carbon monoxide, get him or her into fresh air immediately.
- If the person swallowed the poison, remove anything remaining in the mouth.
- If the suspected poison is a household cleaner or other chemical, read the label and follow instructions for accidental poisoning. If the product is toxic, the label will likely advise you to call the poison control center.

- Follow treatment directions that are given by the poison control center.
- If the poison spilled on the person's clothing, skin or eyes, remove the clothing. Flush the skin or eyes with cool or lukewarm water, such as by using a shower for 20 minutes or until help arrives.
- Make sure the person is breathing. If not, start rescue breathing and CPR.
- Take the poison container (or any pill bottles) with you to the hospital.

What NOT to do:

- **Don't give ipecac syrup or do anything to induce vomiting.**

UNIT TWENTY FOUR, TWENTY FIVE & TWENTY SIX

Heart Attack

A heart attack happens when one or more of the blood vessels that supply blood to the heart become blocked. When this occurs, cells in the heart begin to die when they cannot get blood for vital nourishment. If a large part of the heart is deprived of blood, the heart stops beating and the victim suffer **CARDIAC ARREST!**

When a victim's heart stops beating, they require **CARDIOPULMONARY RESUSCITATION (CPR)** which provides vital oxygen through rescue breathing and which maintains circulation through chest compressions.

PROPER TRAINING IS REQUIRED TO PERFORM CPR, HOWEVER ANY HEART ATTACK CAN LEAD TO CARDIAC ARREST AND IT IS THEREFORE VITAL FOR FIRST AIDERS TO BE ABLE TO RECOGNIZE THE EARLY WARNING SIGNS OF A HEART ATTACK SO THE VICTIM CAN RECEIVE PROMPT PROFESSIONAL ATTENTION!

A heart attack victim whose heart is still beating has a much better chance of survival than a victim whose heart has stopped! Most heart attack victims who die succumb within 2 hours after having their heart attack. Many of these victims could be saved if bystanders recognize the symptoms of a heart attack and get the victim to a hospital quickly! Indeed, many victims of heart attacks think they are experiencing **HEARTBURN** or other minor discomfort when in fact their life is in jeopardy!

The most significant sign of a heart attack is chest pain. The victim may describe it as pressure, a feeling of tightness in the chest, aching, crushing, fullness or tightness, constricting or heavy pain. The pain may be located in the center of the chest although it is not uncommon for the pain to radiate to one or both shoulders or arms or to the neck, jaw or back.

In addition to pain, victims may experience sweating, nausea or shortness of breath. Many victims deny they may be having a heart attack. Others may have their condition worsened by fear of dying.

With all victims of heart attacks - and with all victims receiving first aid for any condition - it is important for the rescuer to constantly reassure the victim and keep them as calm and relaxed as possible.

The psychological value of reassurance is as important in first aid as any treatments!

FIRST AID FOR A HEART ATTACK:

- Recognize the signs & symptoms of a heart attack
- Comfort & reassure the victim
- Have the victim stop whatever they were doing and sit or lie in a comfortable position
- Summon emergency medical help quickly
- If the victim become unconscious, be prepared to perform CPR [IF YOU ARE TRAINED TO DO SO]

All of us can reduce the risk of heart attack by controlling high blood pressure, limiting cholesterol in the diet, watching weight, exercising, giving up smoking and minimizing stress.

Obstructions in the Airway

NOTE: Emergency treatment of airway obstructions is taught as part of CPR training and only through classroom practice can the necessary skills be mastered. The mechanics of handling airway obstructions are presented in this tutorial for background insight only

If an individual is choking - but can speak or cough forcibly - there is an exchange of air (although it might be diminished) and you should encourage the victim to continue coughing while you just stand by! On the other hand, if a victim is choking, but CANNOT speak or cough, an airway obstruction exists which must be treated immediately!

The treatment for an obstructed airway in a conscious victim involves use of the HEIMLICH MANEUVER which is performed as follows:

- Stand behind the victim.
- Wrap your arms around the victim's waist.
- Make a fist with one hand and place the thumb side of the fist against the victim's abdomen just above the navel and well below the lower tip of the breast bone.
- Grasp your fist with your other hand, with elbows out, and press your fist into the victim's abdomen with quick, upward thrusts.

Each thrust is a distinct, separate attempt to dislodge the foreign object.

- Repeat thrusts until foreign object is cleared or the victim becomes unconscious.

Emergency treatment of airway obstructions in an unconscious victim is taught in CPR classes.

Heart attack: First aid:

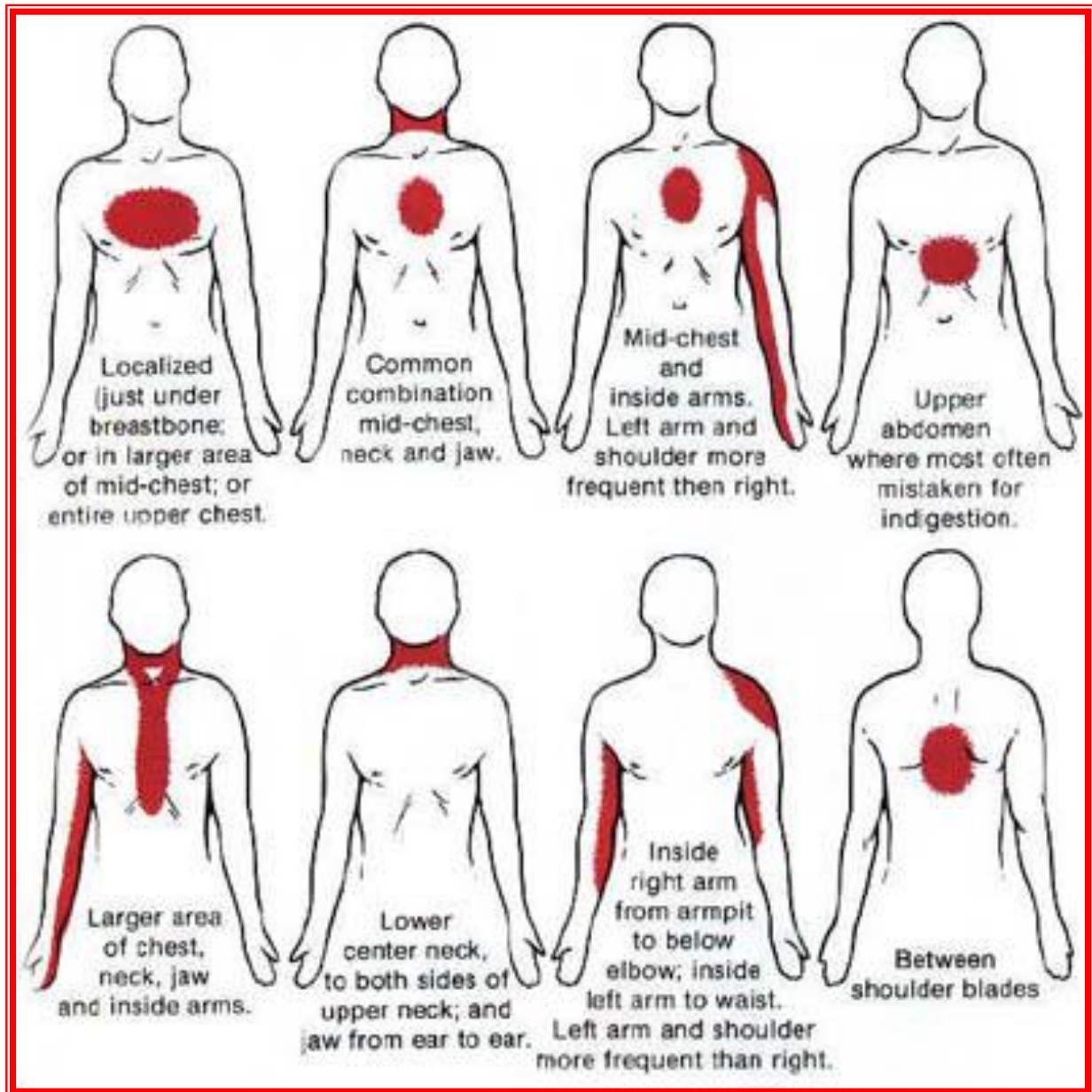
Someone having a heart attack may experience any or all of the following:

- Uncomfortable pressure, fullness or squeezing pain in the center of the chest
- Prolonged pain in the upper abdomen
- Discomfort or pain spreading beyond the chest to the shoulders, neck, jaw, teeth, or one or both arms
- Shortness of breath
- Lightheadedness, dizziness, fainting
- Sweating
- Nausea

A heart attack occurs when an artery supplying your heart with blood and oxygen becomes partially or completely blocked. This loss of blood flow injures or destroys part of your heart muscle. A heart attack generally causes chest pain for more than 15 minutes, but it can also have no symptoms at all.

Many people who experience a heart attack have warning symptoms hours, days or weeks in advance. The earliest warning sign of an attack may be ongoing episodes of chest pain that start when you're physically active, but are relieved by rest.

Heart Attack Warning Signs



Cardiopulmonary Resuscitation (CPR)

What is CPR?

Cardiopulmonary resuscitation (CPR) is a combination of rescue breathing and chest compressions delivered to victims thought to be in cardiac arrest. When cardiac arrest occurs, the heart stops pumping blood. CPR can support a small amount of blood flow to the heart and brain to “buy time” until normal heart function is restored.

Cardiac arrest is often caused by an abnormal heart rhythm called ventricular fibrillation (VF). When VF develops, the heart quivers and doesn't pump blood. The victim in VF cardiac arrest needs CPR and delivery of a shock to the heart, called defibrillation. Defibrillation eliminates the abnormal VF heart rhythm and allows the normal rhythm to resume. Defibrillation is not effective for all forms of cardiac arrest but it is effective to treat VF, the most common cause of sudden cardiac arrest.

Rescue Breathing

You now need to check to see if the person is breathing normally.

- You do this by first opening the person's airway. Tilt the victim's head back by lifting the chin gently with one hand, while pushing down on the forehead with the other hand.
- Next, place your ear next to the victim's mouth and nose and look, listen, and feel: Look to see if the chest is rising, listen for any sounds of breathing, and feel for any air movement on your cheek. Taking no more than 5-10 seconds, if you do not see, hear, or feel any signs of normal breathing, you must breathe for the victim.
- While keeping the victim's head tilted back, place your mouth around the victim's mouth and pinch the victim's nose shut. Give 2 slow breaths, making sure that the person's chest rises with each breath.

Chest Compressions

After giving 2 breaths immediately begin chest compressions.

- Place the heel of one hand on the center of the chest, right between the nipples. Place the heel of your other hand on top of the first hand. Lock your elbows and position your shoulders directly above your hands. Press down on the chest with enough force to move the breastbone down about 2 inches. Compress the chest 30 times, at a rate of about 100 times per minute (slightly faster than once every second).
- After 30 compressions, stop, open the airway again, and provide the next 2 slow breaths. Then, position your hands in the same spot as before and perform another 30 chest compressions. Continue the cycles of 30 compressions and 2 breaths until an AED becomes available or until EMS providers arrive.
- This technique of performing CPR may be used on anyone older than eight years of age.

REFERENCES

- **Taylor , C., et al.: Fundamentals of Nursing : The Art and Science of Nursing care, 7th ed.,2011, Lippincott**
- **White, L.; Duncan, G.; and Baumle, W.: Foundation of Nursing, 3rd ed., 2011, Australia: CENGAGE**