Lecture 8 : Fundamentals of Nursing

4.Blood pressure:

- **Definition:** the pressure blood is exerted on the arteries walls when the left ventricle of the heart is pushing the blood into the aorta. Measured by millimeters of mercury (mm Hg).
- **Purpose the measurement of Blood pressure:**
  - To determine the client's hemodynamics status (e.g. cardiac output: stork volume of the heart and blood vessels resistance).
  - To identify and monitor change in blood pressure resulting from a disease or medical therapy (e.g. presence of cardiovascular disease, renal disease , circulatory shock, or acute pain ,rapid infusion of fluids or blood products).
- **Two pressure measurements:**
- **Systolic pressure :** measuring of pressure when the left ventricle contracts. It is the maximum of the pressure 100 – 140 mm /Hg.
- **Diastolic pressure :** measuring of pressure when the heart relaxes. It is the minimum of the pressure 60 - 90 mm /Hg.

❖ The average of blood pressure 120 mm /Hg.

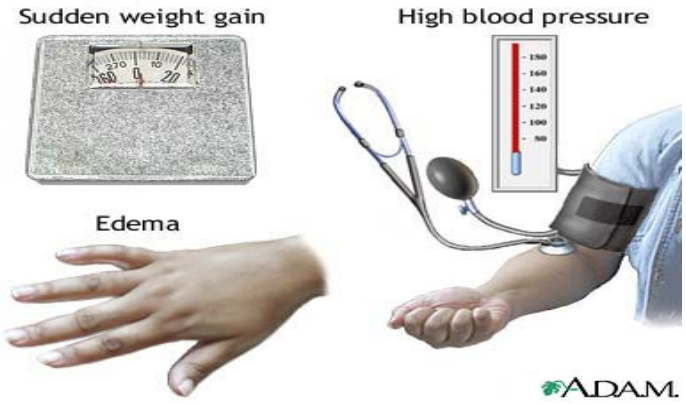
80

- **Hypertension :**High a blood pressure, the Systolic pressure is above 140 mm /Hg. And Diastolic pressure is above 90 mm /Hg.
- **Hypotension :**low a blood pressure ,the Systolic pressure is below 100 mm /Hg. And Diastolic pressure is below 60 mm /Hg.

Factors affecting the arterial pressure:

1. Cardiac output.
2. Peripheral resistance.
3. The quantity of blood.
4. The viscosity of blood.
5. The elasticity of vessel walls.
6. Cardiovascular disorders
7. Neurological conditions
8. Kidney and urological disorders
9. Pre eclampsia in pregnant women
10. Psychological factors such as stress, anger, or fear .
11. Various medications

Eclampsia

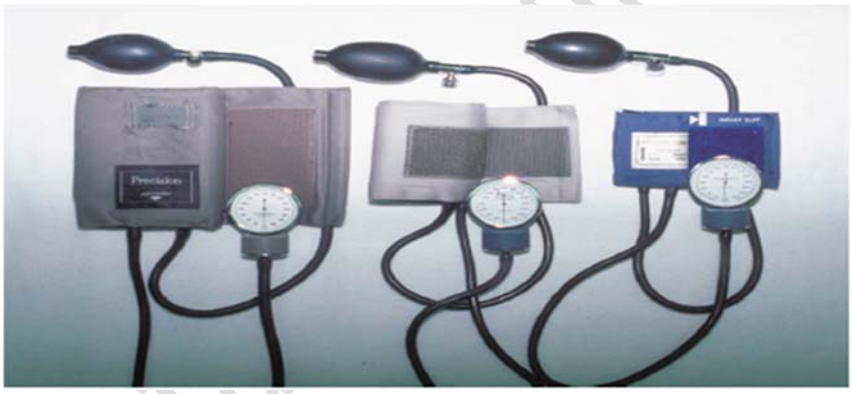


■ **Equipment used in blood pressure measuring :**

❖ Blood pressure checked by **sphygmomanometer and stethoscope.**

- **Types of sphygmomanometers:**
  - Aneroid
  - Electronic
  - Mercury

- **Aneroid sphygmomanometers:**
  - Circular gauge for registering pressure.
  - Very accurate.
  - If in use, must be checked, serviced every 6 to 12 months.



■ **Electronic sphygmomanometers:**

- Provides a digital readout of the blood pressure .
- No stethoscope is needed.
- Easy to use.

❖ **Mercury sphygmomanometers:**

- A column of mercury rises with an increased pressure as the cuff is inflated.
- If in use, must be checked, serviced every 6 to 12 months.

Procedure :

1. Explain the procedure to the patient.
2. Perform hand hygiene.
3. Provide for client privacy.
4. position the arm must be at the heart level especially when use the mercury sphygmomanometers .
5. Place the deflated cuff and wrap it on patient's arm, apply the cuff to the upper of elbow joint (2,5)cm .
6. Palpate brachial artery with the finger tips and placing the stethoscope over it .
7. Cleanse the earpieces with antiseptic wipe and place the stethoscope in your ear.
8. Close the valve.
9. Inflate cuff until you no longer hear brachial pulse sound.
10. Continue pumping until the pressure reach to 20 mm Hg.
11. Release the pressure completely in the cuff, and let the air escape slowly and hear the first sound,1st beat you hear is systolic pressure.
12. Continue to releasing the pressure slowly the last beat you hear is diastolic pressure.
13. As soon as the pulse sounds stop, open the valve and release the air quickly.
14. Remove the cuff from the patient's arm.
15. Wipe the cuff with an approved disinfectant.
16. Document and Recording in the chart.

❖ **Another method for measuring blood pressure by using sphygmomanometer without Stethoscope:**

1. Place the cuff on patient's arm
2. Locate radial pulse.
3. Inflate to about 20 mm Hg.
4. Release air until pulse is felt.
5. Method only obtains systolic pressure.

❖ **Special considerations in adults:**

- Post exercise, movement disabilities, obese, anxiety , stress, known blood pressure problems.
- Can be measuring the blood pressure from patient's thigh if he have contraindication in the arms.
- **Avoid measurement in an arm:**
  - Injury or blocked artery is present.
  - History of mastectomy on that side.

❖ **Special considerations in children:**

- Not routinely taken on each visit
- Take before other tests or procedures
- Cuff size important
- Palpatory method not used with children.

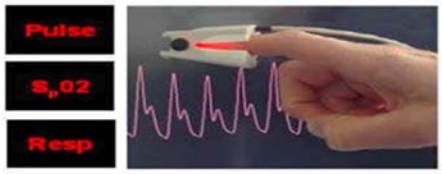
5.Oxygen Saturation:

- Over the past decade, Oxygen Saturation measurement of gas exchange and red blood cell oxygen carrying capacity has become available in all hospitals and many clinics.

- **Oxygen Saturation** provide important information about cardio-pulmonary dysfunction and is considered by many to be a fifth vital sign.

- For those suffering from either acute or chronic cardio-pulmonary disorders, **Oxygen Saturation** can help quantify the degree of impairment.

- **Purpose of measuring Oxygen Saturation:**
  - To estimate the arterial blood oxygen saturation.
  - To detect the presence of hypoxemia before visible signs develop.
- **Equipment:**
  - Nail polish remover as needed
  - Alcohol wipe
  - Pulse Oximetry
- **Pulse Oximetry:**



- Evaluates the effectiveness of oxygenation
- Probe is placed on finger or earlobe.
- Pulse oximetry is a tool.
- Does not replace good patient assessment

Pulse Ox Enemies:

- Nailpolish blocks light
- Cold hands have poor capillary refill
- Cyanotic hands have NO capillary refill

Normal Oxygen Saturation 90-100%

Procedure :

1. Explain the procedure to the patient .
2. Perform hand hygiene.
3. Provide for client privacy.
4. choose a sensor appropriate for the patient's weight ,size.
5. Prepare the site :

- Clean the site with an alcohol wipe before applying the sensor.
- It may be necessary to remove a female patient's dark nail polish.

6. Apply the pulse oximetry .
7. Document the oxygen saturation.