



Department of Anesthesia Techniques



Heart Sounds Electrocardiogram (ECG) & Blood Pressure

Dr. Zahraa Tariq

Dr. Rawaa Awad

Lec.5

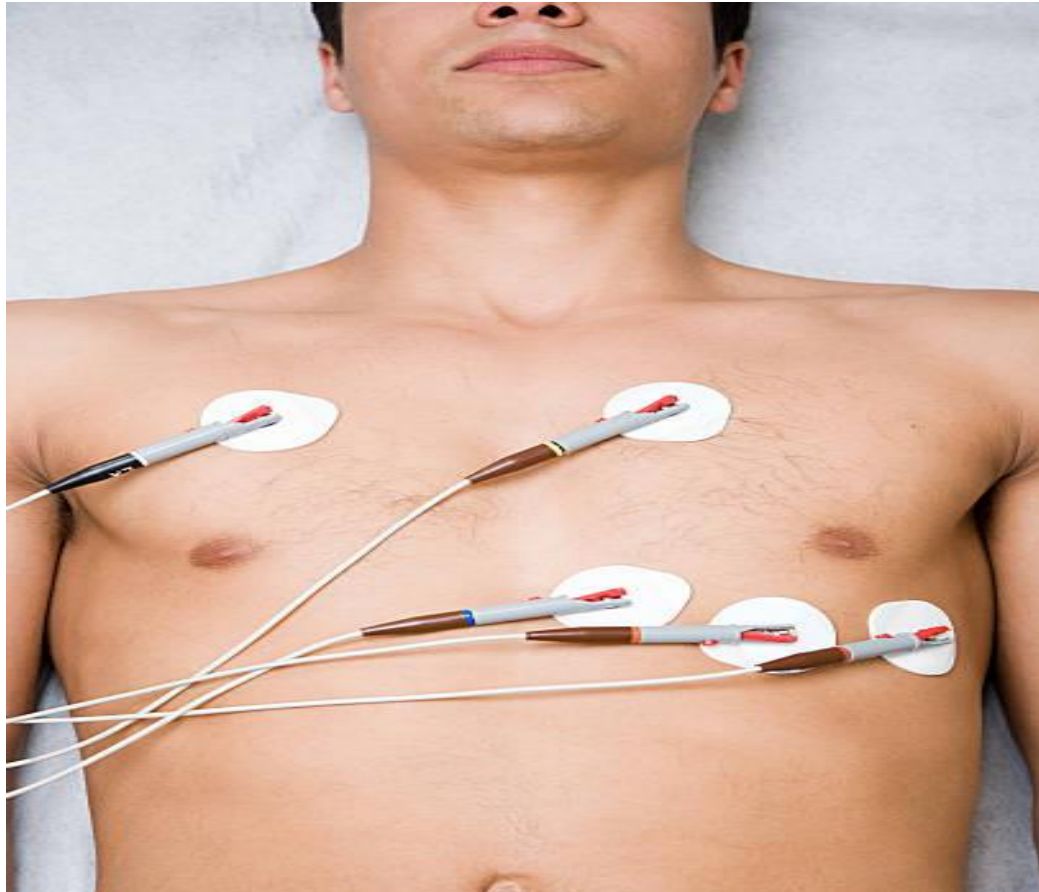
المرحلة الأولى

Heart Sounds

- Heart sounds are an audible sounds that occurs when the valves close.
- When the stethoscope is placed on the chest wall over the heart, two sounds are normally heard:
 - a) First heart sounds (S1):** is caused by closure of the AV valves when ventricles contract at systole.
 - b) Second heart sound (S2):** is caused by closure of the aortic and pulmonary valves in diastole(ventricular relaxation).

Electrocardiogram (ECG)

- ECG :a recording of the heart's electrical activity from the surface of the body using electrodes placed on the skin.



❖ **There are three main components to an ECG:**

1. **The P wave:** which represents depolarization of the atria which initiate atrial contraction.
2. **The QRS complex:** which represents depolarization of the ventricles, which initiates ventricular contraction.
3. **The T wave:** which represents repolarization of the ventricles at which the ventricles begin to relax.



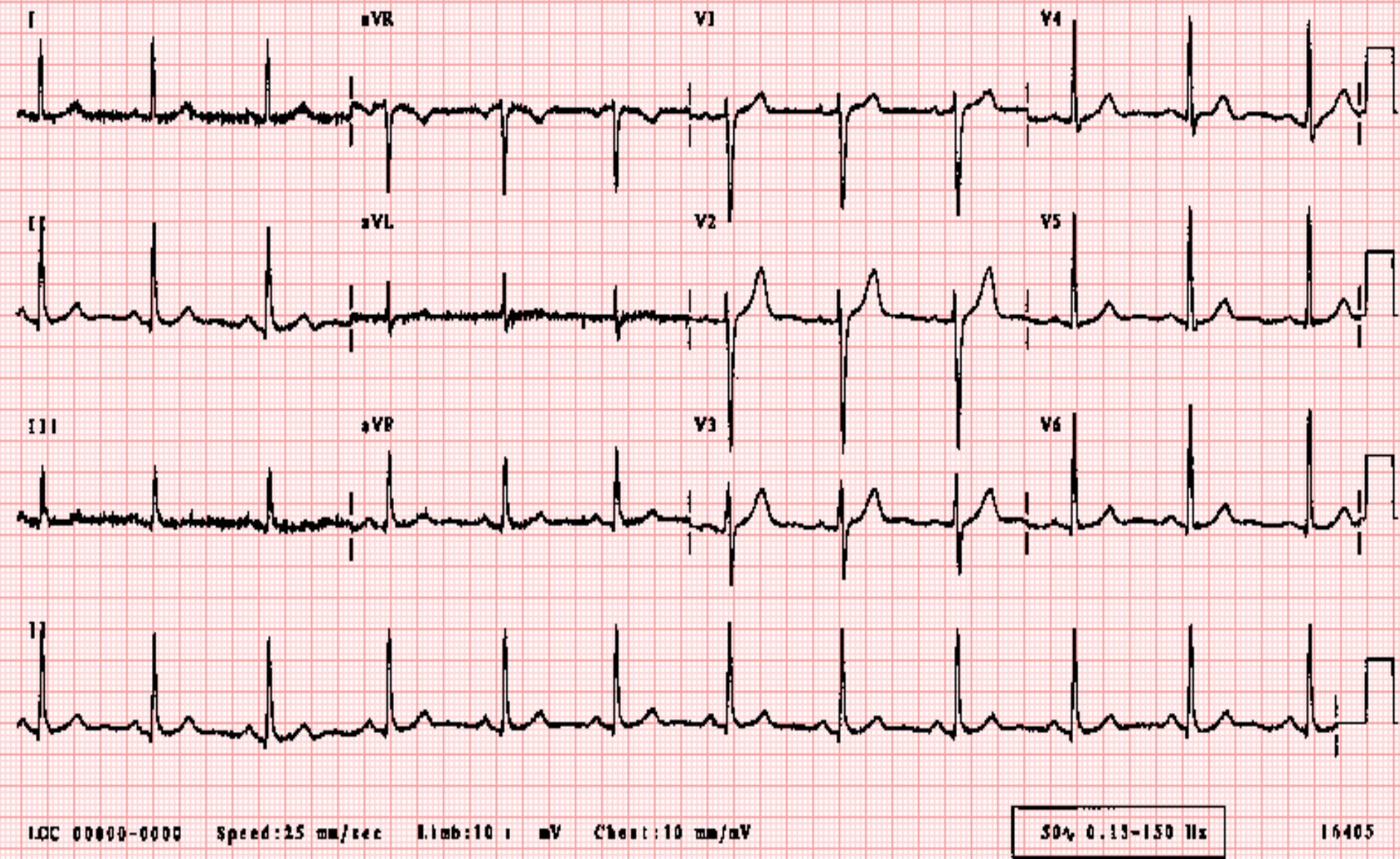


www.nurseok.com

P - Atrial contraction

QRS - Ventricular contraction

T - Re-polarizing ventricles



Normal ECG

Blood Pressure

- **Blood Pressure:** means the pressure exerted by the circulating blood upon the walls of blood vessels.
- Blood pressure doesn't stay the same all the time ,it change to meet your body needs.
- Blood pressure is usually expressed in terms of the systolic pressure over diastolic pressure.
- $Bp = \frac{\textit{systolic}}{\textit{diastolic}}$



○ **Types of Blood Pressure:**

A. **Systolic blood pressure:** is the maximum arterial blood pressure during contraction of the heart.

○ Normal range **110-130**mmHg

B. **Diastolic blood pressure :** the lowest pressure within the arterial blood due to relaxation of the heart.

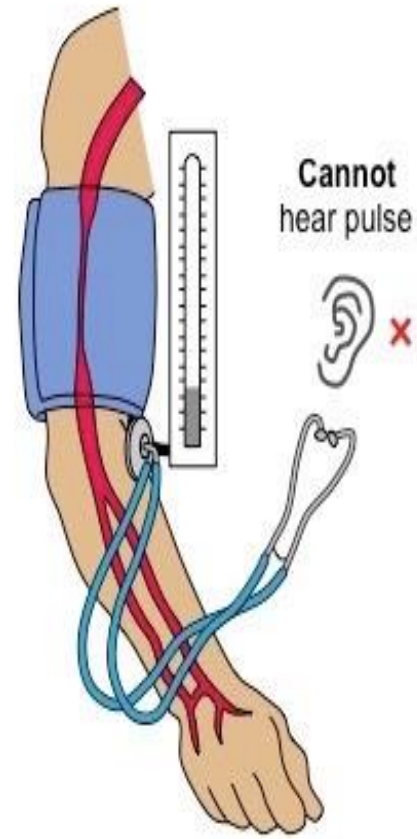
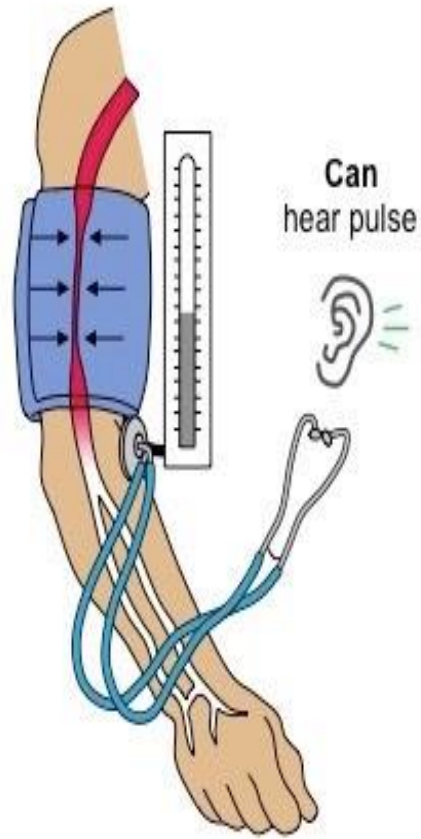
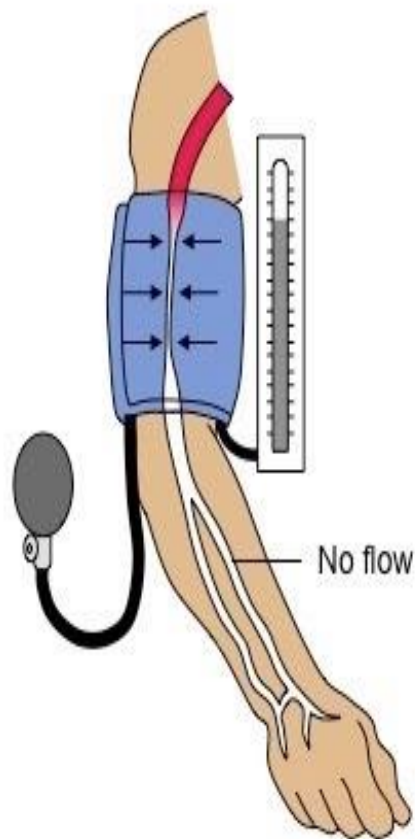
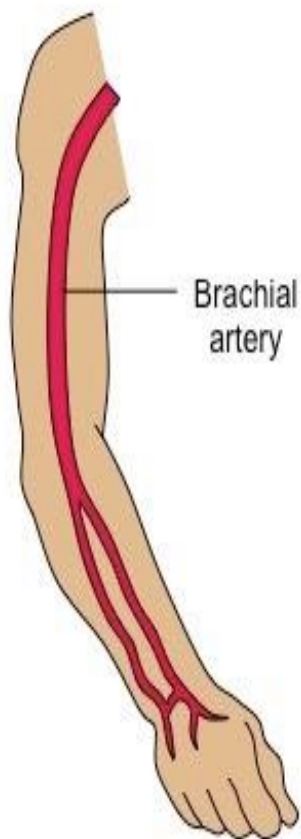
○ Normal range **60-80**mmHg



○ **Blood Pressure Measurement Methods**

- Arterial blood pressure is most commonly measured via a sphygmomanometer, which used the height of a column of mercury to reflect the blood pressure.
- Blood Pressure can be Measured in Two methods:
 1. **Auscultatory Method:** by using stethoscope and sphygmomanometer .





Normal Blood Flow

no occlusion of blood flow

Blood Occlusion

cuff pressure blocks blood flow

Systolic Pressure

systolic pressure > cuff pressure

Diastolic Pressure

diastolic pressure > cuff pressure



2. Palpitary Method:

- It involves the measuring of blood pressure with a sphygmomanometer and palpating the radial pulse. It can only determine systolic blood pressure; diastolic blood pressure cannot be estimated.



○ **Physiological Factors Affecting Blood Pressure:**

1. Body position
2. Emotional state.
3. Exercise
4. Sleep
5. Breathing

