Department of Anesthesia Techniques

Heart Sounds

Electrocardiogram (ECG)

& Blood Pressure

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Heart Sounds

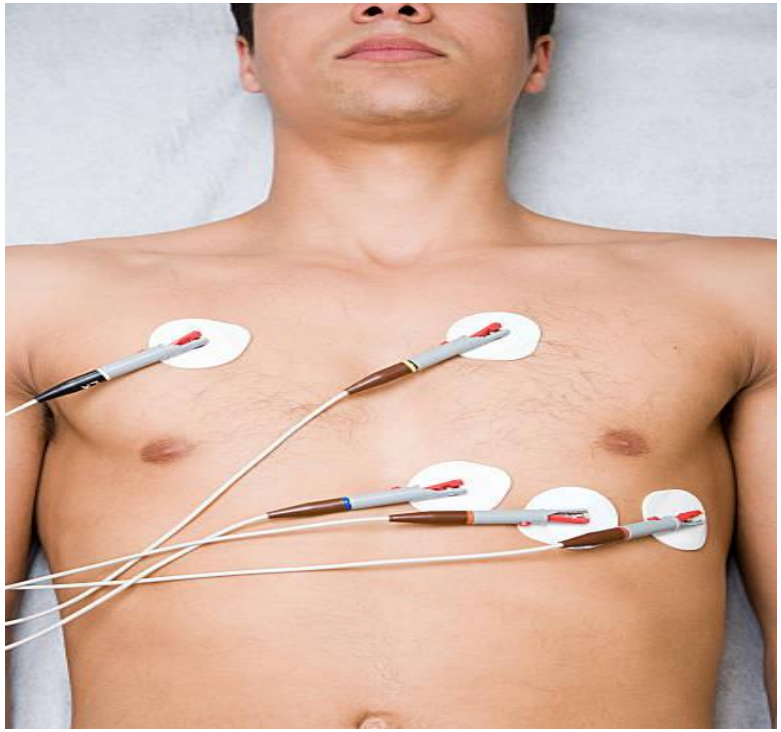
- Heart sounds are an audible sounds that occurs when the valves close.
- When the stethoscope is placed on the chest wall over the heart, two sounds are normally heard:

a) **First heart sounds (S1):** is caused by closure of the AV valves when ventricles contract at systole.

a) **Second heart sound (S2):** is caused by closure of the aortic and pulmonary valves in diastole(ventricular relaxation).

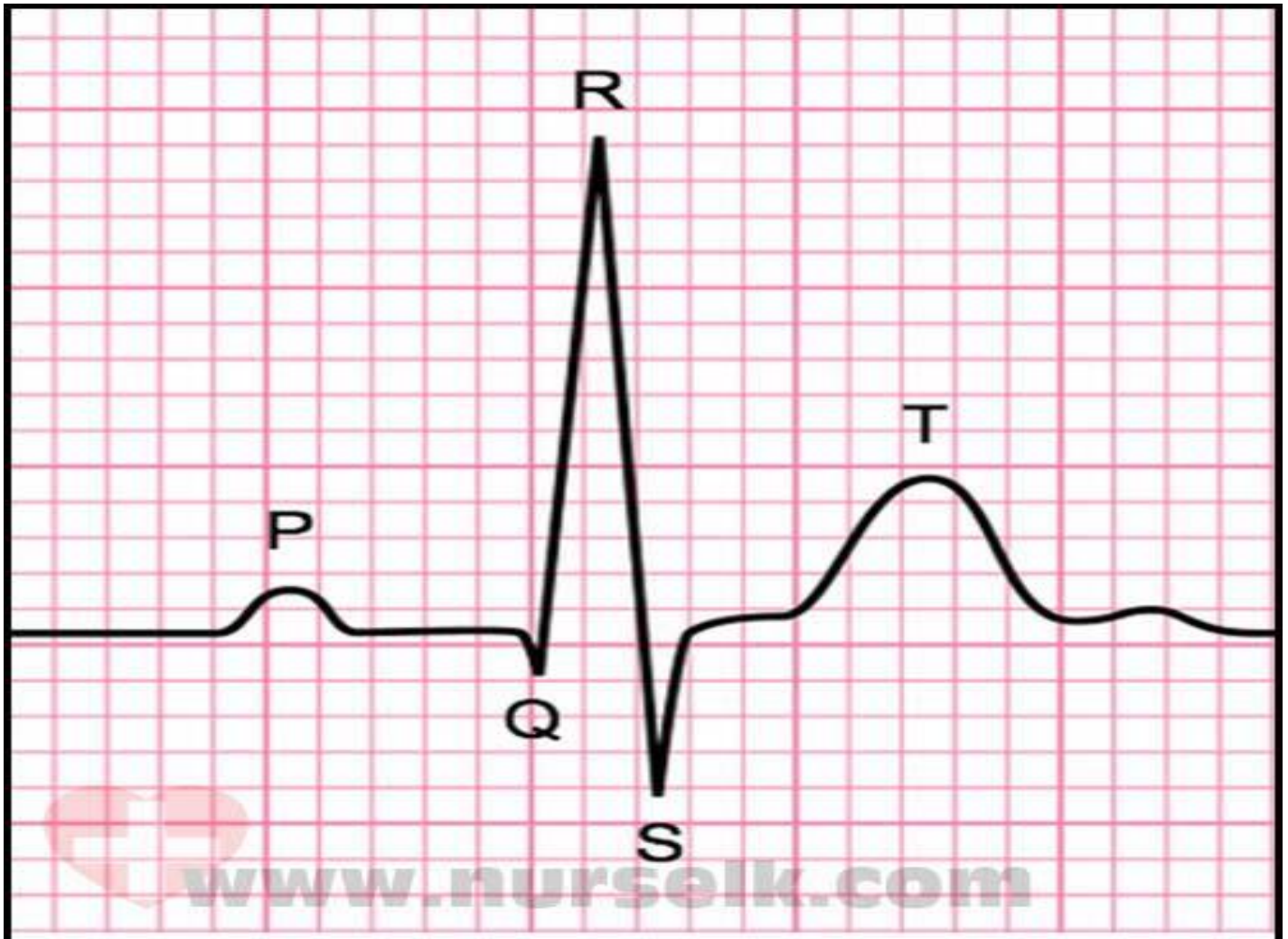
Electrocardiogram (ECG)

- 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:

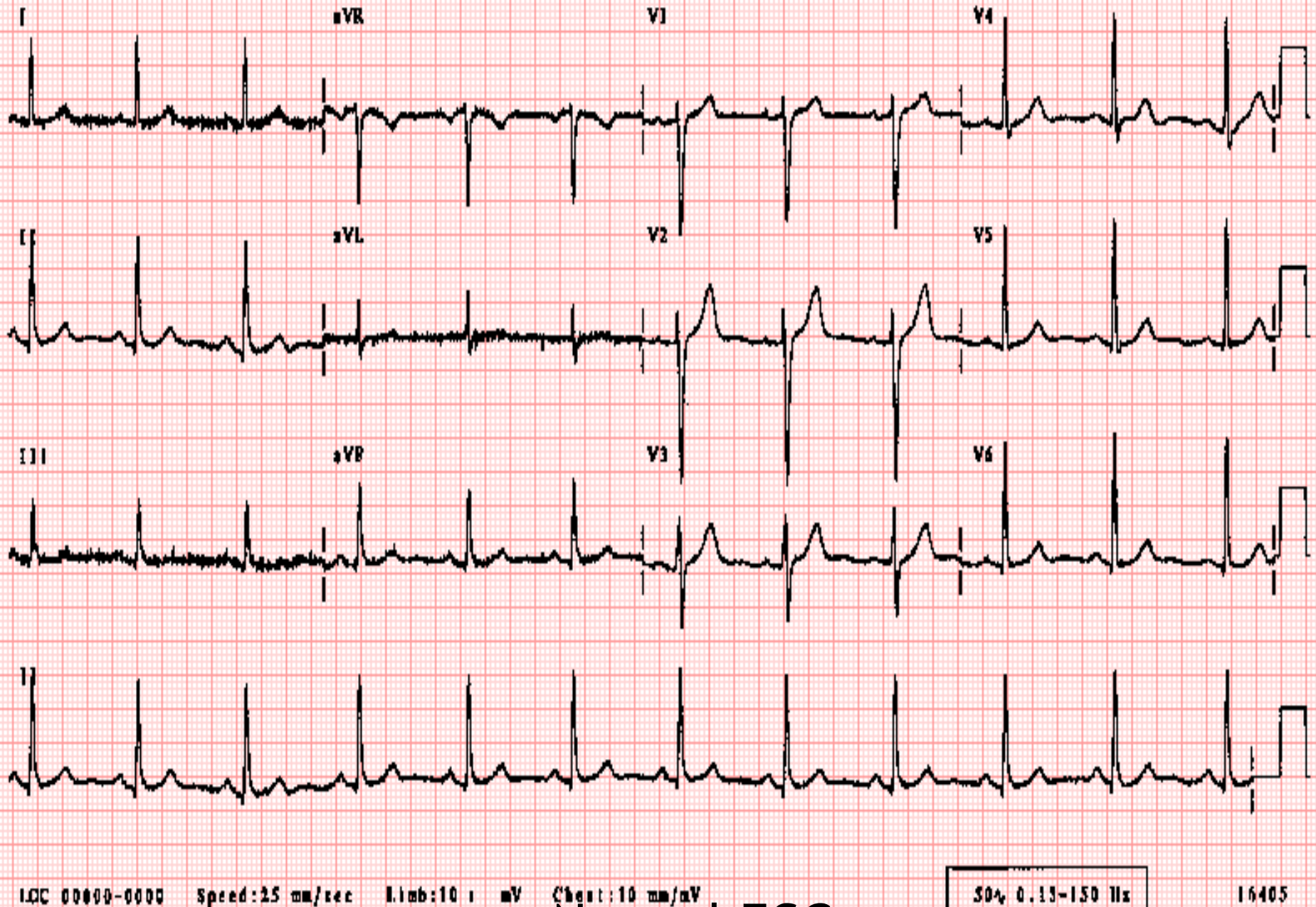
1. **The P wave**: which represents depolarization of the atria which initiate atrial contraction.
2. **The QRS complex**: which represents depolarization of the ventricles, which initiates ventricular contraction.
3. **The T wave:** which represents repolarization of the ventricles at which the ventricles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



P -Atrial contraction

QRS - Ventricular contraction

T - Re-polarizing ventricles


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II
LOC 00000-0000
Speed:25 mm/sec
Limb:10 mV
Chest:10 mm/mV
50~ 0.15-150 Hz
16405

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 = $\frac{\boldsymbol{systolic}}{\boldsymbol{diastolic}}$

Types of Blood Pressure:

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

Normal range **110-130**mmHg

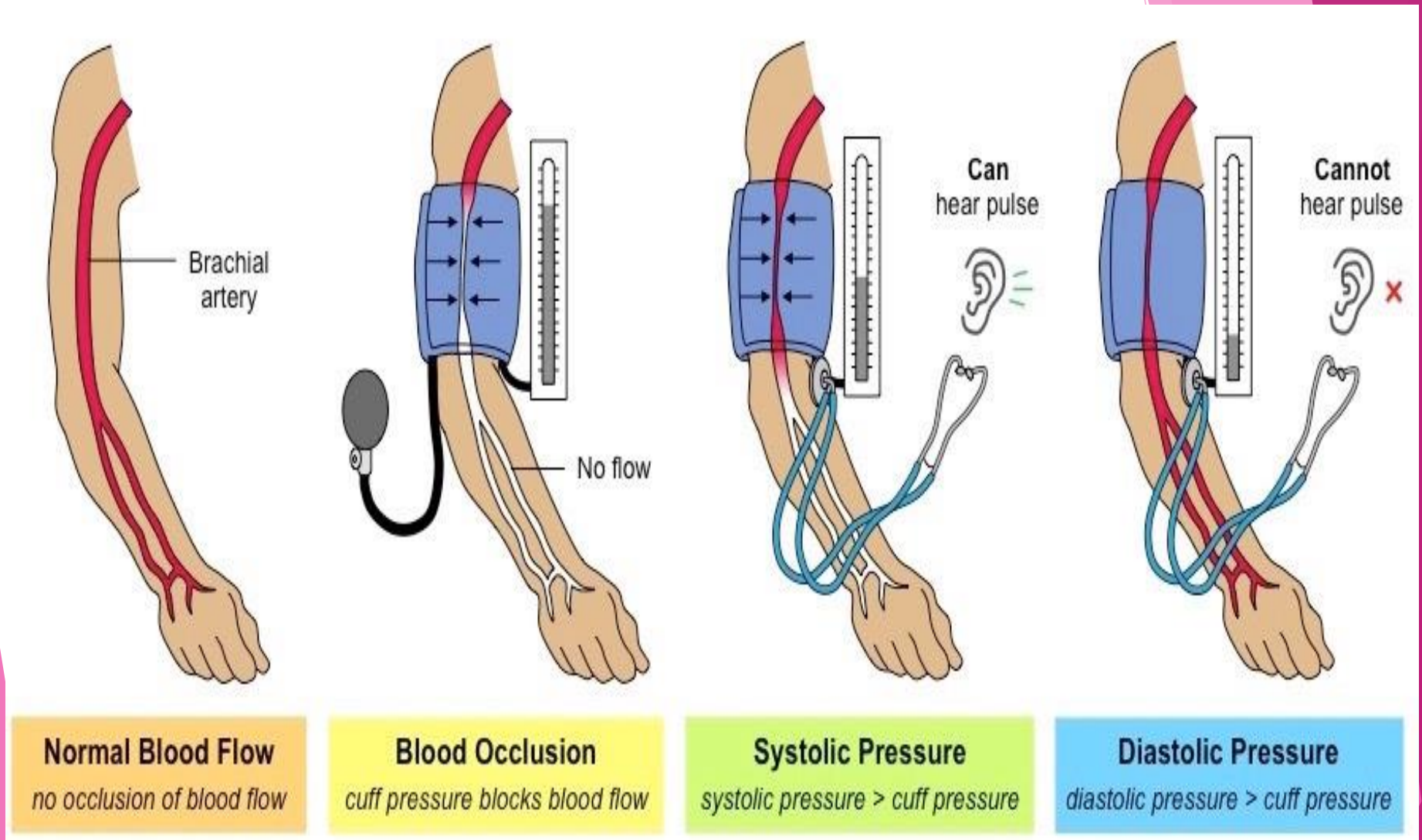
B. **Diastolic blood pressure :** the lowest pressure within the arterial blood due to relaxation of the heart.

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 .


Brachial artery
No flow
Can hear pulse
Cannot hear pulse
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

Thank you