

# **Carotid Arterial Pulse & Jugular Venous Pulse**

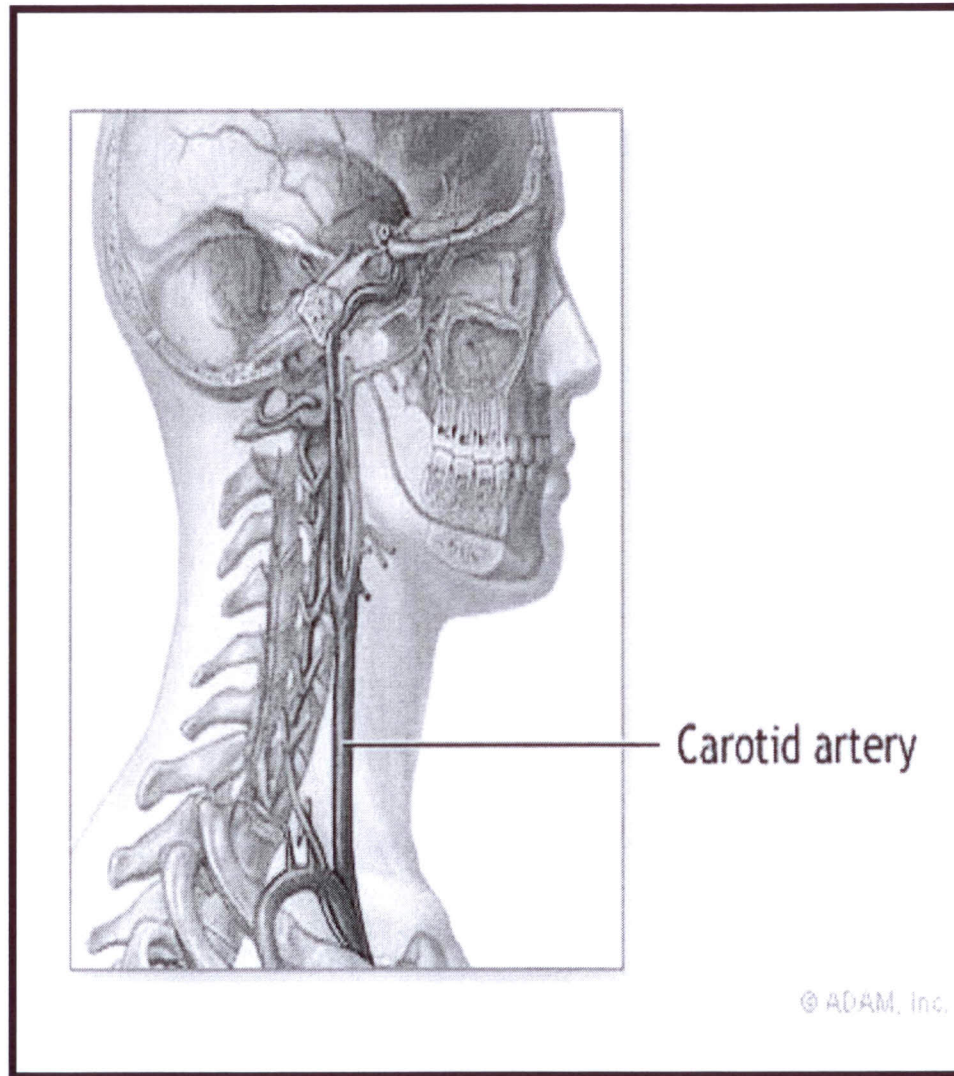
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# Objectives

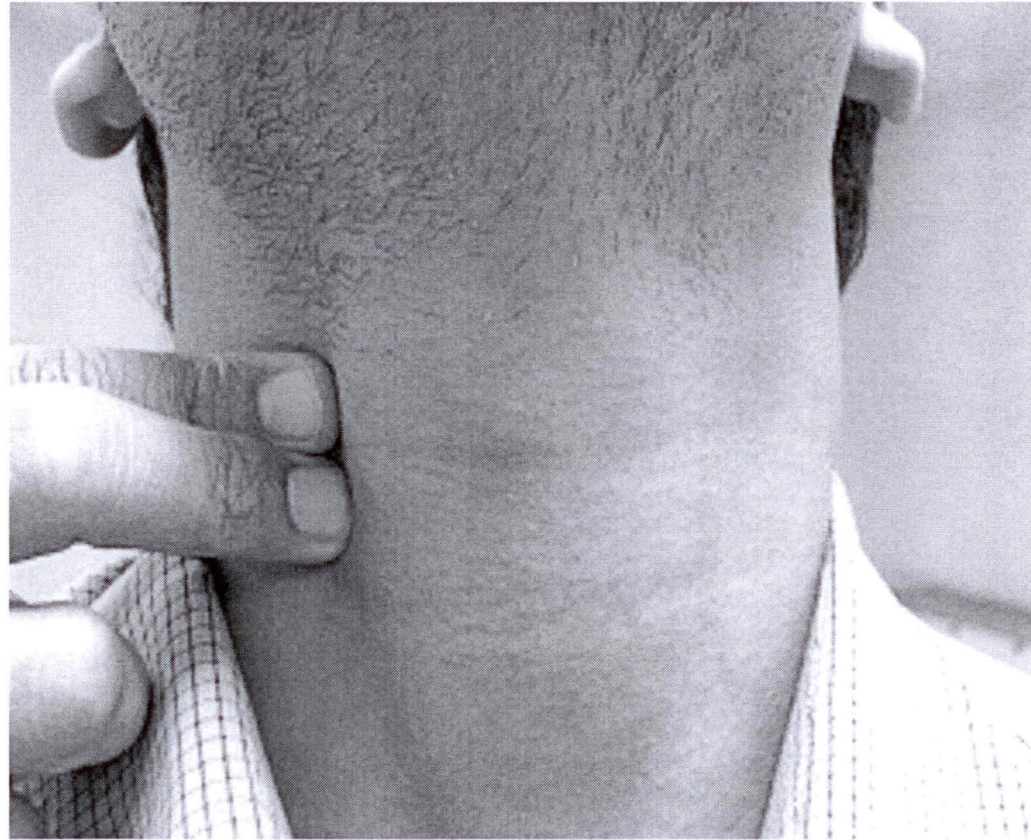
- To record the carotid and jugular pulses.
- Identify the different waves.
- Understand the events causing the different waves of the carotid and jugular pulses.

# The Carotid Arterial Pulse

- Located in the anterior part of the neck.
- The carotid pulse can be palpated beneath the anterior border of the sternocleidomastoid muscle.



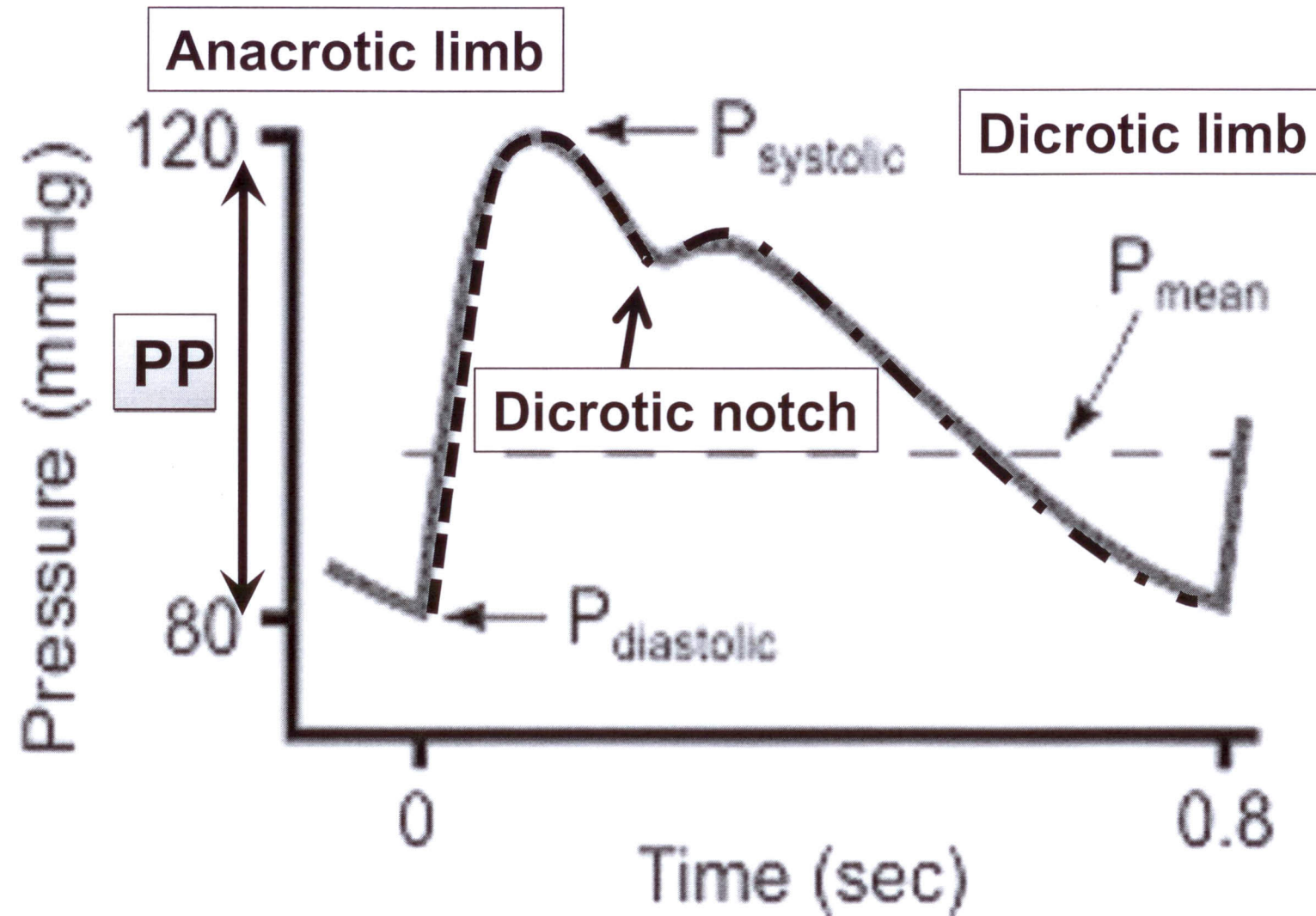
## Cont. carotid arterial pulse



- Apply the transducer (pulse plethysmogram) over the carotid artery.
- Start recording.

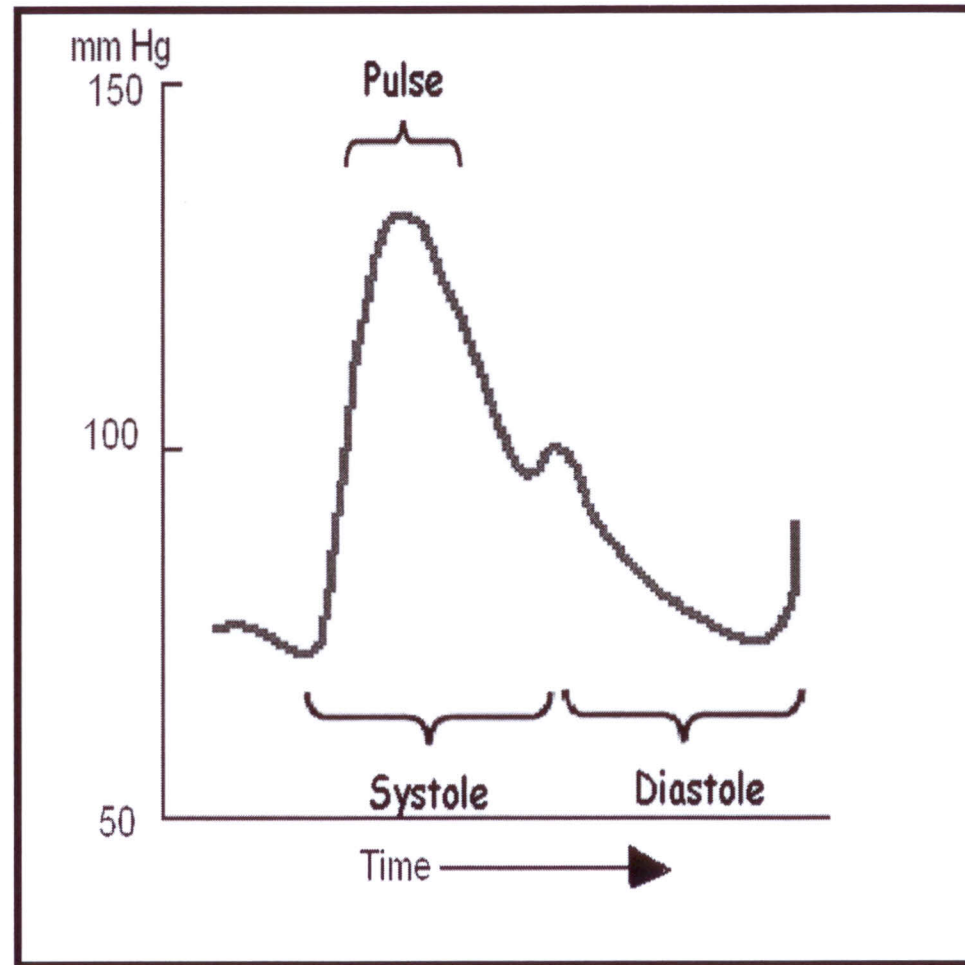


# Carotid Arterial Pulse



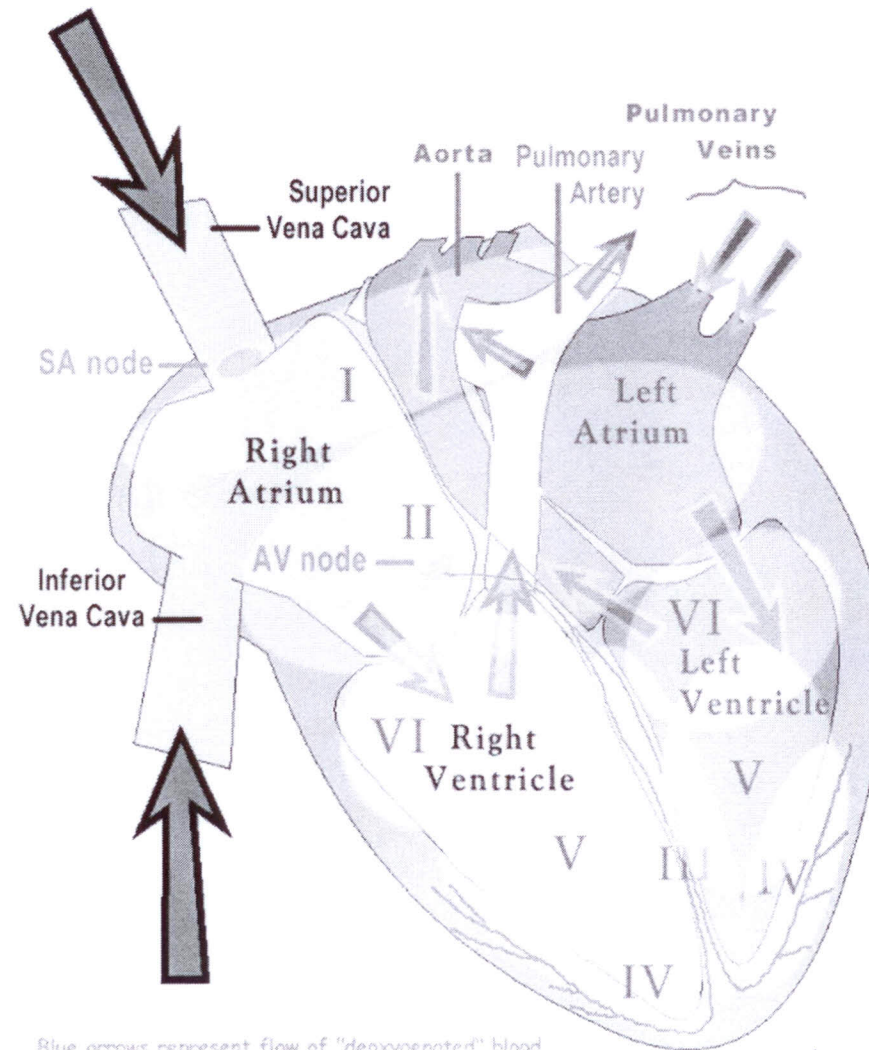
# The Carotid Arterial Pulse Waves

- **Anacrotic limb** = max ejection phase of ventricular systole.
- **Dicrotic notch** = Aortic valve closure.
- **Dicrotic limb** = ventricular diastole.



# Jugular Venous Pressure Waves

- The RA collects venous blood from all the body.
- Right atrial pressure = CVP.
- Atrial pressure changes during the cardiac cycle are transmitted to the great veins of the neck.



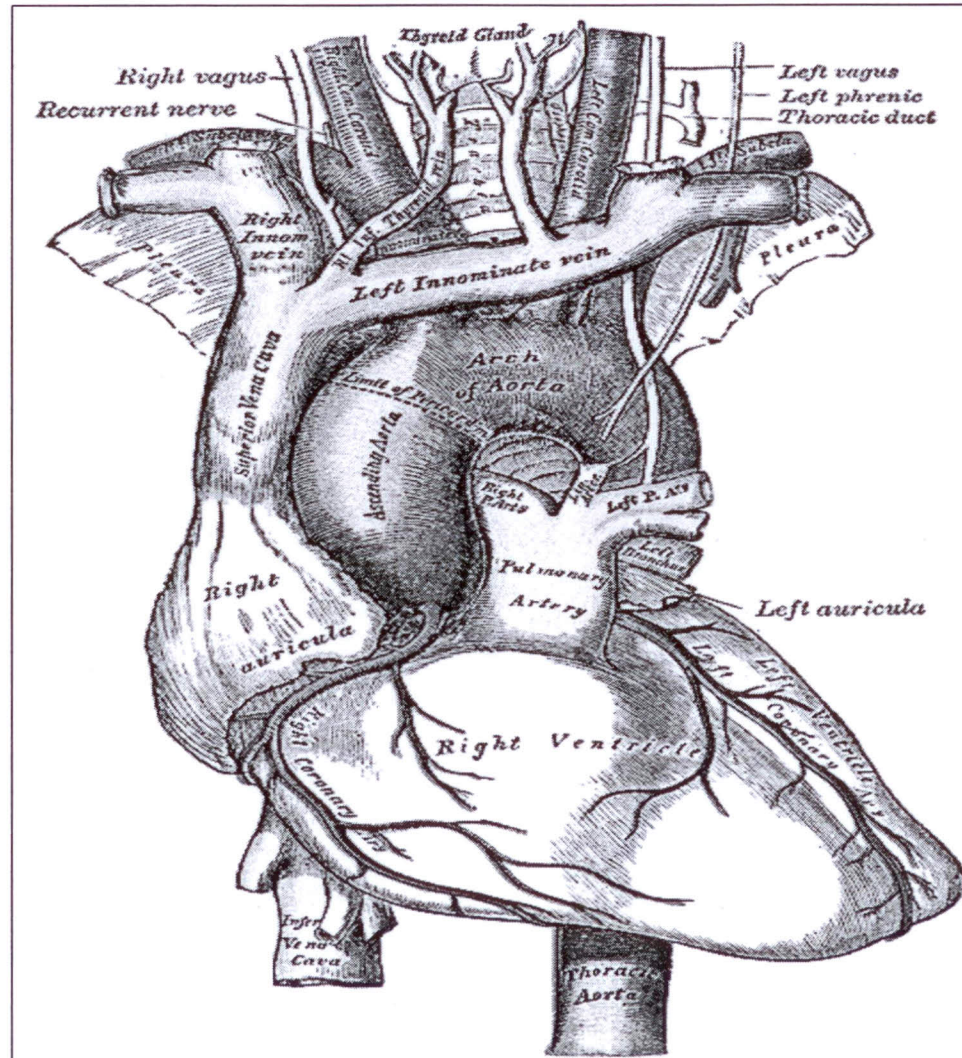
# JVP

- These pressure changes can be observed clinically and recorded as the JVP.
- Reflects important information about the dynamics of the Right side of the heart.



# From where is the JVP Measured?

- From the *right internal jugular vein*.....Why?
- Because the right innominate and jugular veins extend in an almost straight line cephalad to the SVC.



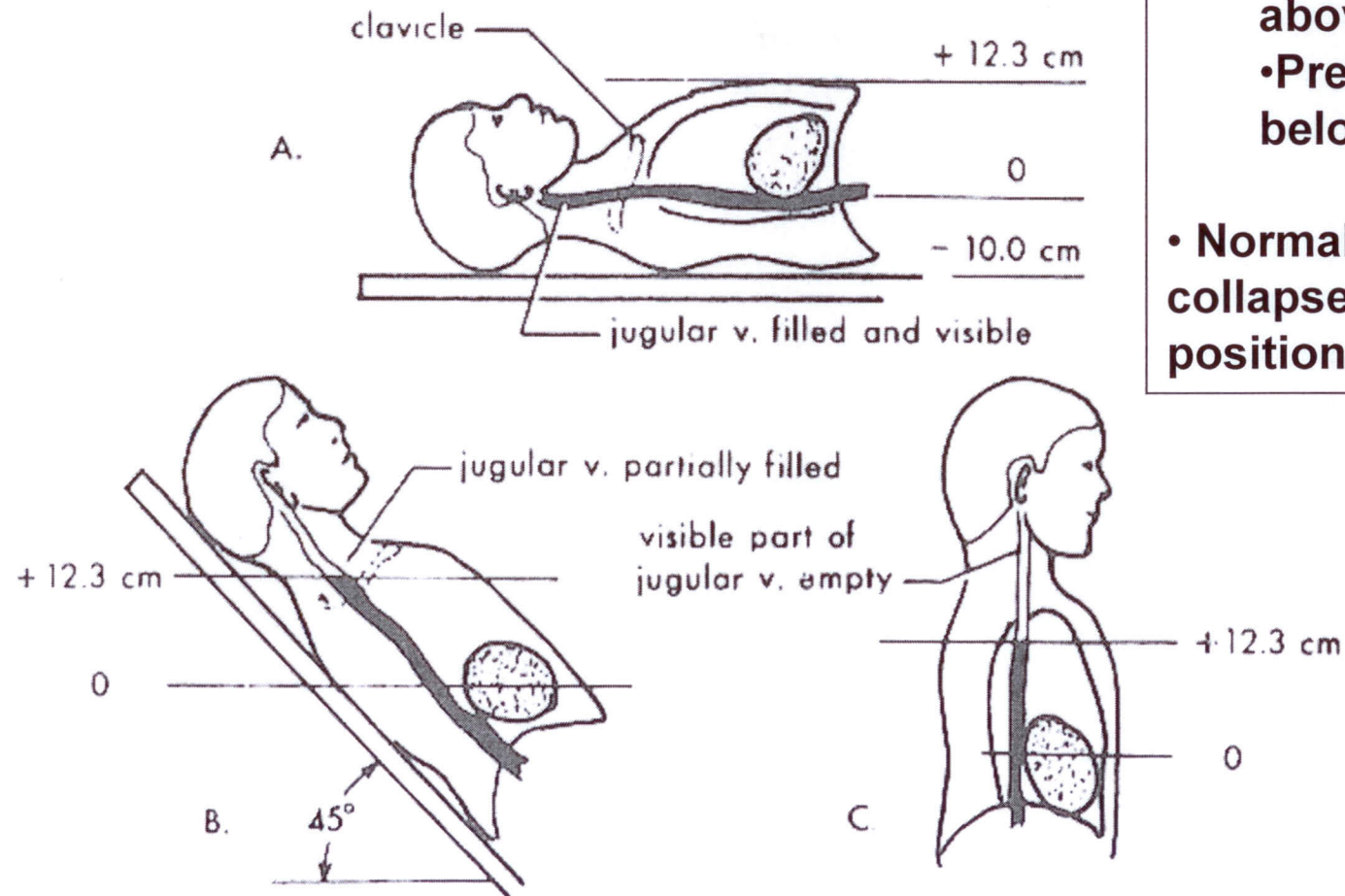
# How Is It Measured?

- Normal CVP = 4.6 mmHg.

- Due to gravity:

- Pressure decrease above the heart level.
- Pressure increase below the heart level.

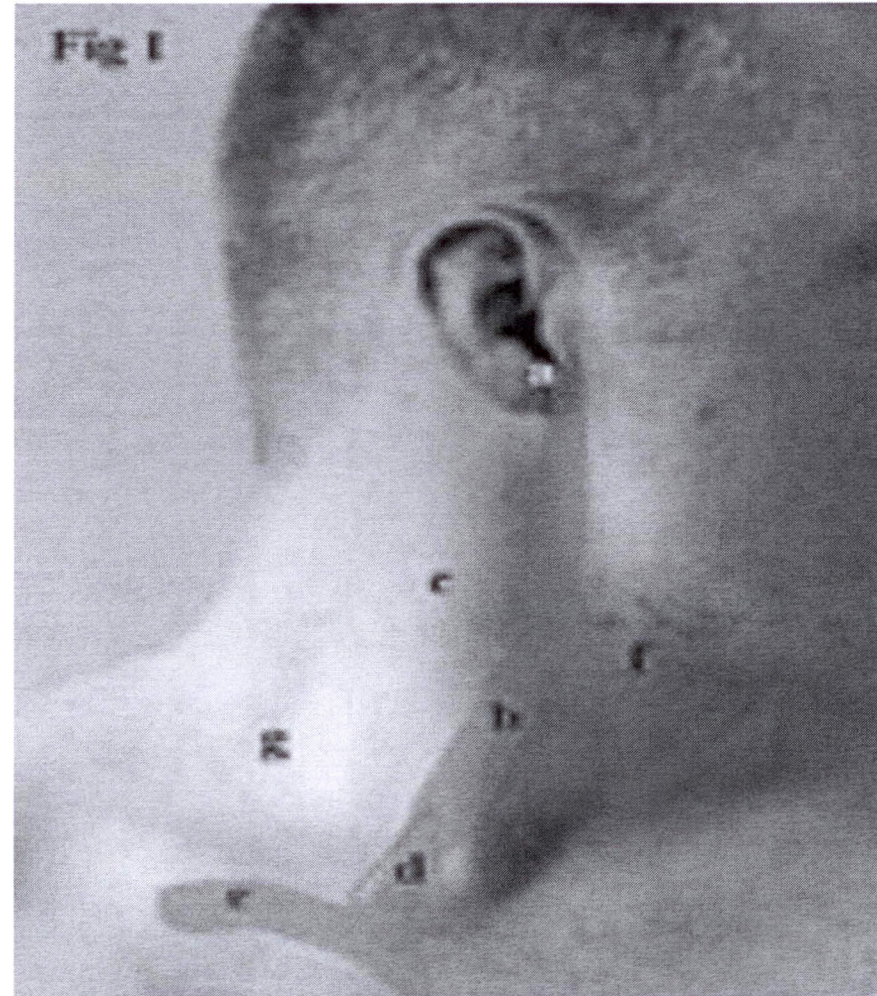
- Normally neck veins are collapsed in the upright position.



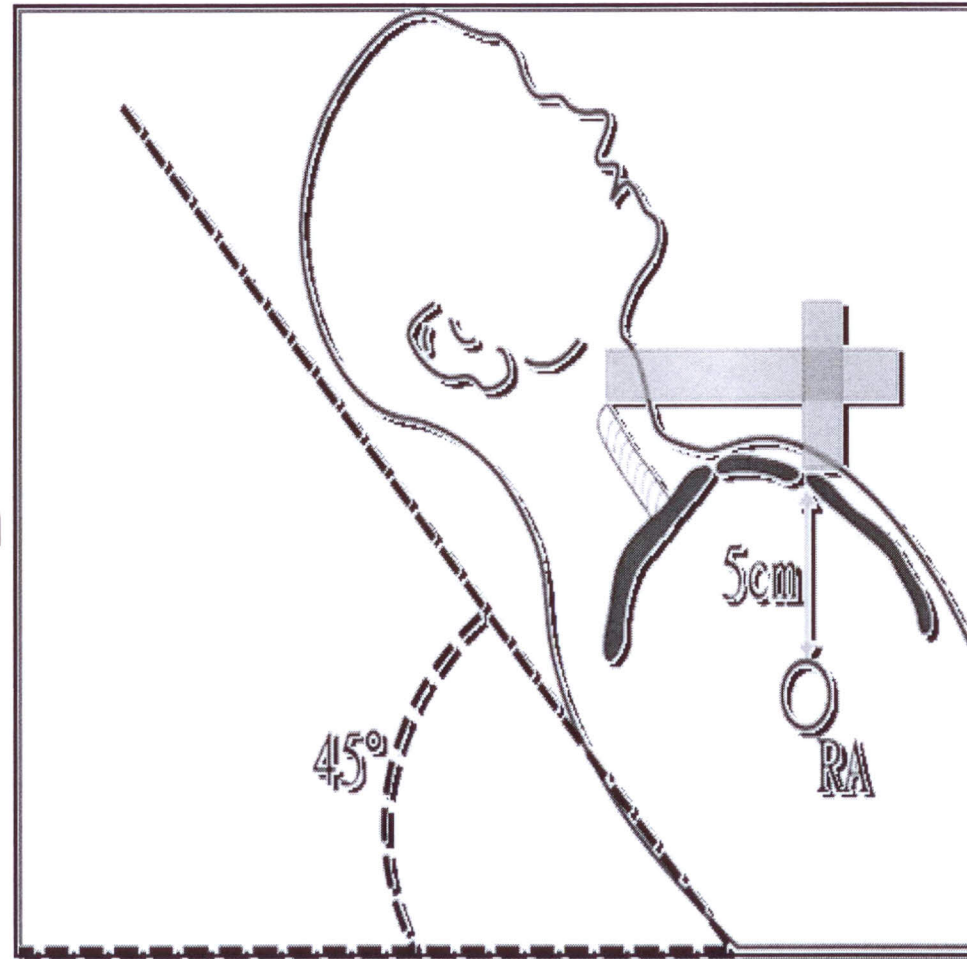


# How to Measure JVP?

- Lie at 45°.
- Identify Rt internal jugular venous pulsations.



- Measure the vertical height from the sternal angle to top of pulsations in cm.
- Normally not more than 4 cm above the sternal angle.





# Recording the JVP

- Put the pulse plethysmogram on the visible pulsations.
- Record.

# JVP Waves

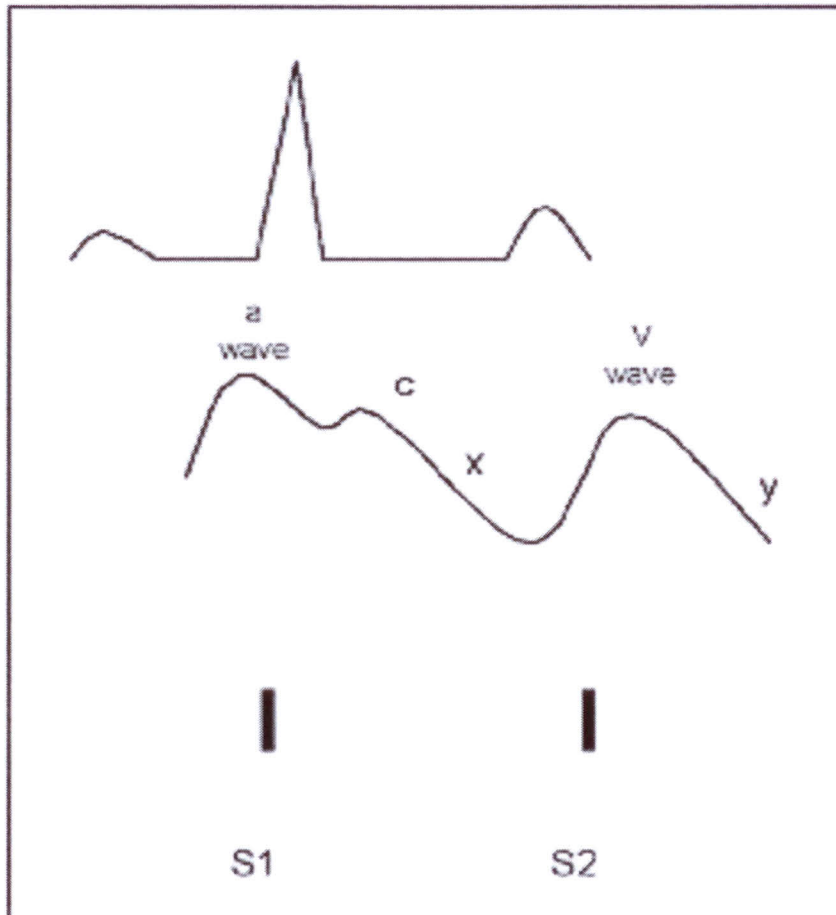


Fig 1a. Jugular venous pulse waves and descents and their relation to the ECG and heart sounds.

- ⦿ The a-wave = atrial systole.
- ⦿ The c-wave = bulging of tricuspid valve into atria.
- ⦿ The x-descent = downward displacement of A-V ring during ventricular systole.
- ⦿ The v-wave = filling of atria while tricuspid valve is closed.
- ⦿ The y- descent = opening of tricuspid valve & blood flow into ventricles.

# Abnormalities

- Elevated a-wave:
  - tricuspid stenosis.
- Cannon a-wave:
  - Contraction against closed tricuspid valve.
- Absent a-waves:
  - AF.