

Arterial blood pressure measurement



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Measurement of ABP

1. Direct Method

By cardiac catheter cannulated through a large artery, transmits the blood pressure to manometer.

2. Indirect Method: By sphygmomanometer + stethoscope.

-Principle: The pressure of blood in the artery (brachial artery) is balanced against the pressure of air in a rubber cuff surrounding the artery. The pressure of air in the cuff is then measured by means of a mercury manometer.

- Methods:

- a) Palpatory step.
- ▶ b) Auscultatory step.



Palpatory method	Auscultatory method
Less accurate	More accurate
Only Systolic pressure	Systolic and Diastolic pressure
Avoidance of any silent gap, If done before the Auscultatory method	If done alone in a presence of a silent gap, it gives inaccurate results





Mercurial

The most accurate



Digital

The least accurate



Cuffs of different sizes

Apparatus

Sphygmomanometer . Which is composed of

- ▶ Mercury Manometer,
- ▶ **Mercury Reservoir,**
- ▶ Rubber Tubes,
- ▶ Rubber Cuff
- ▶ **Air Pump.**



Position for taking your blood pressure at home

① Rest for 5 minutes before measuring your blood pressure.

② Sit in a chair with both feet flat on the ground and back straight.

③ Place your arm at the level of your heart or chest.

④ Stay still and do not talk as your blood pressure machine operates.







1. palpatory step

- A rubber inflatable cuff is placed over the **brachial artery**.
- Feel the subject's **radial artery** with the tip of 3 middle fingers, the pressure in the cuff is raised until the cuff pressure exceeds that of the pressure in the artery and at this point, the artery collapses and the radial pulse can no longer be felt .
- Then the pressure in the cuff is slowly released and the radial pulse reappears. The pressure at which the pulse reappears corresponds to the systolic pressure as it is the point at which the systolic pressure peaks in the brachial artery exceeding the occluding pressure in the cuff.



2. Auscultatory step

- ❑ The cuff is inflated manually until the artery is completely occluded.
- ❑ Listening with the stethoscope over the brachial artery at the elbow, the examiner should then slowly release the pressure in the cuff.
- ❑ When blood just starts to flow in the artery,

Korotkoff sound are heard which are:

I. **Sudden** appearance of faint clear sounds corresponds to SBP., heard as **tapping** sounds.

II. As the cuff pressure is lowered, the sounds become **murmur-like**.

III. With further lowering of the cuff pressure, the sounds become **louder**.

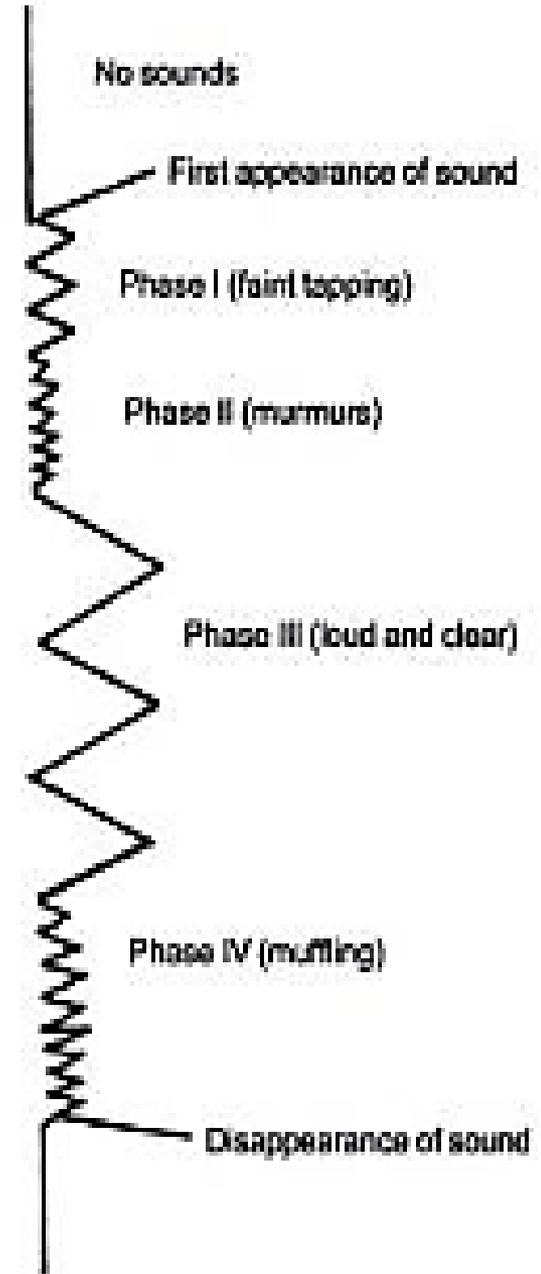
IV. When the cuff pressure approaches the diastolic pressure, turbulent flow becomes continuous and sounds become **dull** and **muffled**

V. At the diastolic pressure, the sounds **disappear**.



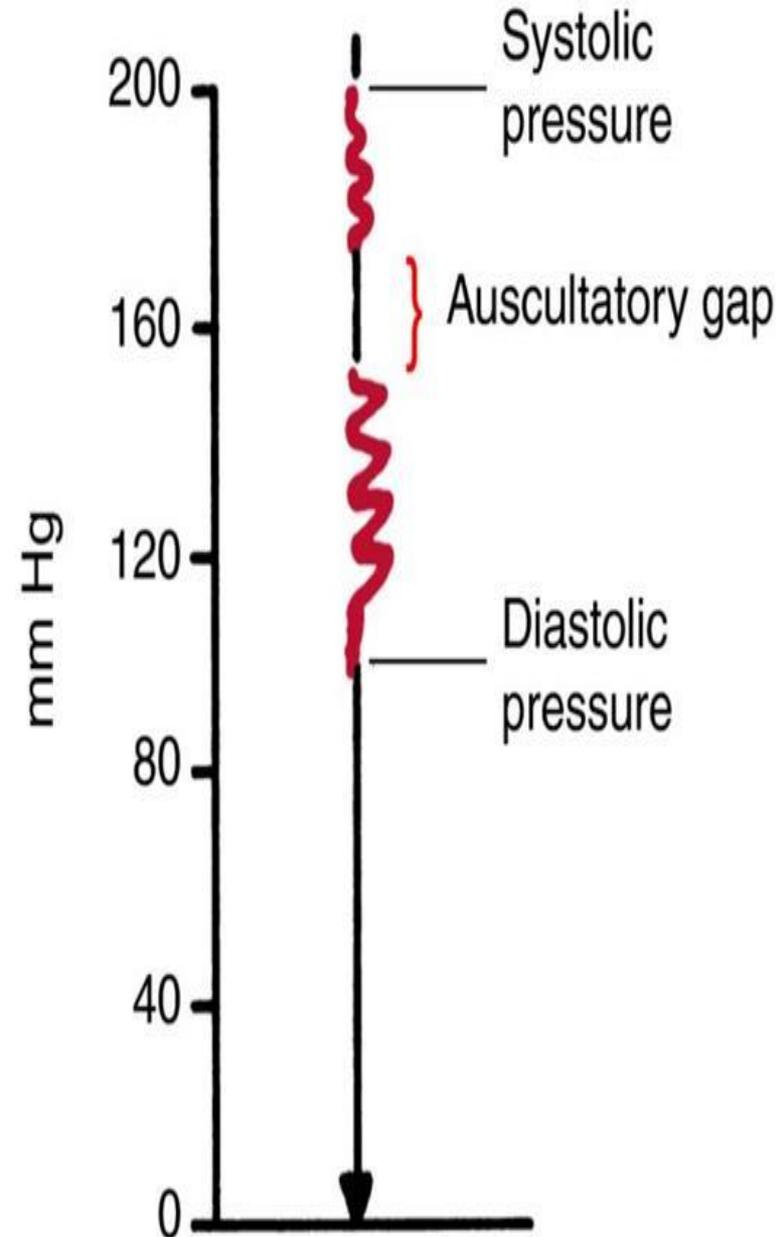


Korotkoff sounds



Auscultatory silent gap.

- ✓ During auscultation, sound **disappears** for short time (gap) between systolic and diastolic BP.
- ✓ in hypertensive atherosclerotic patients.





Thank you!