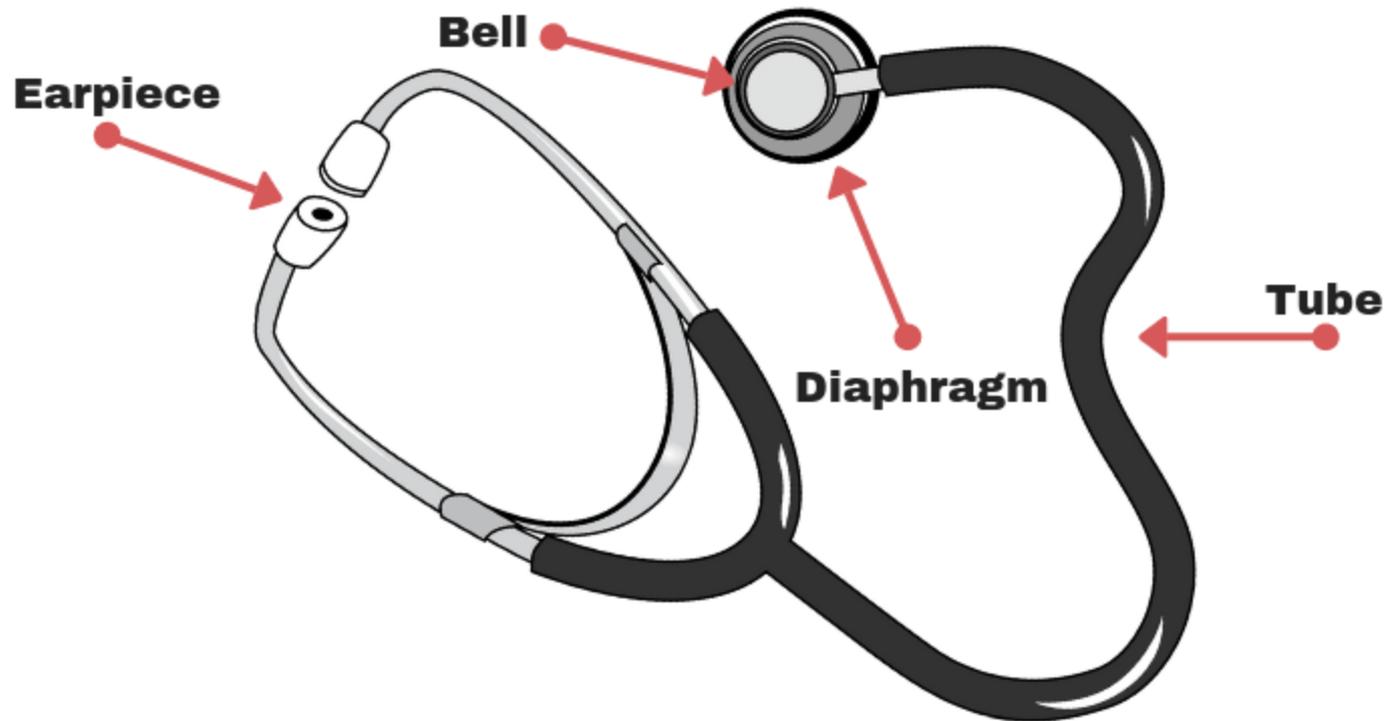


Auscultation of heart sounds & blood pressure measurement

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Stethoscope



How to wear it



Correct position



Wrong position

Place the ear tips in the ears, and twist them until they point slightly forward (toward your nose). If you do it right, you'll make a good seal, and sounds in the room will become very faint.

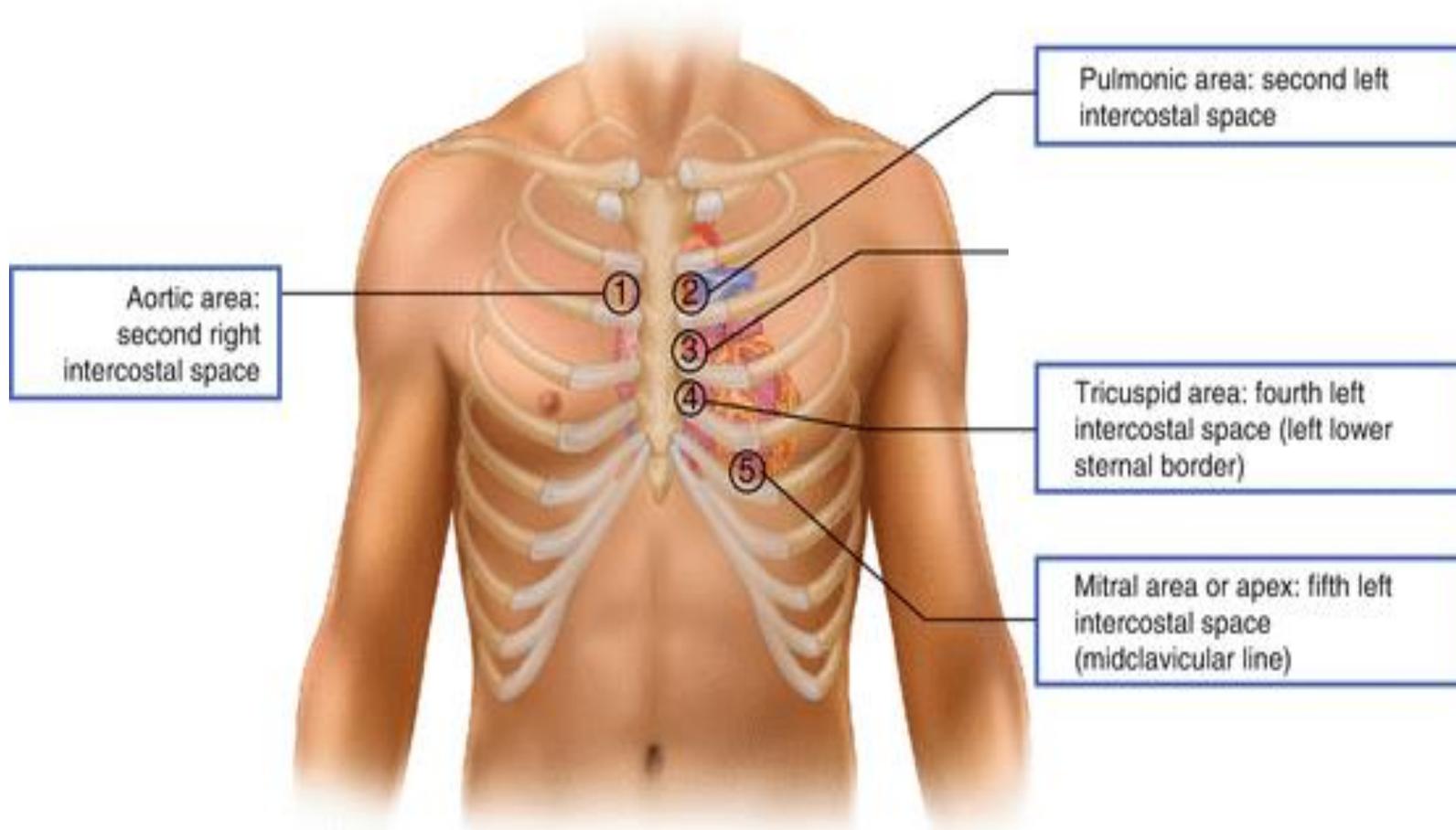
How to hold it



Normal Heart sounds

- S1 caused by closure of mitral and tricuspid valves at the beginning of systole. Heard as LUB
- S2 caused by closure of aortic and pulmonary valves at the end of systole. Heard as DUB.
- S2 is louder and higher pitched than S1

Auscultation of heart sounds



The diaphragm is best for higher pitched sounds, like breath sounds and normal heart sounds. The bell is best for detecting lower pitch sounds, like some heart murmurs, and some bowel sounds.

Blood pressure Measurement

- A sphygmomanometer is a device that measures blood pressure.
 1. Digital sphygmomanometers are automated, easy to operate and can be used in noisy environments. However they are less accurate than manual ones, need periodic calibration and are contraindicated to use with certain medical conditions.
 2. Manual sphygmomanometers consist of aneroid and mercury devices.

Manual sphygmomanometers

- It is composed of an inflatable cuff, which is wrapped around the arm. A measuring device that indicates the cuff's pressure. A bulb that inflates and deflates the cuff.
- A stethoscope is used to listen to arterial blood flow sounds.



Mercury



Aneroid



Digital

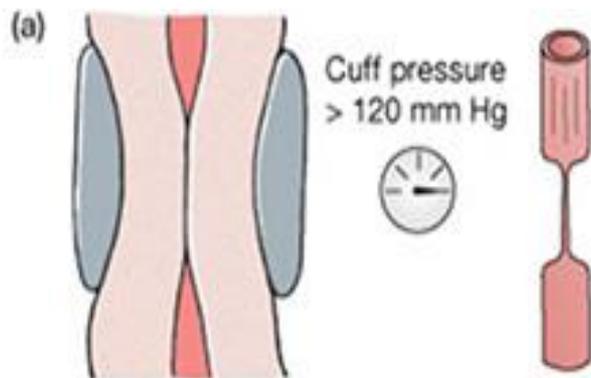
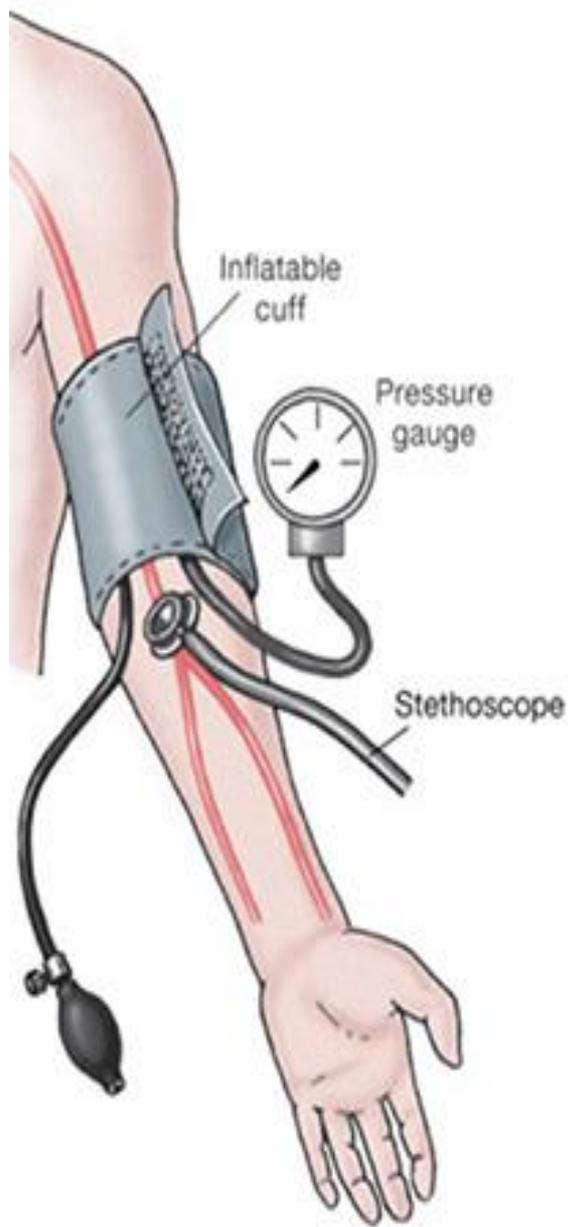




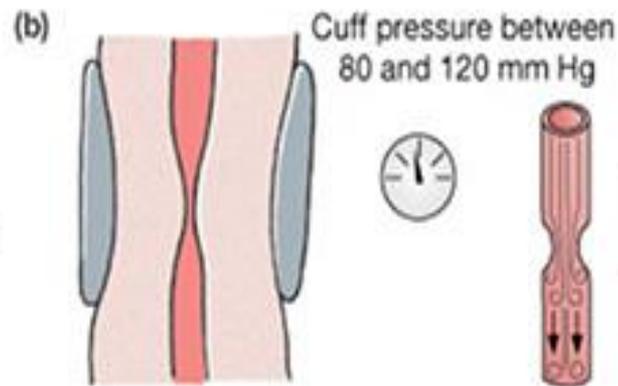
How to measure the blood pressure

1. Ask the patient to sit down and rest for ten minutes
2. Locate the brachial pulse
3. Place the cuff around the upper left arm, the lower edge of the cuff should be about 1 inch above the brachial pulse area (antecubital fossa). Use the fabric fastener to make the cuff snug, but not too tight. The arm should be roughly at the same height as the heart while the arm is supported.
4. Inflate the cuff while palpating the radial pulse, when the pulse is no longer felt note the BP reading on the gauge and inflate 10-20 mmHg above that value.

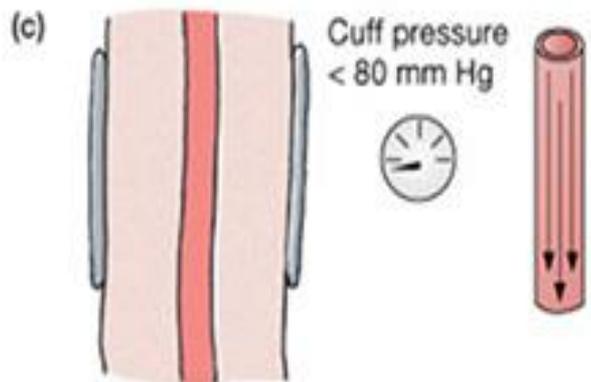
5. Place the diaphragm of your stethoscope on the brachial pulse area & start deflating the cuff slowly and steadily while listening through the stethoscope. When you hear a tapping sound (1st korotkoff sound) note the reading on the gauge, this is the systolic BP.
 6. Continue to deflate the cuff till you no longer hear the tapping sound(5th korotkoff sound), the reading on the gauge at this point indicates the diastolic BP
- The sounds heard while measuring the BP are called Korotkoff sounds, they are caused by the turbulent blood flow inside the brachial artery
 - <https://www.youtube.com/watch?v=f6HtqolhKqo>



When the cuff is inflated so that it stops arterial blood flow, no sound can be heard through a stethoscope placed over the brachial artery distal to the cuff.



Korotkoff sounds are created by pulsatile blood flow through the compressed artery.



Blood flow is silent when the artery is no longer compressed.

Blood Pressure Stages

Blood Pressure Category	Systolic mm Hg (upper #)		Diastolic mm Hg (lower #)
Normal	less than 120	and	less than 80
Elevated	120-129	and	less than 80
High Blood Pressure (Hypertension) Stage 1	130-139	or	80-89
High Blood Pressure (Hypertension) Stage 2	140 or higher	or	90 or higher
Hypertensive Crisis (Seek Emergency Care)	higher than 180	and/or	higher than 120

Source: American Heart Association

Peripheral pulses

- Radial pulse can be palpated by the index and middle finger at the Base of the thumb . Used to determine the heart rate by counting the pulse for 30 seconds and multiplying the result by two. Also used to assess the cardiac rhythm(regular or irregular)
- Brachial pulse can be palpated by the index and middle fingers in the antecubital fossa, just medial to the biceps tendon. Assess the character and volume of the pulse.Used in BP measurement

The radial pulse is felt on the wrist, just under the thumb

