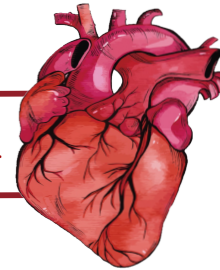


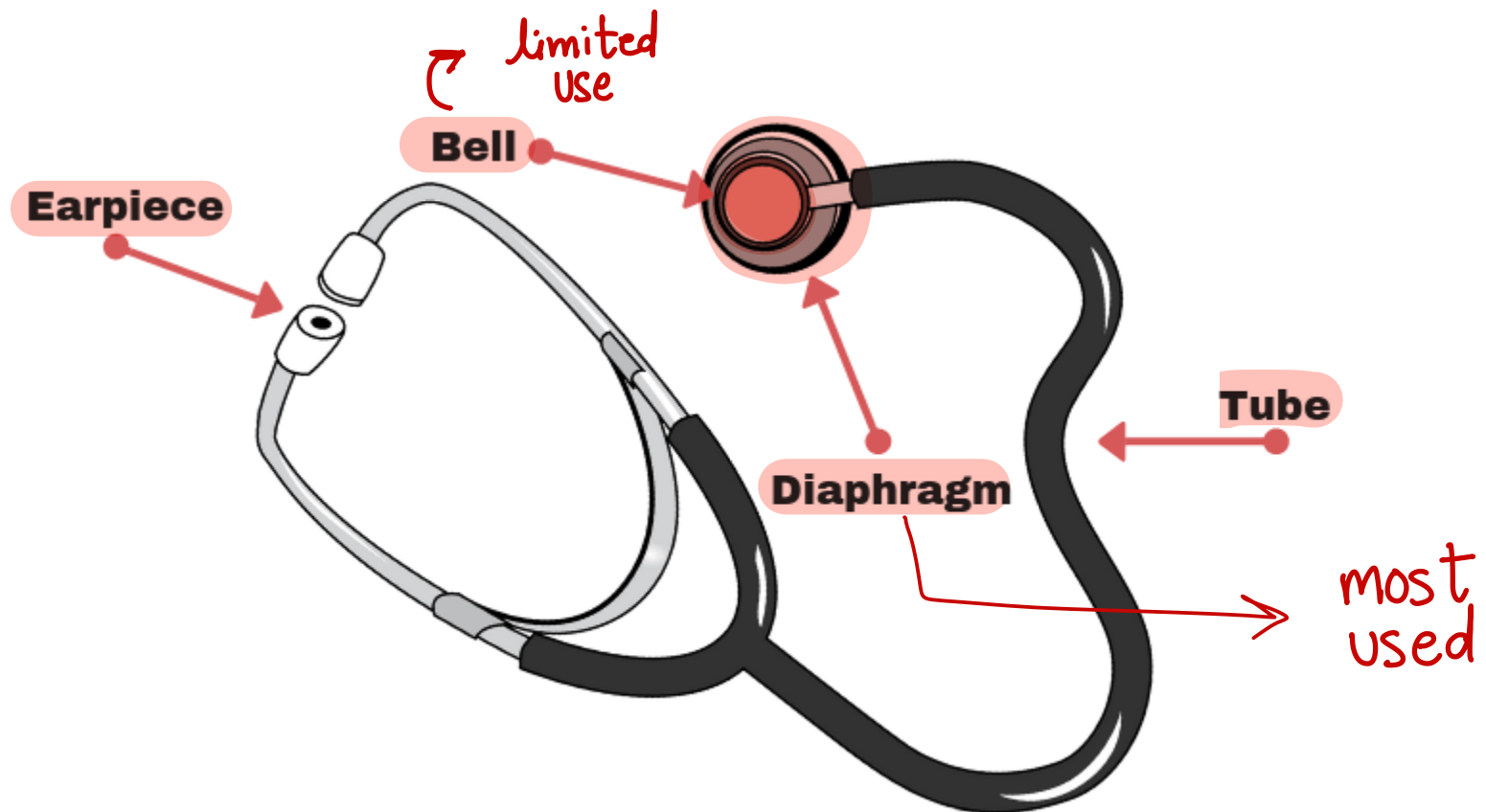
Auscultation of heart sounds, blood pressure measurement & peripheral pulses

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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.

Normal Heart sounds

LUB – DUB

- 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.

Auscultation of heart sounds

the action of listening to sounds from the heart, lungs, or other organs, typically with a stethoscope

Locate the sternal notch then go slowly down the manubrium to locate the sternal angle (distinct bony ridge) 2nd rib

Aortic area: second right intercostal space

Pulmonic area: second left intercostal space

Tricuspid area: fourth left intercostal space (left lower sternal border)

Mitral area or apex: fifth left intercostal space (midclavicular line)

mid-clavicular line below the nipple.

apex of the heart (palpation)

These areas are where we hear the valves the best not their anatomical positions.

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.

Peripheral Pulses

- The palpable pulse in an artery reflects the pressure wave generated by the ejection of blood into the circulation from the left ventricle. → *aorta → peripheral arteries generates a pressure wave → expansion & recoil that can be palpated.*
- When taking a pulse we assess:
 - ✓ 1. Rate : the number of pulses occurring per minute
 - ✓ 2. Rhythm: the pattern or regularity of pulses
 - ✓ 3. Volume: the perceived degree of pulsation *with practice*
 - ✓ 4. Character: an impression of the pulse waveform or shape.
- The rate and rhythm of the pulse are usually determined at the radial artery;
- the pulse volume and character are assessed from the larger pulses (brachial, carotid or femoral)

Temporal

Carotid

Brachial

*most assessed
arterial pulse*

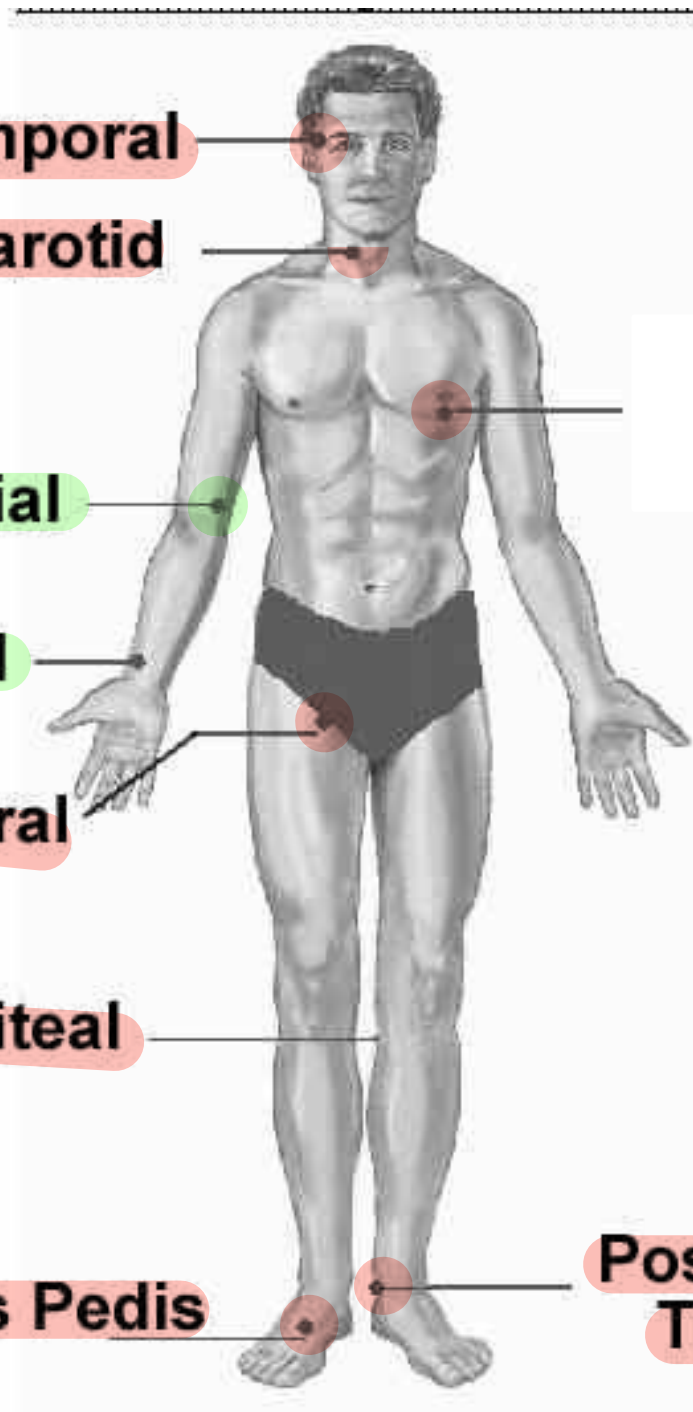
Radial

Femoral

Popliteal

Dorsalis Pedis

**Posterior
Tibial**



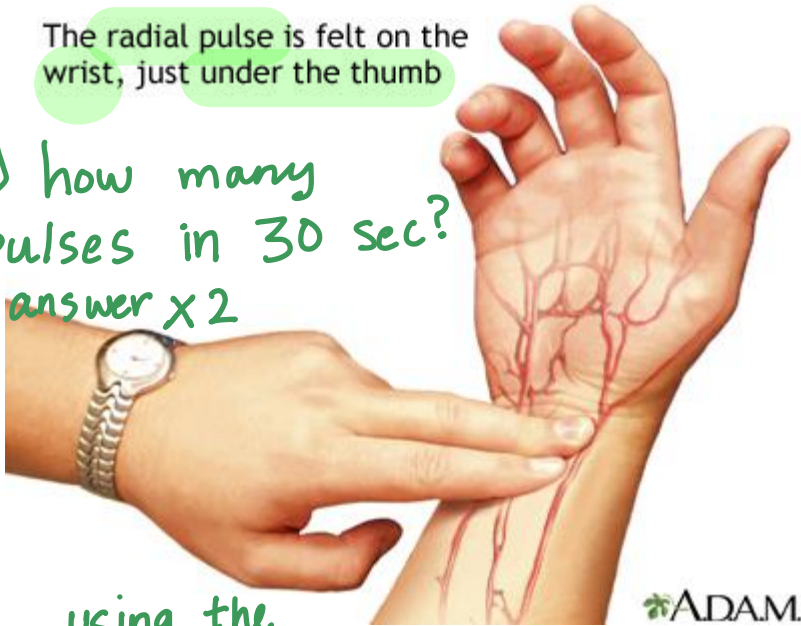
the heart beats are evenly spaced.

② is the rhythm
or irregular?

regular

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

① how many
pulses in 30 sec?
answer x 2



using the
middle & index
fingers pressing
against the bone
to feel the
pulse.

* Brachial artery located
in the cubital fossa, locate
the bicep tendon and put
your finger medially to it
applying some pressure.



to determine the volume
& character.

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

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

We can change the pressure inside of it

- 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

more accurate , it is banned /restricted.



Aneroid

more commonly used



Forearm
around the wrist

Digital

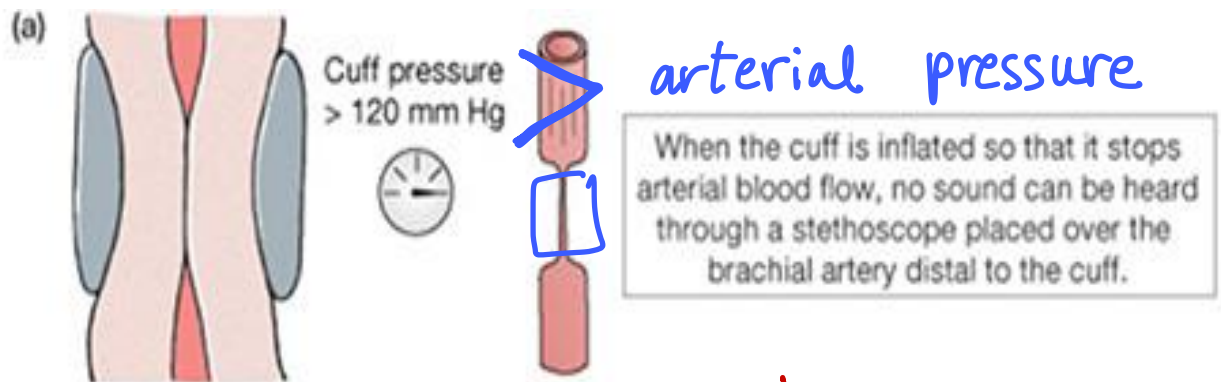
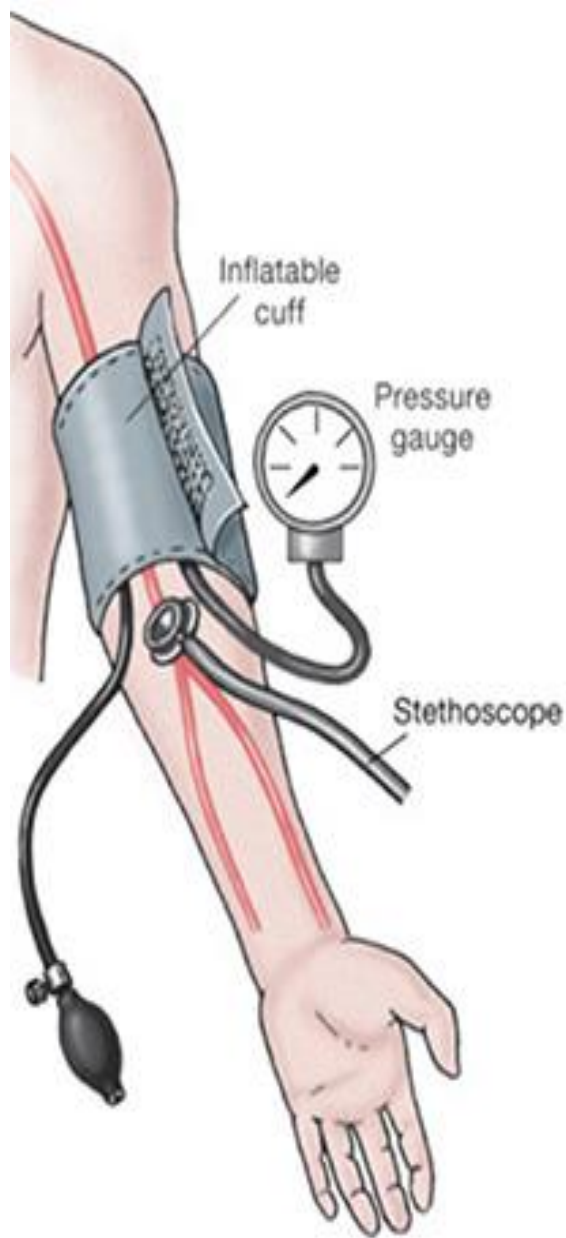




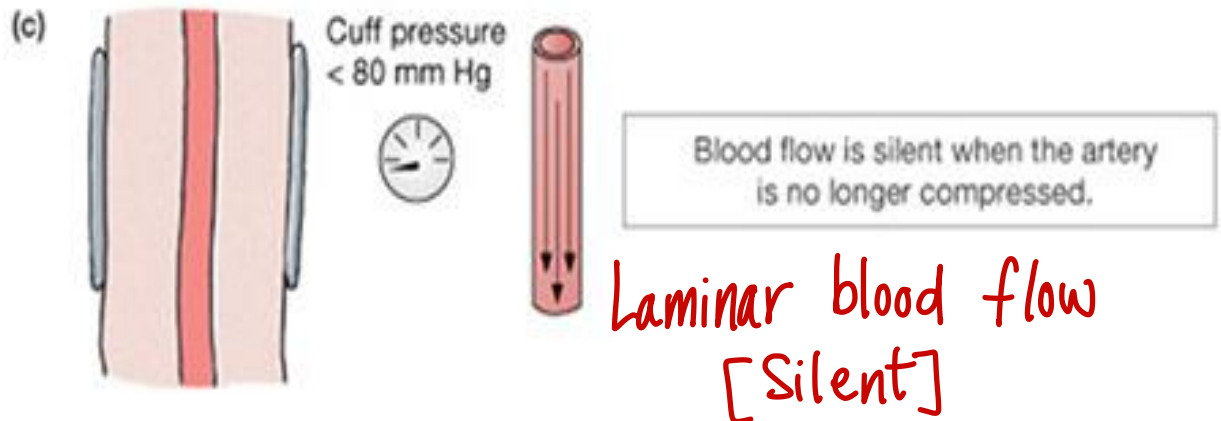
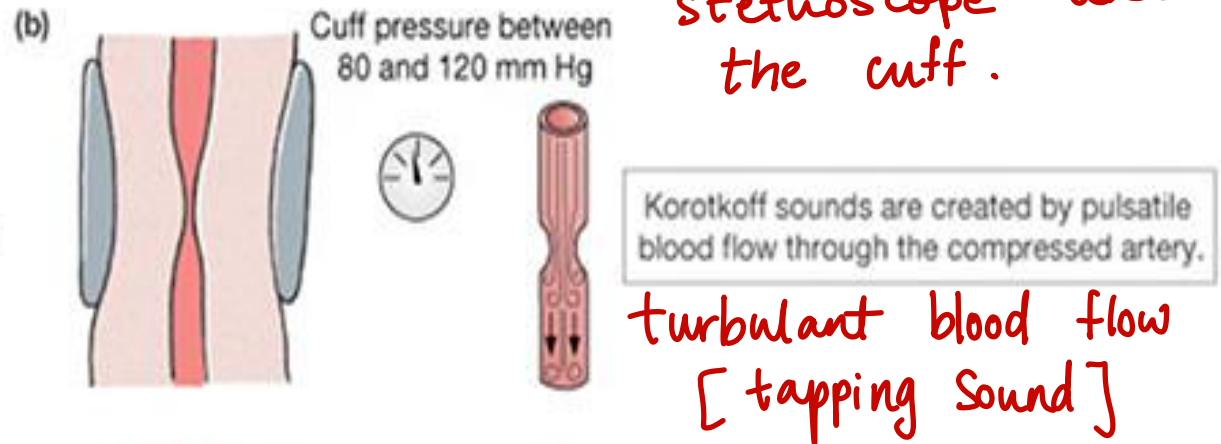
How to measure the blood pressure

1. Ask the patient to sit down and rest for ten minutes *physical / emotional stress $\Rightarrow$ $\uparrow$ BP*
2. Locate the brachial pulse *shouldn't move / talk during measurement*
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>



▲ Don't place the stethoscope under the cuff.



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

