



# Vital signs

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# **Blood pressure**

## **Arterial blood pressure**

- is a measure of the pressure exerted by the blood as it flows through the arteries

**Systolic pressure** – is the pressure of the blood as a result of contraction of the ventricles

**Diastolic pressure** – is the pressure when the ventricles are at rest

# Factors affecting blood pressure

- Age ↑
- Exercise ↑
- Stress ↑
- Race ↑ ↓
- Gender – after puberty ↓ women, after menopause ↑
- Medications ↑ ↓
- Obesity ↑
- Disease process ↑ ↓

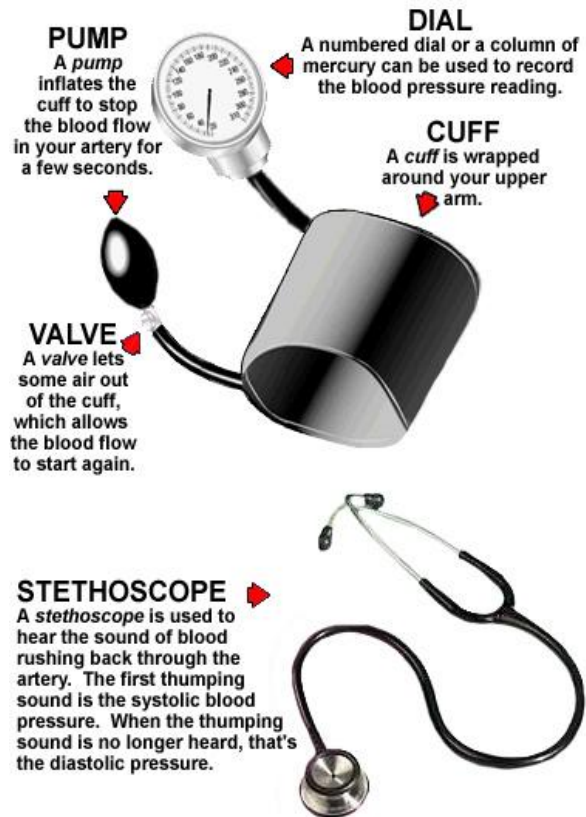
# Method

- **Direct measurement**— invasive monitoring, involves the insertion of a catheter into the brachial, radial, or femoral artery
- **Indirect methods (noninvasive)** — auscultatory and palpatory methods

# Korotkoff's Sounds

- ***Phase 1***- the pressure level at which the first faint, clear tapping or thumping sounds are heard (***systolic blood pressure***)
- ***Phase 2*** – the period during deflation when the sounds have a muffled quality
- ***Phase 3*** – the period during which the blood flows freely through an increasingly open artery and the sounds become crisper and more intense
- ***Phase 4*** – the time when the sounds become muffled and have a soft quality
- ***Phase 5*** – the pressure level when the last sounds is heard (***diastolic blood pressure***)

**Equipment** – stethoscope, blood pressure cuff of the appropriate size, sphygmomanometer (aneroid, mercury, electronic)



## *Preparation*

- ensure that the equipment is intact and functioning properly
- make sure that the patient has not smoked or ingested caffeine within 30 minutes prior to measurement

## *Performance*

- explain to the patient what you are going to do, why it is necessary
- position the patient appropriately (sitting unless otherwise specified)
- expose the upper arm

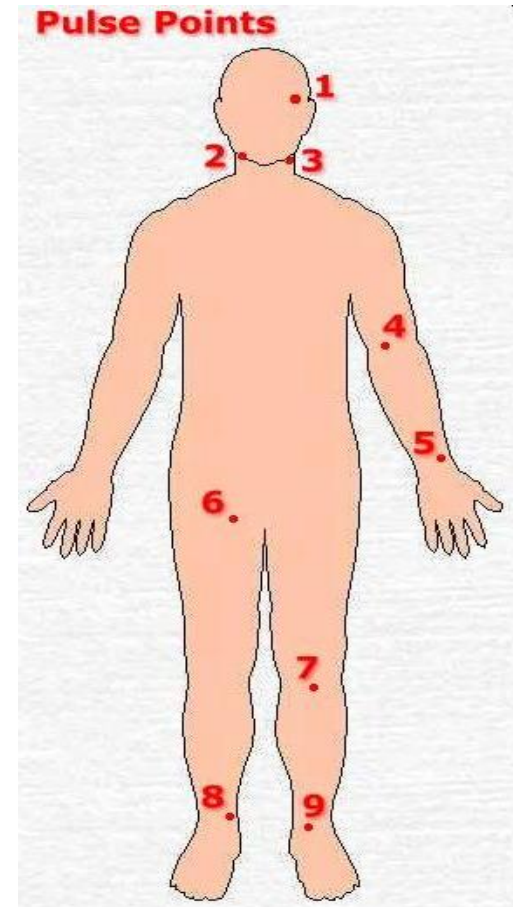
- wrap the deflated cuff evenly around the upper arm; locate the brachial artery; apply the centre of the bladder directly over the artery
- clean the earpieces and insert the ear attachments of the stethoscope in your ears
- place the bell side over the brachial pulse
- auscultate the patient's blood pressure
- pump up the cuff until the sphygmomanometer reads 30 mm Hg above the point where the brachial pulse disappeared
- release the valve on the cuff carefully so that the pressure decreases at the rate of 2 to 3 mm Hg per second
- identify each of the five phases, if possible



# Pulse

The rate of pulsation can be counted per minute over the following arteries:

- temporal, carotid, brachial, radial, femoral, popliteal and pedal artery, apical
- frequency, quality and rhythm are assess



# Body temperature

## Values of body temperature

<b>42°C and more</b>	death (denaturation of proteins)
<b>40°C - 42°C</b>	hyperpyrexia
<b>38°C - 39,9°C</b>	pyrexia (fever, febris)
<b>37°C - 37,9°C</b>	subfebris
<b>36°C - 36,9°C</b>	normal body temperature
<b>35,9°C and less</b>	hypothermia
<b>less than 34°C</b>	death (patient stops breathing)

# Methods for assessing body temperature

- oral, axillary, rectal, on the skin, in the ear

Ranges in normal body temperature:

- oral:  $37^{\circ}\text{C} \pm 0.3$  to  $0.6^{\circ}\text{C}$ ,
- rectal:  $37.5^{\circ}\text{C} \pm 0.3$  to  $0.6^{\circ}\text{C}$ ,
- axillary:  $36.5^{\circ}\text{C} \pm 0.3$  to  $0.6^{\circ}\text{C}$ .

## ***Low body temperature***

### **Some of the most common medical causes –**

hypothyroidism (under active thyroid), Addison's disease, dysfunction of the Hypothalamus, diabetes, sepsis or widespread infection, liver failure, kidney failure, drug or alcohol abuse, side effects of certain medication

- wearing insufficient warm clothes in winter season, sudden fall in extremely cold water,

**Symptoms** - drowsiness, slow heartbeat, slow breathing, shivering, weakness, confusion, excessive fatigue, purple fingers and toes, depression

**Treatment** – warm clothes, warm blanket, hot fluids - tea, soup, warm bath, warm intravenous fluids, warm air (warm bladder, peritoneal, pleural irrigation)

## ***High body temperature (fever)***

**Some of the most common causes** – infection, side effects of medications, hormonal imbalance, high intensity of exercises, skin problems, insufficient sleep, cancer, autoimmune diseases

**Symptoms** - shivering → stop → fever remain → sweating (seizure)

**Treatment** – cool liquids, cool compress, fluids with electrolytes, lukewarm bath, plenty of rest, sleep, medications (ibuprofen, acetaminophen, aspirin),

# Respirations

- is the act of breathing
  - ✓ external respiration
  - ✓ internal respiration
  - ✓ inhalation / inspiration
  - ✓ exhalation / expiration
  - ✓ costal / thoracic breathing
  - ✓ diaphragmatic / abdominal breathing

# Assessing respirations

- when the patient is relaxed (after exercise - to identify the patient's tolerance to activity)
  - ✓ rate
  - ✓ depth (normal, deep, shallow)
  - ✓ rhythms (regular, irregular)
  - ✓ quality
- ✓ eupnoea, bradypnea, tachypnea, apnoea

## **Equipment**

- watch with a second hand

## **Performance**

- observe or palpate and count the respiration rate (the patient's awareness that you are counting the respiratory rate could cause the patient voluntarily to alter the respiratory pattern)
- count the respiratory rate for 30 seconds if the respiration are regular / count for 60 seconds if irregular



**Thank you for your attention...**

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# References

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