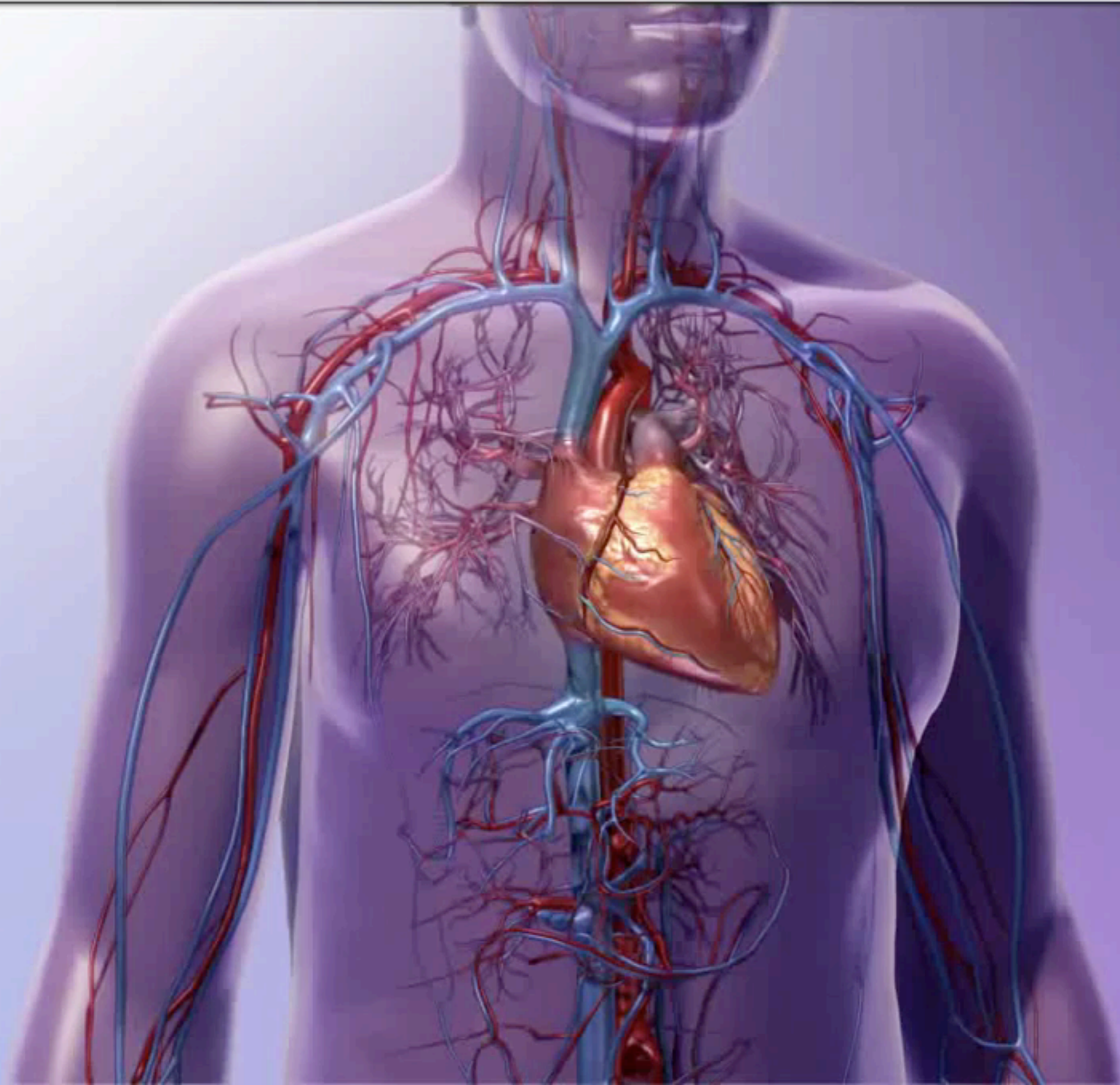


Blood Pressure and Vascular Disease





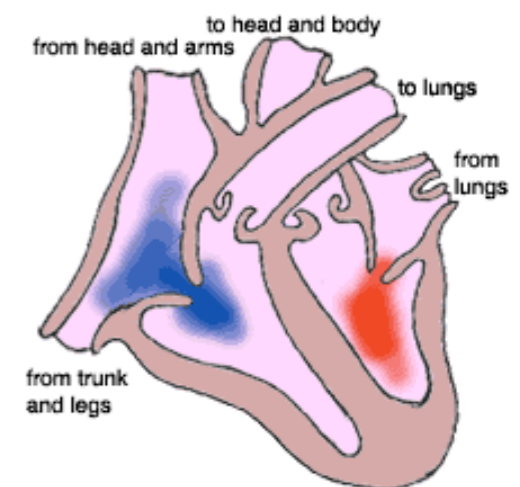


1. Heart rate

- average = 70/min

2. Stroke volume

- amount of blood forced out of the heart with every heartbeat
- average = 70 mL



2. Cardiac Output

- amount of blood pumped by the heart in one minute
(*measured in mL/min*)

= heart rate **x** stroke volume

---> indicates amount of oxygen getting to body

$$\begin{aligned} \text{Cardiac Output} &= \frac{\text{beats}}{\text{min}} \times \frac{\text{mL}}{\text{beat}} \\ &= \text{mL/min} \end{aligned}$$

The stethoscope

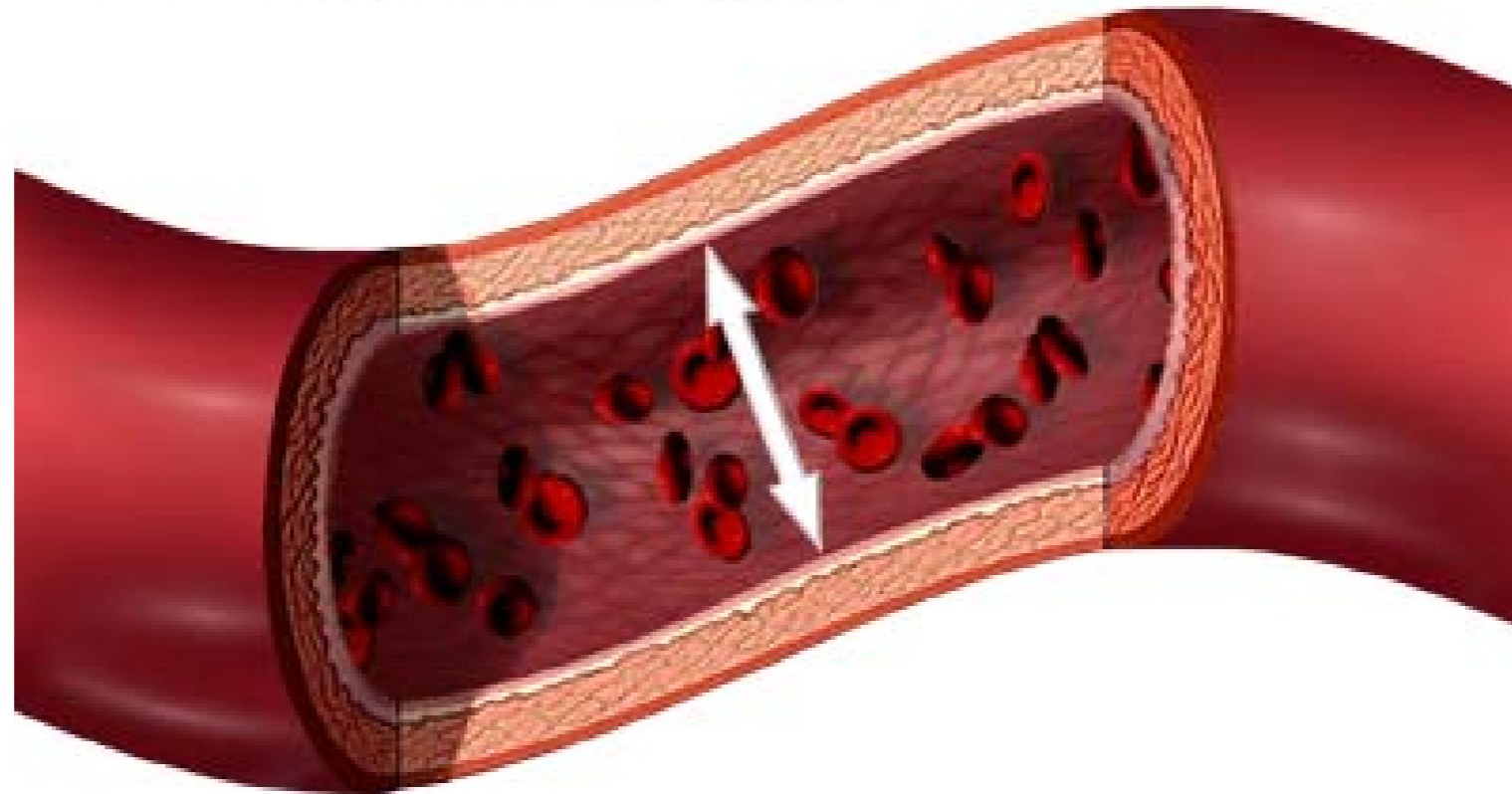
- 19th century invention
- improved the knowledge of the working of the heart
- before this doctors listen to the chest directly
 - ~~dirty patients~~
 - ~~obese patients~~
 - females
- first non invasive investigation of anatomy
 - diagnosis heart and lung issues



Systole

- **ventricles contracts** & pushes blood
- = highest blood pressure in the arteries

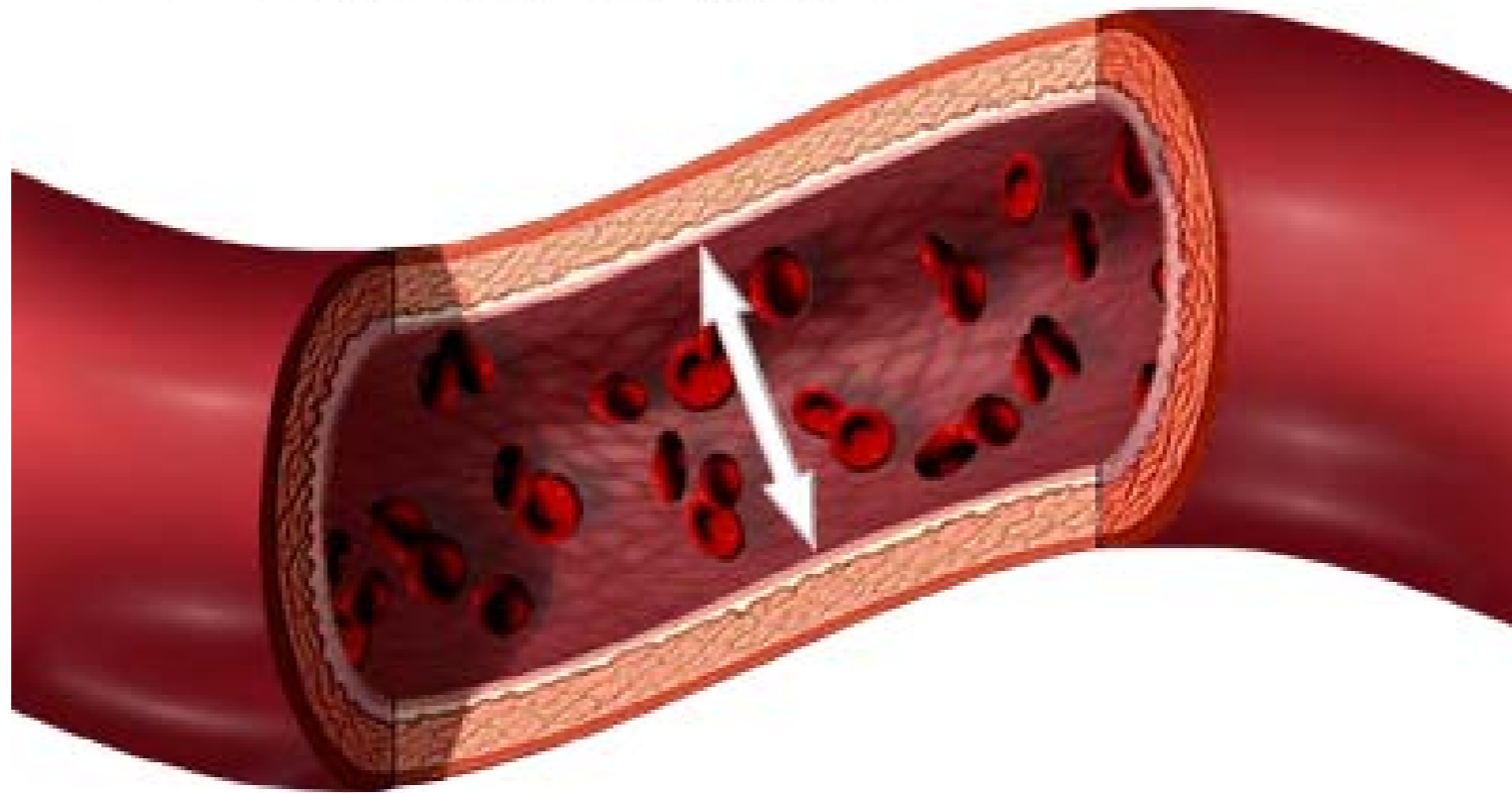
Blood pressure is the measurement of force applied to artery walls

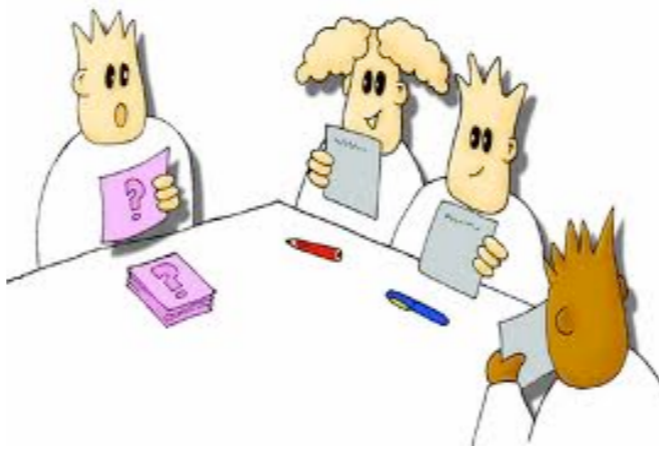


Diastole

- **ventricles relax** & heart fills with blood
- = lowest blood pressure in the arteries

Blood pressure is the measurement of force applied to artery walls





Which of the following represents **systolic** BP:

- the artery is at low pressure
- the artery is at high pressure
- the artery is in-between pressure
- the ventricles are contracting
- the atria are contracting
- tapping of the heart beat is first heard
- tapping of the heart beat disappears

- Blood pressure indicates the highest & lowest blood pressures

- a **sphygmomanometer** measures BP

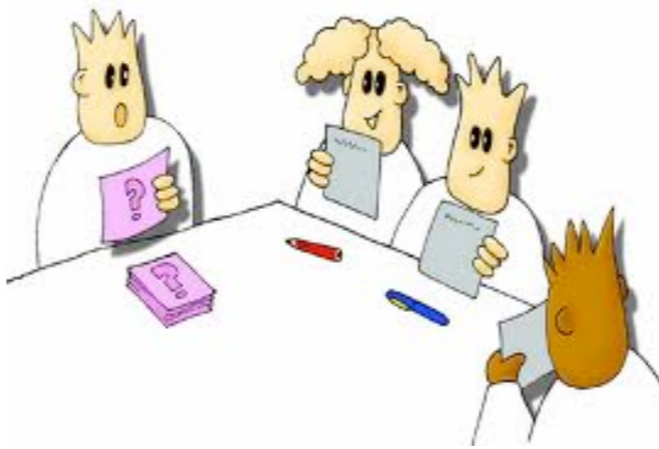
B.P. = systolic p (highest)
diastolic p (lowest)

“normal textbook adult” = $\frac{120}{80}$ mmHg



Factors affecting blood pressure

- **increase blood volume**
 - salty food causes water retention
 - excess fluid
- **increase artery resistance**
 - plaque build up, fatty diet (trans fats)
 - diameter change caused by hormone
 - a clot or thrombosis
- **increase heart rate or strength of heart beat**
 - stress
 - age
 - height
 - obesity



Which of the following indicates 'average' blood pressure?

140
95

110
65

80
120

127
80

122
84

Blood Pressure ranges

- = Low blood pressure
- = Normal blood pressure
- = Prehypertension
- = High blood pressure stage 1
- = High blood pressure stage 2
- = Hypertensive crisis

