

HEARTRATE, BLOOD PRESSURE, & DISEASE

HEARTBEAT CYCLE

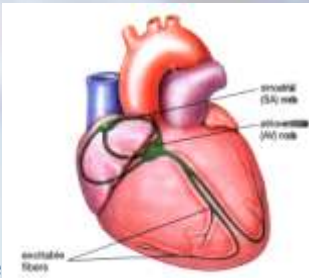
2 Main Periods:

1. **Diastole** – The period of heart relaxation. Blood flows into the heart. Pressure is at the lowest in the arteries.
2. **Systole** – The period of heart contraction. Begins with the contraction of the atria and then the ventricles. Pressure is at the highest in the arteries.

Control of Heartbeat

1. SINOATRIAL NODE (S-A NODE)

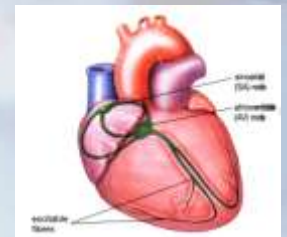
- Also known as the pacemaker
- Muscle cells located in the wall of right atrium
- Sends electrical impulse to the heart
- Atria contracts
- Impulse reaches the A-V Node



Control of Heartbeat

2. ATRIOVENTRICULAR NODE (A-V NODE)

- Cells at base of right atrium
- Impulse causes ventricles to contract



BLOOD PRESSURE

- Use an instrument called a **SPHYGMOMANOMETER** (blood pressure cuff) and a **STETHOSCOPE**.
- Normal is 120/80 mm Hg.
- 120 represents pressure when heart contracts (systolic pressure)
- 80 represents pressure when heart relaxes (diastolic pressure)

High Blood Pressure - Hypertension

- High blood pressure increases force on vessel walls
- Can damage blood vessels and organs
- Caffeine, nicotine, winning the lottery – any exciting or stressful event can lead to high blood pressure

HOW DO BP DRUGS WORK?

- Either causes the heart to beat less forcefully
- or they widen the blood vessels.

CARDIOVASCULAR PROBLEMS

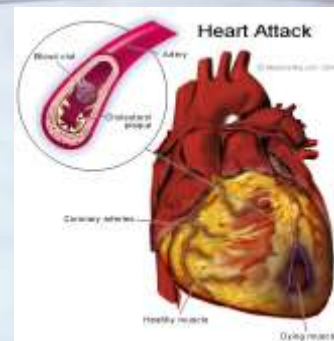
- Hypertension – high blood pressure
- **Toxemia** – pregnancy induced hypertension
- **Hypotension** – low blood pressure
- **Heart murmur** – an unusual sound during heartbeat due to improper closing of valves.
- **Stroke** – sudden death to brain cells due to a problem with blood supply.

Heart Attack

- Death of heart muscle from the sudden blockage of a coronary artery
- Can be caused by **Atherosclerosis**- arteries narrow due to a build up of cholesterol rich plaques on inner wall
- **Arteriosclerosis** – buildup of plaques under the inner wall



Approximately 1 Million Americans have a heart attack each year, and 400'000 die from it!



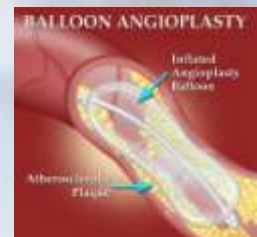
SIGNS

- Angina (chest pain), shortness of breath, nausea, sweating, anxiety.....



Treatment

Angioplasty – A surgical procedure whereby an inflated balloon forces the clogged artery to open.





Coronary Bypass

- When veins are removed from another part of the body and are attached to the heart in order to bypass a blocked artery.

