

**Blood Pressure:** The pressure that exerts against the inner blood vessels walls

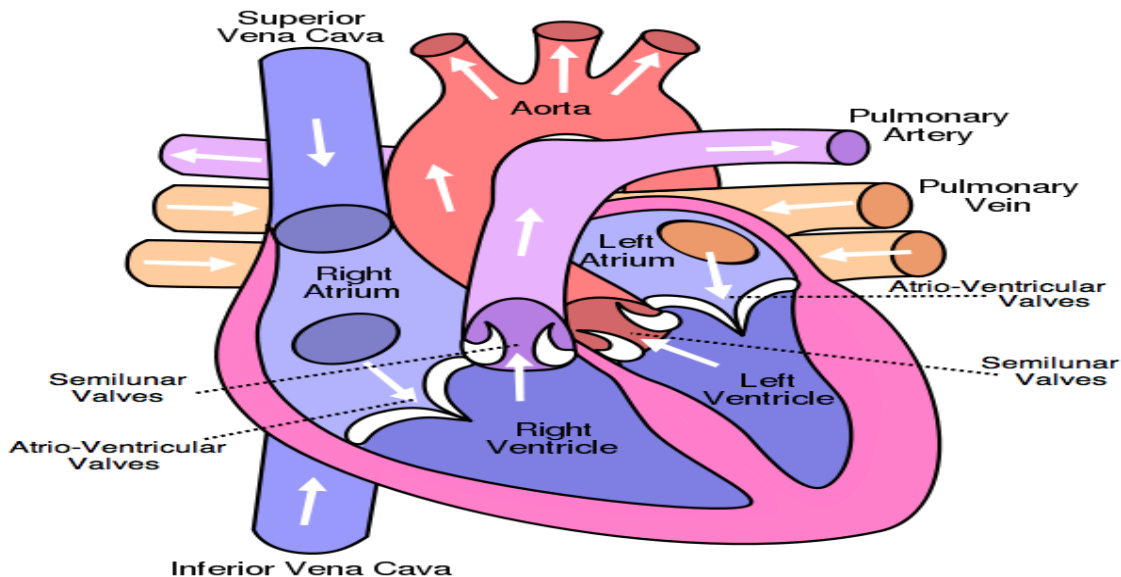
**Systolic pressure:** The pressure during peak (contraction)

**Diastolic pressure:** The pressure during the relaxation

### 6.2.1

-blood enters through right side, through superior or inferior vena cava

-The blood enters the right atrium



-goes through the right atrioventricular

-with contraction blood pumps through the right semilunar valve into the pulmonary artery

-lungs and picks up oxygen

when its back

-blood return through the pulmonary vein and goes to the left atrium

-contract; blood is pushed through the left atrioventricular valve and into the left ventricle

-the pumps blood through the left semilunar valve and into the aorta, distributes it to the rest of the body

Pulmonary circuit:

- right side of heart
- thin wall only have to send blood to the lungs
- operate at low pressure

Systemic circuit:

- left side of the heart
- thicker wall, have to pump blood to the rest of the body
- operate at high pressure

when u take ur pulse

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### 6.2.2

- The heart is a muscle must contract to pump blood
- The coronary arteries for a network of vessels and capillary beds to supply the heart with oxygenated blood and nutrients, its bring back the oxygenated blood and dumps it into the right atrium
- first blood vessels that ascend from the aorta

### 6.2.3

- All blood except from the lungs enters the body through the Vena cavas, and collects into the right atrium. The right atrioventricular valve pumps the blood to the right semilunar valve and then the blood is pumped into the pulmonary artery, where is taken to the lung
- Then when it come back, it comes through the pulmonary vein and into the left atrium, then with contraction is transported to the left atrium with the left atrioventricular valve. The blood is then pumped to the aorta and distributed to the rest of the body.
- VALVES MAINTAIN THE ONE WAY FLOW OF BLOOD
- when the atria contract the AV opens, and blood goes to the ventricle, when the ventricle contract the AV closes and the semilunar valve opens force blood out into arteries
- when pressure rises the semilunar valves close to ensure a one way trip

### 6.2.4

- The heart contraction is myogenic meaning it signal for cardiac contraction arises from its own muscle
- pacemakers initiate contractions, messages to the medulla of the brain (sections controlling heart beat rates)
- The walls of the right atrium have specific nerves called SA Nodes (message from brain to heart, beat faster)
- SA Nodes initiate the contraction of the cardiac muscle and acts as a pacemaker
- An adrenaline (epinephrine) is carried by the blood when it reaches the pacemaker it signals the increase of the beating
- Its stimulates the atria to contract and when its reaches the level that the junction between the atria and the ventricle exchange happens its stimulates another node the AVN node (carries message to the brain to slow down heart beat), which sends signal to begin ventricular contractions
- insure a delay between the atrial and ventricular contractions (so blood goes one way()), resulting in a lub dub heart sound.
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### 6.2.5

#### Differences between arteries, veins, and capillaries

Arteries	Veins	Capillaries
Take blood from the heart	Take blood to the heart	Take blood from arteries to veins
Blood under high pressure	Blood under low pressure	Pressures rises then gradually falls down as blood flows from arteries to veins
Blood flows in pulses	No pulse	Pulse gradually disappears
Thick muscular walls	Thinner walls	Walls are one cell thick
Small lumen	Large lumen	Leaky* and red blood cells travel in single file
No semi-lunar valves	Semi-lunar valves	No semi-lunar valves
Carry oxygenated blood (except pulmonary artery)	Carry deoxygenated blood (except pulmonary vein)	Blood slowly loses its oxygen

- feature to withstand and maintain high blood pressure: A
- Surface area for passing of blood: V

### 6.2.6

There are four main components to blood:

- Plasma - the fluid medium of the blood; dissolves nutrients like glucose
- Erythrocytes - red blood cells (involved in oxygen transport)
- Leukocytes - white blood cells, such as phagocytes (non-specific immunity) and lymphocytes (specific immunity; attack infection, destroy old cells)
- Platelets - responsible for blood clotting (haemostasis)

### 6.2.7

The following things are transported by blood:

- **N**utrients (e.g. glucose)
- **A**ntibodies
- **C**arbon dioxide
- **H**ormones
- **O**xygen
- **U**rea
- **H**eat (not a molecules, unlike all the others)

### H.5.1

- During one heartbeat there is two steps Systole and Diastole
  - **Atrial Diastole**
    - All muscles are relaxed and valves are closed
    - The semilunar valve is closed , the closing of it causes the second lub
    - blood is oxygenated and returning to the atria
  - **Atrial systole**
    - Atrium is in contraction due to the SA node

- blood pressure is higher in the Atrium than in the ventricle
  - blood moves down through the Atrioventricular valves
  - The pressure in the Atrium opens the valves
  - The semilunar valve is closed
- **Ventricle systole**
  - Ventricle is in contraction
  - Pressure is built up in the ventricle and needs to move to the atrium
  - The pressure in the ventricle causes the semilunar valves to open
  - blood passes to the arteries
- DELAY ONE SECOND BECAUSE OF TRANSFER FROM SA TO AV NODES (FIRST LUB)
- **Ventricular Diastole**
  - All muscles are relaxed and valves are closed
  - The semilunar valve is closed, the closing of it causes the second lub
  - blood is oxygenated and returning to the atria

### H.5.3

- Atherosclerosis is the narrowing of the arteries due to buildup of plaque
- damages to artery walls cause chronic inflammation; accumulation of lipids and cholesterol
- Atheromas develop in the arteries reducing the diameter of the lumen needing more pressure to get blood flow
- leads to formation of clots and blockages, if happen in the coronary arteries, lead to a heart attack (coronary thrombosis)

### H.5.5

Risk factors for coronary heart disease (CHD) include:

- Exercise – sedentary lifestyle or excessive exercise can both place a strain on normal heart activity
- Genetics – having hypertension (high blood pressure) or a family history of heart attacks increases the risk
- Gender – males are more at risk than females due to low estrogen levels (risk increases in women post-menopause as levels fall)
- Smoking – smoking raises blood pressure because nicotine causes vasoconstriction
- Obesity – being overweight places additional strain on the heart
- Diet – too much saturated fats and cholesterol promotes atherosclerosis, high salt levels and excessive alcohol intake are also risk factors
- Age – old age leads to less flexible blood vessels