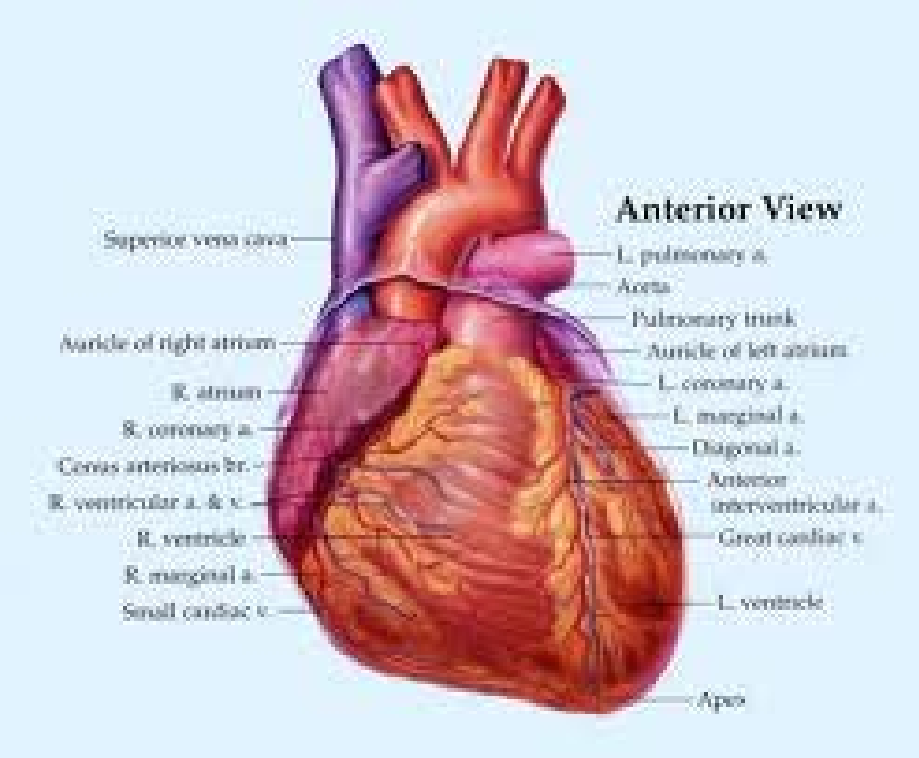
Circulatory System



Your Circulatory system includes the blood, heart, and blood vessels.

It moves materials to all parts of your body.

The movement of material into and out of your cells occurs by **diffusion**, or movement of material from an area of high concentration to a low concentration.

Movement also occurs by **active transport**, which is the opposite of diffusion.

The Heart controls blood flow through all parts of your body.

The Heart has four chambers:

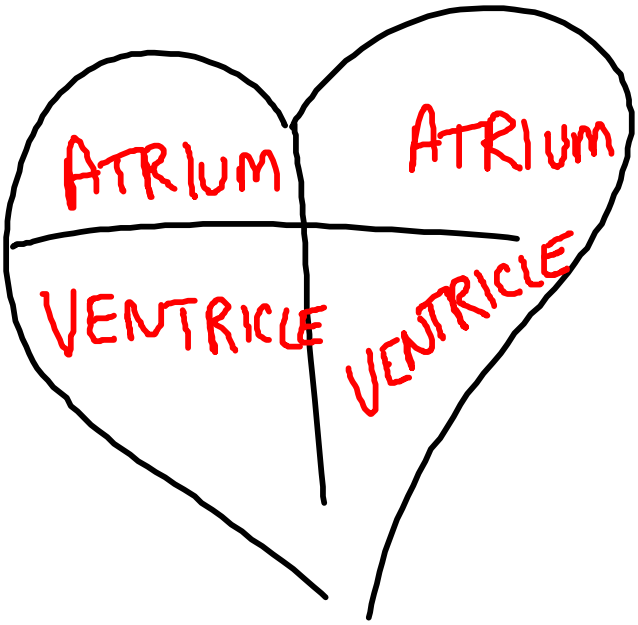
Atriums-upper chambers

2 ATRIUM

Ventricles-lower chambers

2 VENTRICLE

One-way valves seperates each atrium from the ventricle.


ATRIUM
ATRIUM
VENTRICLE
VENTRICLE

Blood flows in one direction- from atrium to ventricle.

A wall between the two atriums and ventricles prevent oxygen-rich blood and oxygen-poor blood from mixing.

Circulatory system is divided into three sections.

- Coronary Circulation
- Pulmonary Circulation
- Systemic Circulation

Coronary Circulation is the flow of blood to and from the tissues of the heart.

Pulmonary Circulation, the blood flows through the heart to the lungs, where carbon dioxide and other waste materials diffuse out, oxygen diffuses in, and the blood flows back to the heart.

Systemic Circulation moves oxygen-rich blood to all the organs and body tissues, except the heart and lungs, and returns oxygen-poor blood to the heart.

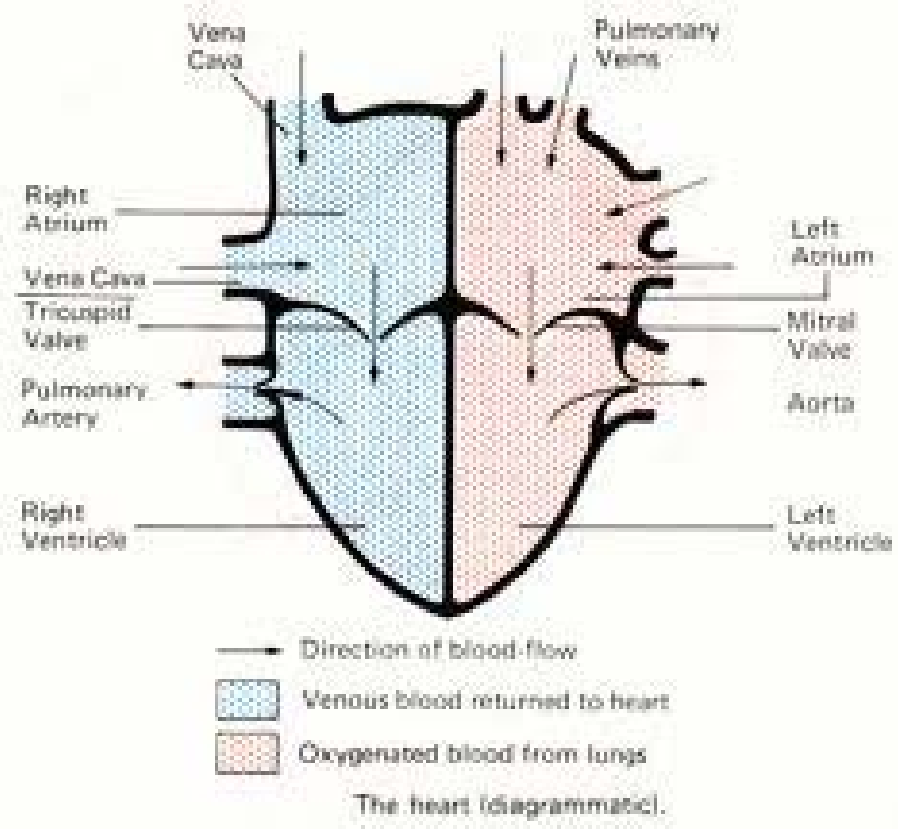
Blood Vessels carry blood to every part of your body.

Arteries are blood vessles AWAY from your heart.

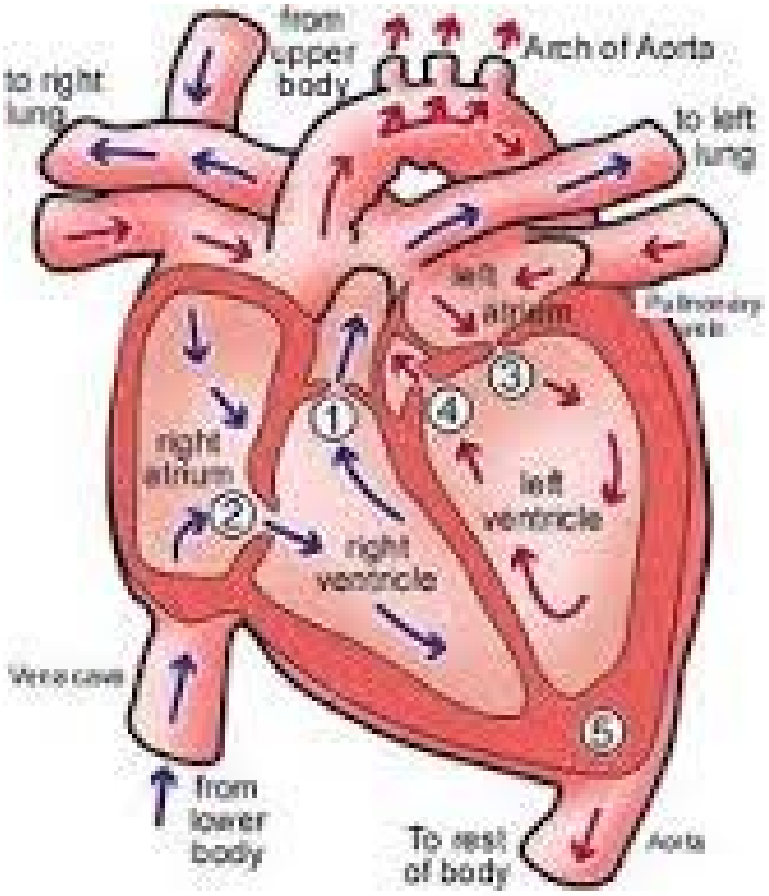
Each ventricle is connected to an artery.

The RIGHT ventricle connects to the PULMONRY artery.

The LEFT ventricle connects to the AORTA.



The heart (diagrammatic).


from upper body
Arch of Aorta
to right lung
to left lung
left atrium
right atrium
left ventricle
right ventricle
from lower body
To rest of body
Aorta

Every time your heart contracts, blood is moved from your heart into your arteries.

Veins carry blood back to your heart.

One-way valves keep blood moving toward the heart by muscle contractions throughout your body.

There are two major veins, the SUPERIOR VENA CAVA which returns blood from the head and neck, and the INFERIOR VENA CAVA which returns blood from the abdomen and lower body.

Capillaries are microscopic blood vessels that connect arteries to veins.

Nutrients and oxygen diffuse to body cells through capillary walls.

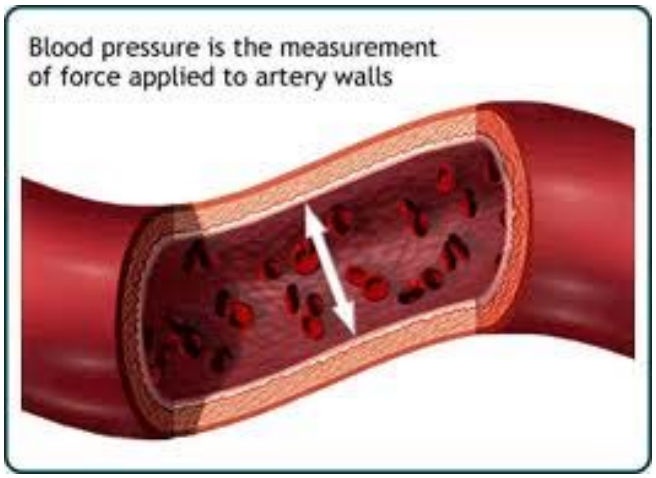
Waste materials and carbon dioxide diffuse from body cells to capillaries.

Blood pressure is the force of the blood on the walls of the blood vessels.

BP is heighest in ARTERIES and lowest in VEINS.

Blood pressure rises and falls with each heartbeat.

Normal pulse rates are between 60 and 100 beats per minute for adults.


Blood pressure is the measurement
of force applied to artery walls

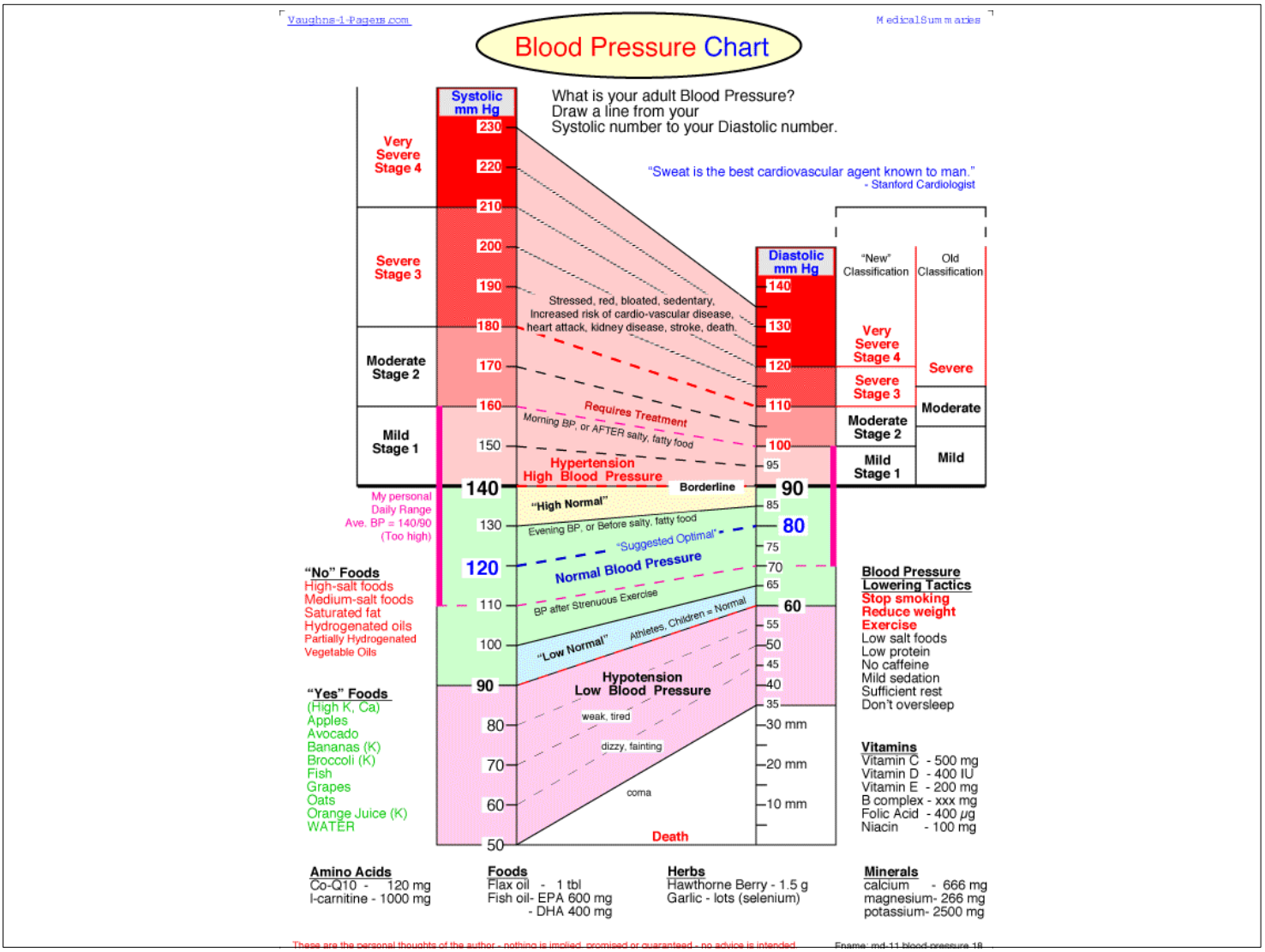

A.D.A.M.

Blood pressure is measured using two numbers.

FIRST-systolic-measures pressure caused by ventricles contracting and pushing blood out of the heart.

SECOND-diastolic-measures pressure that occurs as ventricles fill with blood.

Your brain tries to keep blood pressure constant. Your brain sends messages to your heart to raise or lower your blood pressure by speeding up or slowing down your heart rate.

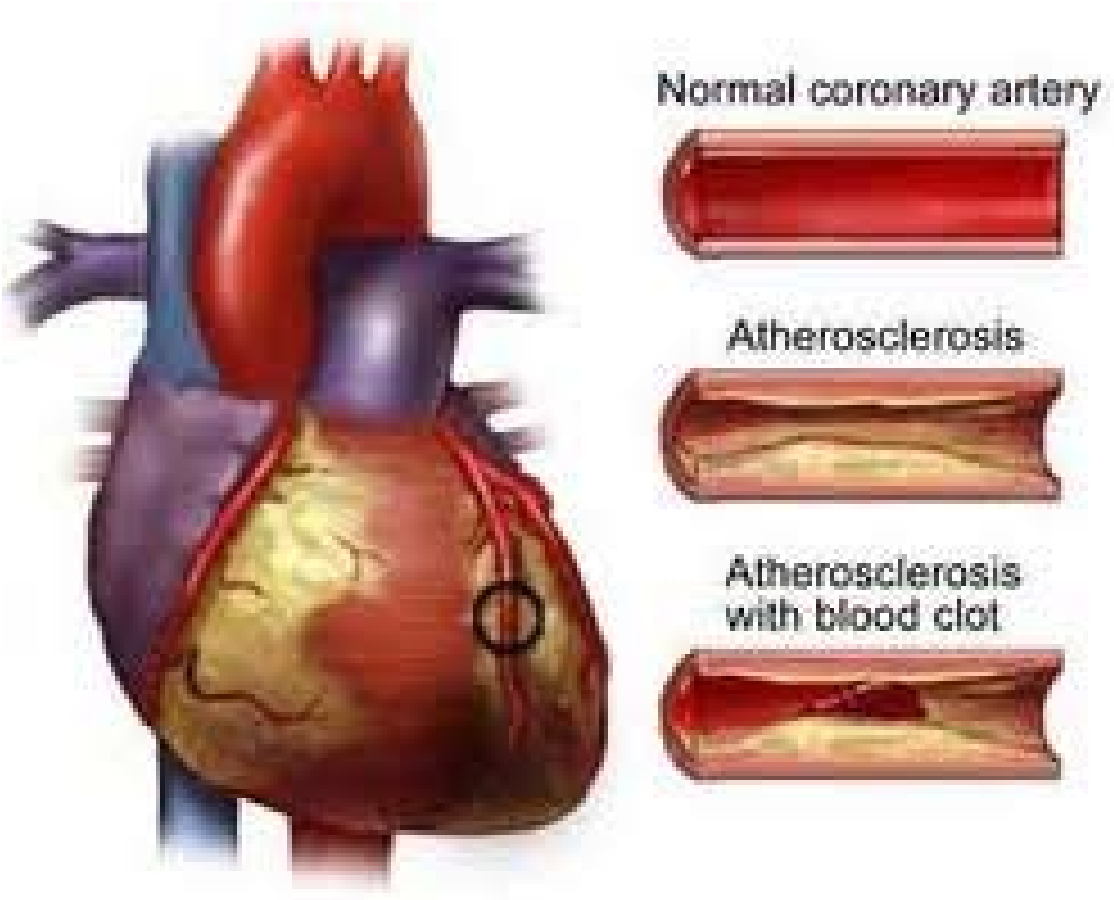

Vaughns-1-Pagers.com
MedicalSummaries
Blood Pressure Chart
What is your adult Blood Pressure?
Draw a line from your
Systolic number to your Diastolic number.
"Sweat is the best cardiovascular agent known to man."
- Stanford Cardiologist
Systolic mm Hg
Diastolic mm Hg
"New" Classification
Old Classification
Very Severe Stage 4
Severe Stage 3
Moderate Stage 2
Mild Stage 1
Severe
Moderate
Mild
Stressed, red, bloated, sedentary.
Increased risk of cardio-vascular disease,
heart attack, kidney disease, stroke, death.
Requires Treatment
Morning BP, or AFTER salty, fatty food
Hypertension
High Blood Pressure
Borderline
"High Normal"
Evening BP, or Before salty, fatty food
"Suggested Optimal"
Normal Blood Pressure
BP after Strenuous Exercise
"Low Normal"
Athletes, Children = Normal
Hypotension
Low Blood Pressure
weak, tired
dizzy, fainting
coma
Death
My personal
Daily Range
Ave. BP = 140/90
(Too high)
"No" Foods
High-salt foods
Medium-salt foods
Saturated fat
Hydrogenated oils
Partially Hydrogenated
Vegetable Oils
"Yes" Foods
(High K, Ca)
Apples
Avocado
Bananas (K)
Broccoli (K)
Fish
Grapes
Oats
Orange Juice (K)
WATER
Blood Pressure
Lowering Tactics
Stop smoking
Reduce weight
Exercise
Low salt foods
Low protein
No caffeine
Mild sedation
Sufficient rest
Don't oversleep
Vitamins
Vitamin C - 500 mg
Vitamin D - 400 IU
Vitamin E - 200 mg
B complex - xxx mg
Folic Acid - 400 µg
Niacin - 100 mg
Amino Acids
Co-Q10 - 120 mg
l-carnitine - 1000 mg
Foods
Flax oil - 1 tbl
Fish oil- EPA 600 mg
- DHA 400 mg
Herbs
Hawthorne Berry - 1.5 g
Garlic - lots (selenium)
Minerals
calcium - 666 mg
magnesium- 266 mg
potassium- 2500 mg
These are the personal thoughts of the author - nothing is implied, promised or guaranteed - no advice is intended.
Fname: md-11-blood-pressure-18

Cardiovascular disease- Leading cause of death in the US.

Artherosclerosis: Fatty deposits build up on arterial walls and clog arteries.

Artherosclerosis can occur in any artery in the body. Deposits in coronary arteries are especially serious.

If a coronary artery is blocked, a heart attack can happen.


Normal coronary artery
Atherosclerosis
Atherosclerosis
with blood clot

Hypertension-High blood pressure.

When blood pressure is high, the heart has to work harder to keep blood flowing.

Can be caused by artherosclerosis.

Prevention:
1. Follow a good diet, avoid salt, sugar, cholesterol, and saturated fats.
2. Eliminate excess weight, which forces the heart to pump faster.
3. Exercise strengthens the heart, lungs, and helps control cholesterol and blood pressure.

4. Manage stress which causes the heart to pump faster.
5. Avoid smoking which increases the amount of carbon dioxide in the blood and makes the heart beat faster.

Blood

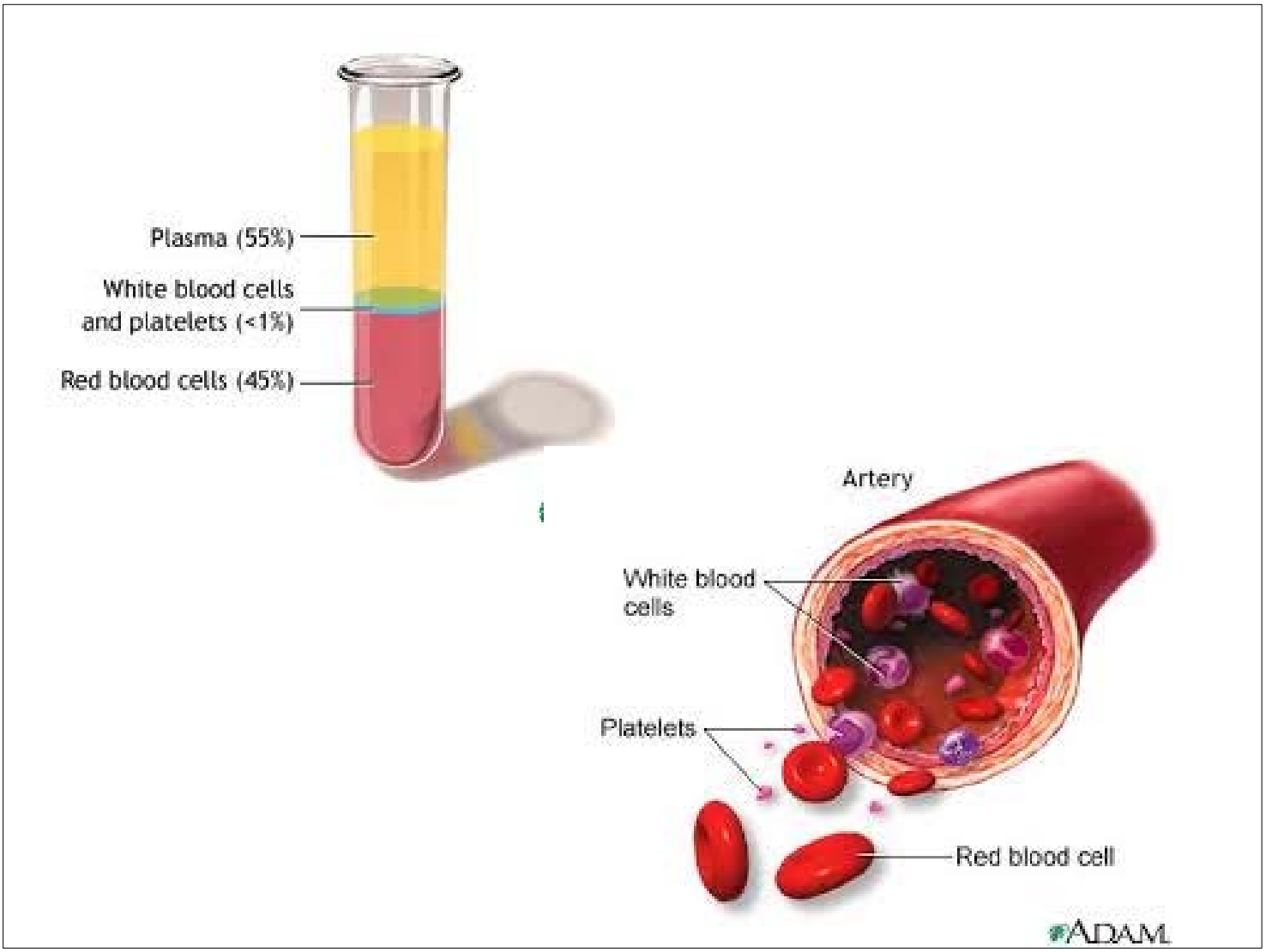
Blood carries oxygen from your lungs to your body cells and carbon dioxide from your cells to your lungs.

Blood carries waste products from your cells to your kidneys to be removed.

Blood transports nutrients to your body cells.

Cells and molecules in blood help fight infections and heal wounds.

Parts of blood:
PLASMA-Liquid part of blood.
Made mostly of water.
Nutrients, minerals, and oxygen are dissolved in plasma.
Plasma carries wastes from cells.


Plasma (55%)
White blood cells and platelets (<1%)
Red blood cells (45%)
Artery
White blood cells
Platelets
Red blood cell
ADAM.

RED BLOOD CELLS-contain hemoglobin, which is a chemical that can carry oxygen and carbon dioxide.

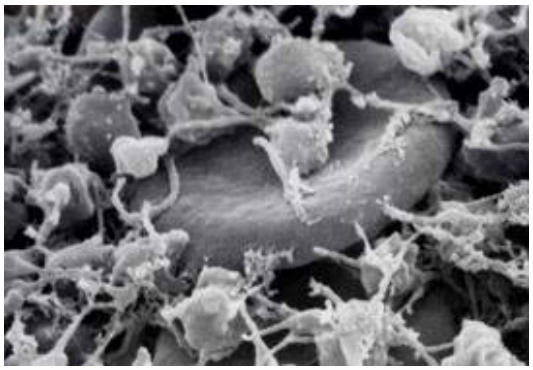
Red blood cells have a life span of 120 days. They get replaced quickly.

WHITE BLOOD CELLS-fight bacteria and viruses.Your body reacts to invaders by increasing the amount of white blood cells.

White blood cells enter infected tissues, destroy bacteria and viruses, and absorb dead cells.

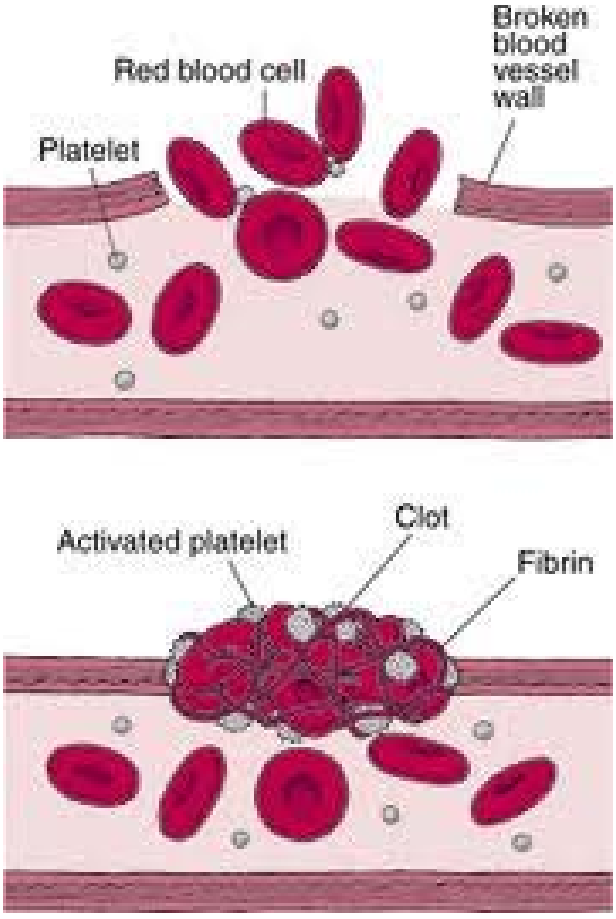
The life span of a white blood cell is a few days to many months.

PLATELETS-are irregularly shaped cell fragments that help clot blood.
They release chemicals that help form filaments of fibrin.
Their life span is about 5 to 9 days.



Blood Clotting: Platelets and clotting factors plug up a wound.
1. Platelets stick to wound and release chemicals.
2. Clotting factors carry out chemical reactions.
3. Threadlike fibers, called fibrin, form a sticky net.

4. The net traps blood cells and plasma and forms a clot.
5. Skin cells then begin the repair process.


Broken blood vessel wall
Red blood cell
Platelet
Clot
Activated platelet
Fibrin

BLOOD TYPES
A, B, AB, O

Based partly on antogens. They are chemical identification tags in the blood. Type O has no antigens, and can donate to any type.

Blood types are also based on antibodies.

Proteins that identify substances that do not belong in the body, such as other blood types, and destroy them.
Type AB has no antibodies and can receive blood from any type.

Rh Factor-is another chemical identification tag in blood.

If people lack the Rh factor (Rh-) receive Rh+ blood, they will produce antibodies against the blood.

Antibodies cause clots to form in blood vessels.

Blood Disease:
Anemia affects red blood cells. Body tissues can't get enough oxygen and are unable to carry on usual activities.Causes include loss of large amounts of blood, diet lacking iron, or heredity.

Leukemia-Affects white blood cells.
White blood cells are made in excessive numbers. The excess cells are immature and don't fight infection well. These immature cells fill in the bone marrow and crowd out normal cells.

The Lymphatic System

Collects tissue fluid and returns it to the blood

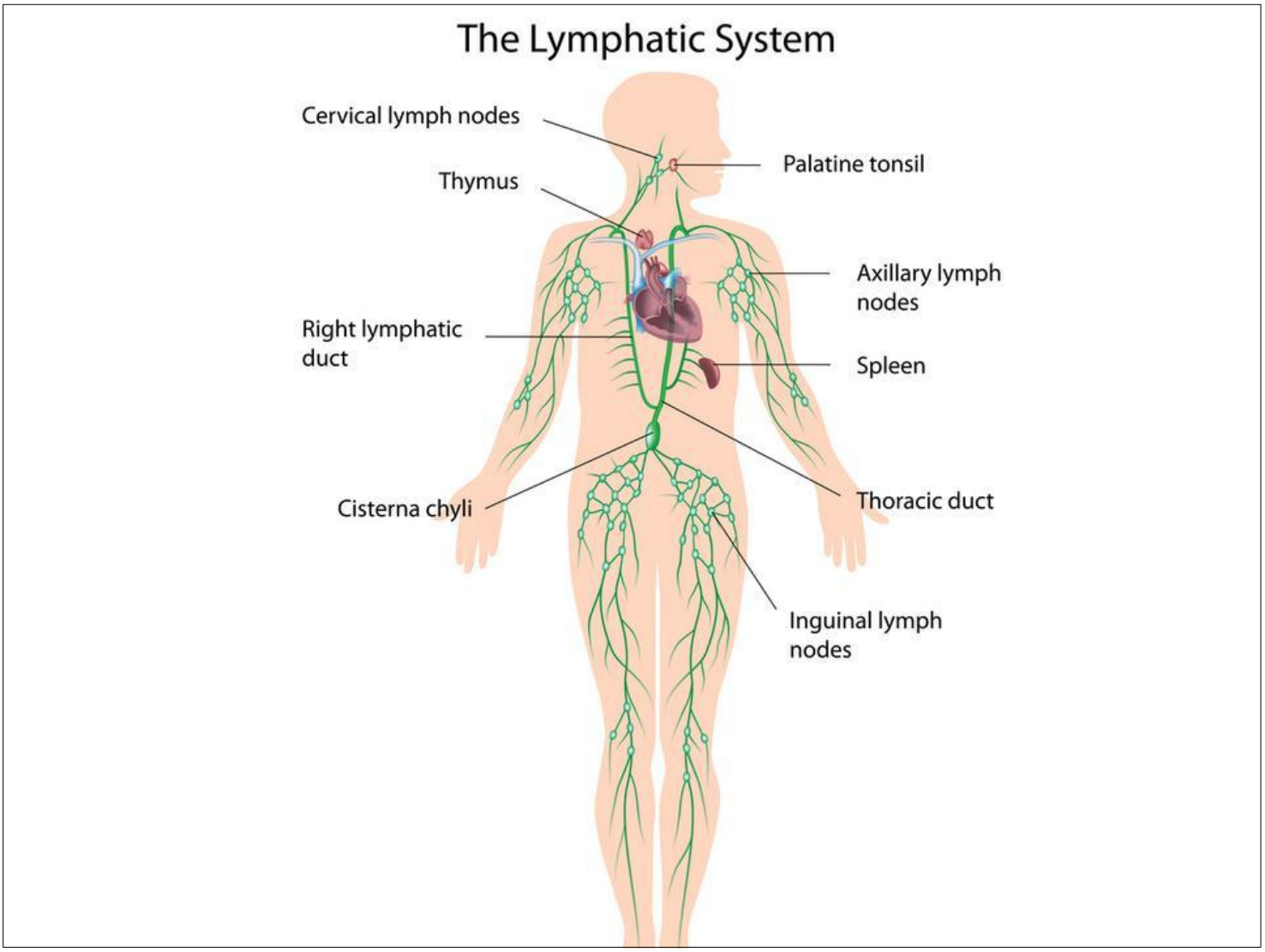
Lymph-Tissue fluid that has diffused into the lymphatic capilaries. Contains water and dissolved substances. Contains **Lymphocytes** (type of white blood cell that helps defend against disease)

Lymph is carried through lymphatic capillaries and vessels to large veins near the heart.

It is moved by contraction of muscles.

Lymphatic vessels have valves to keep lymph from flowing backwards.

Lymphatic Organs
Lymph Nodes: bean-shaped organs found throughout the body that filter microorganisms and foreign materials from lymphocytes


The Lymphatic System
Cervical lymph nodes
Palatine tonsil
Thymus
Axillary lymph nodes
Right lymphatic duct
Spleen
Cisterna chyli
Thoracic duct
Inguinal lymph nodes

Tonsils protect your body from harmful microorganisms that enter through mouth and throat.

Thymus, behind the sternum, makes lymphocytes.

Spleen, behind the stomach, filters out damaged red blood cells and destroys bacteria.

HIV attacks lymphocytes called the helper T-cells.