4.8 Classwork and Evaluation

Slides 14-30

Capillaries

- Tiny blood vessels that connect arteries to veins
- Transfers oxygen and nutrients to the cells
- O2 can pass through thin walls from arterial blood into organ/tissue cells
- CO2 passes into capillaries to get carried back by veins to heart/lungs

Coronary Arteries

- Heart's own system of blood vessels
- Located around the heart muscle to provide blood and oxygen to all parts of the heart
- 2 primary coronary arteries
  - Right coronary artery; feeds right & bottom left ventricle and right atrium
  - Left main coronary artery; supplies blood to the rest of the heart

Blood

- Only tissue that can flow through the body
- Carries oxygen and nutrients to all parts of the body
- Transports waste products back to lungs, kidneys, and liver for disposal
- Essential component of the immune system
- Crucial for fluid and temperature balance
- Composed of plasma and billions of cells

Plasma

- Yellowish part of the blood
- River where the blood cells travel
- 55% of total volume
- Carries blood cells, nutrients, waste products (CO2), clotting proteins, hormones

Blood -- RBCs & Hemoglobin

- Red Blood Cells (erythrocytes)
  - Transports oxygen
  - % of RBCs in total blood volume → hematocrit
- Hemoglobin
  - Takes from high density O2 volumes and brings them where O2 is less abundant
  - "Seatbelt" for oxygen on RBC

Blood -- White Blood Cells

- Able to change according to the need and situation in the body
- Can leave the bloodstream, sliding from vessel walls & attacking invaders

Blood -- Platelets

- "Clotting agents" of blood
- Damaged tissue triggers platelets to be release and cause blood clotting

Heart's Conduction System

- Electrical system
- Regulates the pumping of the heart
- SA node (sinoatrial)
  - Normal pacemaker, in the wall of RA, bas c rate (70-80)
- Impulse from SA to atria
- Impulse also to Atrioventricular node

- ❏ AV node; internal septum, delays impulse by .1 sec.

Flow of Blood through Heart

- ❏ Superior/inferior vena cava
- ❏ Right atrium
- ❏ Tricuspid valve
- ❏ Right ventricle
- ❏ Semilunar valve/pulmonary
- ❏ Pulmonary artery
- ❏ Lungs
- ❏ Back to heart via pulmonary vein
- ❏ Left atrium
- ❏ Bicuspid valve
- ❏ Left ventricle
- ❏ Semilunar valve
- ❏ Aorta
- ❏ Organs in the body

Aneurysm

- ❏ Abnormal dilation of an artery or vein
- ❏ Weakened cell wall from; congenital defect, systemic disease, atherosclerosis, infection, trauma

Embolism

- ❏ Occlusion of a vessel by an object, the embolus, that has been transported to the site of occlusion, through the cardiovascular system

Congestive Heart Failure (CHF)

- ❏ Caused by coronary atherosclerosis, persistent high blood pressure, multiple myocardial infarctions

Clinical Problems

- ❏ MI ~ myocardial infarction
  - ❏ Death of area of the heart muscle from lack of oxygen
  - ❏ Replaced with scar tissue
  - ❏ Results depend on size & location of damage
  - ❏ Heart attack
- ❏ Blood Clot
  - ❏ Use clot dissolving drugs
  - ❏ Balloon angioplasty
- ❏ Angina Pectoris
  - ❏ Heart pain from ischemia (lack of oxygen + blood pressure) of cardiac muscle

Surgical Procedures

- ❏ Angioplasty
- ❏ By-pass
- ❏ Open-heart

Blood Pressure

- ❏ Heart pumps blood into arteries; surge of blood filling vessels creats pressure against the vessel walls

- 2 number measurements
    - Systolic ~ high pressure (avg. 120)
    - Diastolic ~ low pressure (avg. 80)
- Pulse pressure; difference between diastolic and systolic pressures

Pulse

- Rhythmic beating of the heart
- Created by alternating expansion and contraction of artery as blood flows through
- 7 areas where pulse can be felt
    - Brachial artery
    - Common carotid artery
    - Femoral artery
    - Dorsalis pedis artery
    - Popliteal artery
    - Radial artery
    - Temporal artery