Week 8 Lecture 2

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1 Administrative drivel

- The 2nd draft of the paper is **not** due today – to be anounced.

2 Anatomy and Physiology

2.1 Cardiovascular system continued...

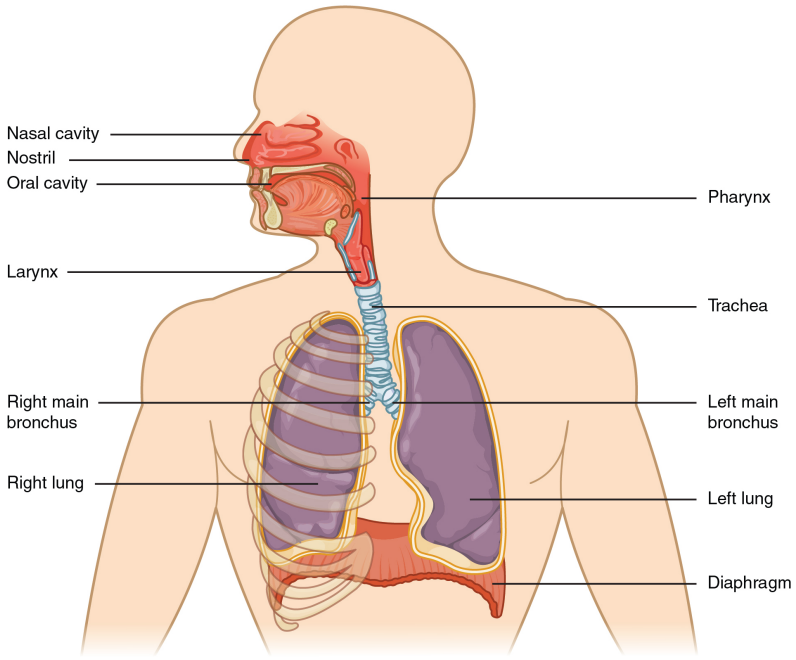
2.1.1 Cardiovascular disease: blood vessels

- Most CVD (cardiovascular disease) is caused by blockages in the vessels
- **Atherosclerosis** is the hardening of the blood vessels
  - Colesterol accumulates in one spot (in the wall) forming a plaque
  - Blood can clot at the plaque forming a **Thrombus**
  - Obstructed artery increases blood pressure
  - Thrombus can break free to lodge in and block a smaller vessel == **embolus**
  - An **embolism** is a blocked vessel
  - if the thrombus gets loose, it can move to a vessel with a smaller diameter, blocking the vessel, which can cause a stroke or heart attack
  - they form more in the legs in older people
- **Myocardial infarction** (heart attack)
  - Death of part of the heart beause its own blood suply is blocked
    - the muscle has to switch to anarobic (eek)
  - typically from a thrombus in the coronary arteries
  - temporary loss of O_2 makes heart act like a cramped muscle $\rightarrow$ pain $\equiv$ **angina**
- Bipass surgery is one of the ways to deal with one of these obstructions
  - A vessel is inserted to bypass the blocked area
  - this is very effective, but usually only viable for about 15 years.
  - more common in men
- **Aneurysm** (weakened vessel – artery or vein)
  - Weak spot in artery ballons under pressure
  - weak spot can burst, causing internal bleeding
  - for arteries outside the brain, the weakened artery can be sheethed

- **Stroke:** embolism or aneurysm in the brain
  - Symptons include loss of motor function, sensation, speech, or vision
  - typically on one side of the body
  - symptoms can be reversed if get to the hospital within minutes
- **Hypertension:** high blood pressure
  - Systolic BP ¿ 140 mmHG
  - Diastolic BP ¿ 90 mmHG
  - causes: diet, genetics
  - key risk: capillaries leak or burst, leading to stroke

2.2 Respiratory system

- Functions:
  - Acquire O_2
  - Expel CO_2
  - Maintain blood pH – by regulating CO_2 (spits into carbonic acid HCO_3 and a hydrogen ion, the latter elevates the pH)
  - pH at tissue is slightly higher allowing oxygen to more easily disolve into the blood
  - Produce sound



- Upper resperiatory tract:
  - Nose, mouth, and pharynx
    - nasal cavity, nostril, oral cavity, pharynx, larynx
    - brings in air
    - warms, moistens, and filters air

    * air in the lungs it 100% humidity
- When breathing in, the nasal bones cool, warming the air, and vice versa on the way out (likewise, condensation in the nose humidifies the air, and recondenses in the nasal cavity on the way out)
- Trachea
    * Move air from upper tract to lungs
    * carilage holds tracheo open
    * smooth muscle between that can change the size of the trachea
- Bronchial tree
    * bronchi, to the bronchioles,, then at the end of the broonchiloi are Alveoli
- Alveoli are where the gass exchange occurs (looks like a little grape)
    * large surfaace area