Week 8 Lecture 1

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1 Administrative drivel

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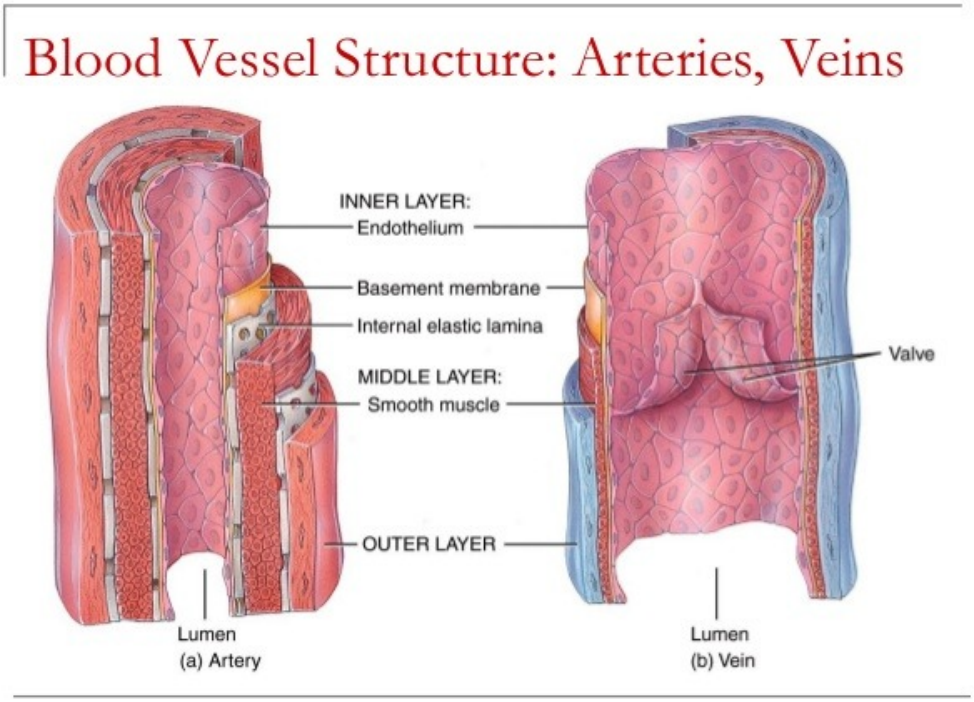
2 Anatomy and Physiology

2.1 Cardiovascular system continued...

2.2 Blood vessels

- Blood pressure is usually lower in veins than arteries
- veins have check valves to prevent the blood from moving backward
  - Helpful in moving blood through the circulatory system
  - every time you move, the muscles get wider, squeezing the blood vessels, but the blood can't go backward's to make room of this compression due to the valves, so the blood has to resume it's journey to the heart
- **Capillaries**
  - Picks up blood from the arterials, through the tissues, and thenn to the veinules
  - Smallest blood vessls – typically 1 blood-cell wide
  - important because virtually all exchanges between tissue and blood happen in the capilaries
  - capilaries have very thin walls (1 cell thick, with gaps) allowing things out (and in through diffusion)
  - **Capillary bed** == interwoven net of capillaries entwined throughout *all* tissue.
  - this means the body can control which tissues get more/less blood.
  - Capillary flow is regulated by : smooth muscle cells, *precapillary sphincters*, wrapped around the small arteries prior to capillary beds can contract or relax, under unconscious nervous control (each instance is 1 muscle cell)
    - open == vasodialation
    - closed == vasoconstriction
  - there is a thorough-fare channel (which is itself a capillary) that bipasses the blood past a capilary bed when vasoconstriction occurs.
  - Adjustable capillaries are found in nearly all tissues
  - Not all capillary beds are active at the same time
    - Turned up/down by precapillary sphincters
  - Vasoconstriction/dialation is used for body temperature regulation
    - renods desease causes to much vasoconstriction in the hands

    - After exercise, skin capilary beds open up
- closer look at blood vessels:



- Veins are less muscular than arteris, and move the blood much more slowly with very little pressure than the arteries
- Veins suffer injury earlier in life since they have a thinner (weaker) structure).
    - Valves – prevent back flow
        - Varicose veins==failed valves
        - Assist in pumping blood
- Vessel injuries:
    - Capillaries are: low pressure and low volume
        - suppose you cut yourself
        - Slow ooze of little blood
    - Veins are: large volume but low pressure
        - suppose you cut yourself
        - Slow ooze of lots of blood
    - arteries are: large volume but high pressure
        - suppose you cut yourself
        - Jets of lots of blood the quirts with pulse
        - these are the most dangerous! won't clot due to high pressure.
- clicker q: What kind of muscle do blood vessels have? Smooth