

Lecture 10: Blood Pressure

1. Basics of Blood Pressure
2. Non-invasive Blood Pressure Measurement
3. Auscultatory Method

★ Student presentations (Mar 10+12)

→ Teams of 2-3 students

→ 20 min powerpoint

- Disease or medical condition
- Electronic instrumentation

← e.g. ablation catheter

- PreLab due at lab session

- Lab 3 report due Fri (Feb 14)
(Template on course website)

- Exam #1 problems due next Mon (Feb 17)

→ Counts as HW

→ Re-do all 4 problems

- Ellis Hospital Tour ← Mar 10²
(still working on this...)

0. Review EEG (Electroencephalography)

Alpha 8-13 Hz
Awake, resting state



Beta 14-30 Hz

Beta I: similar to alpha



Beta II: Agitation

Theta 4-7 Hz
Frustration

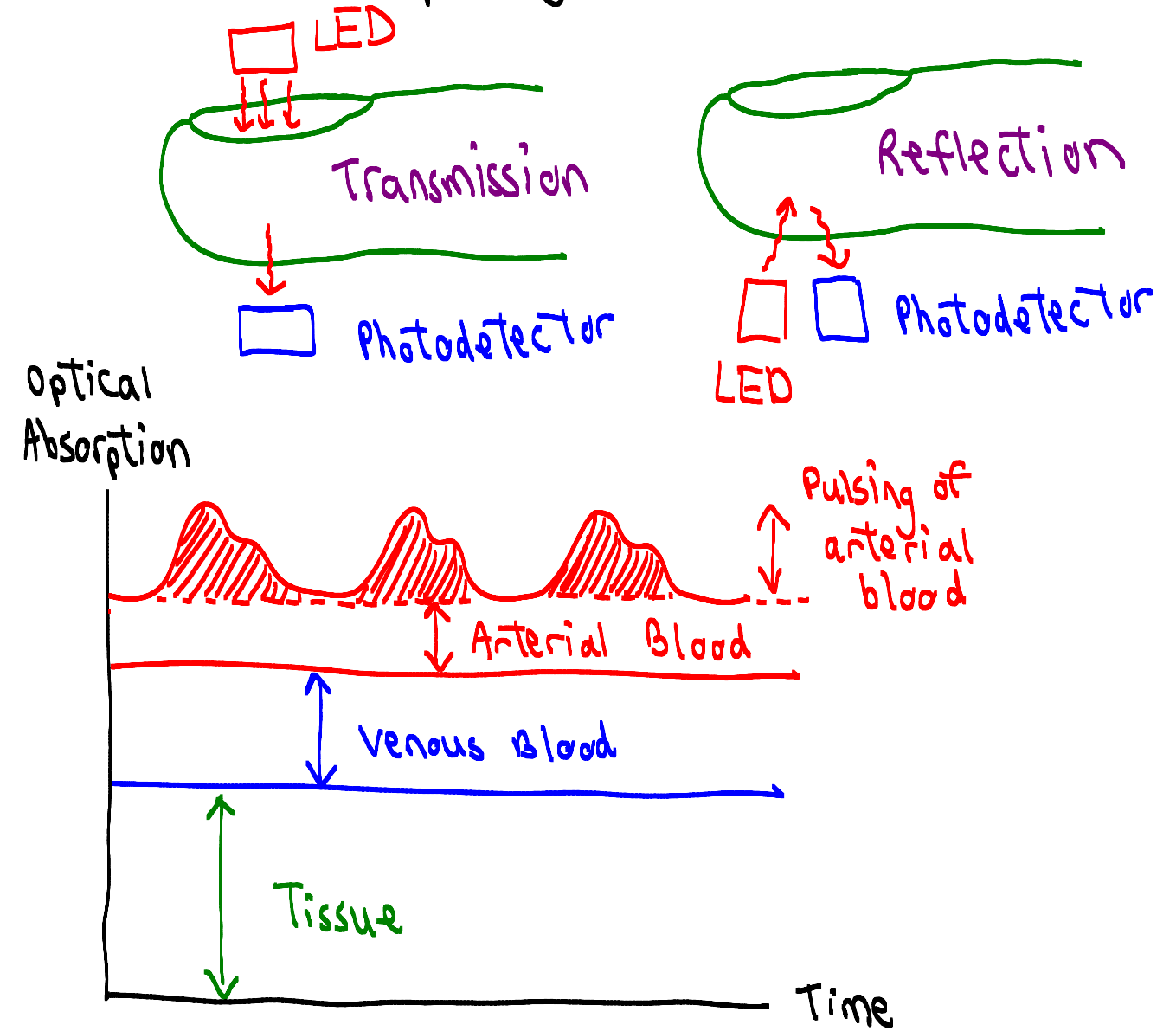


Delta below 3.5 Hz
Deep sleep...



Photoplethysmography (PPG)

(10.0)



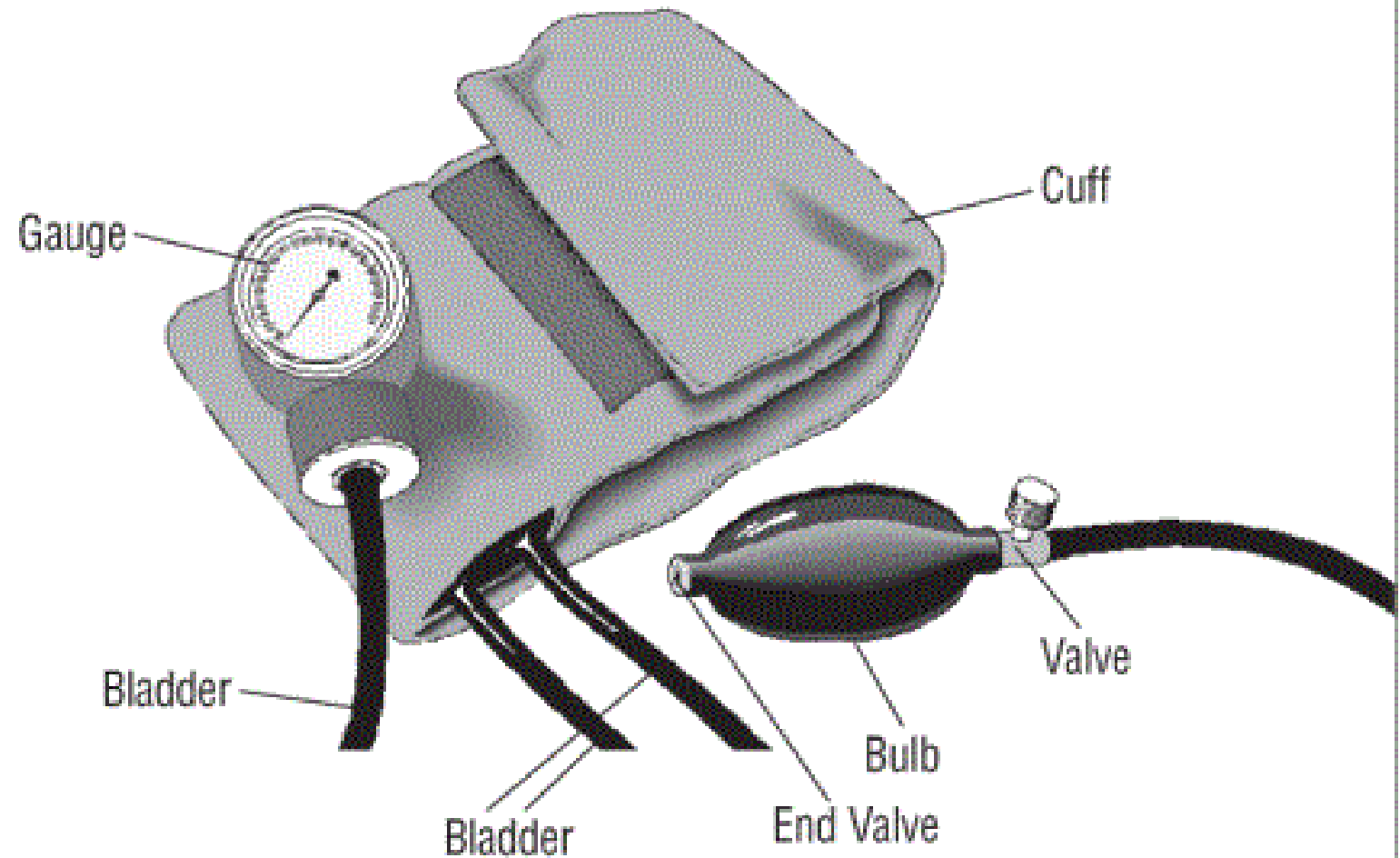
Moving on from heart rate to ...

1. Basics of Blood Pressure ← Arterial blood pressure

A. Clinical Significance

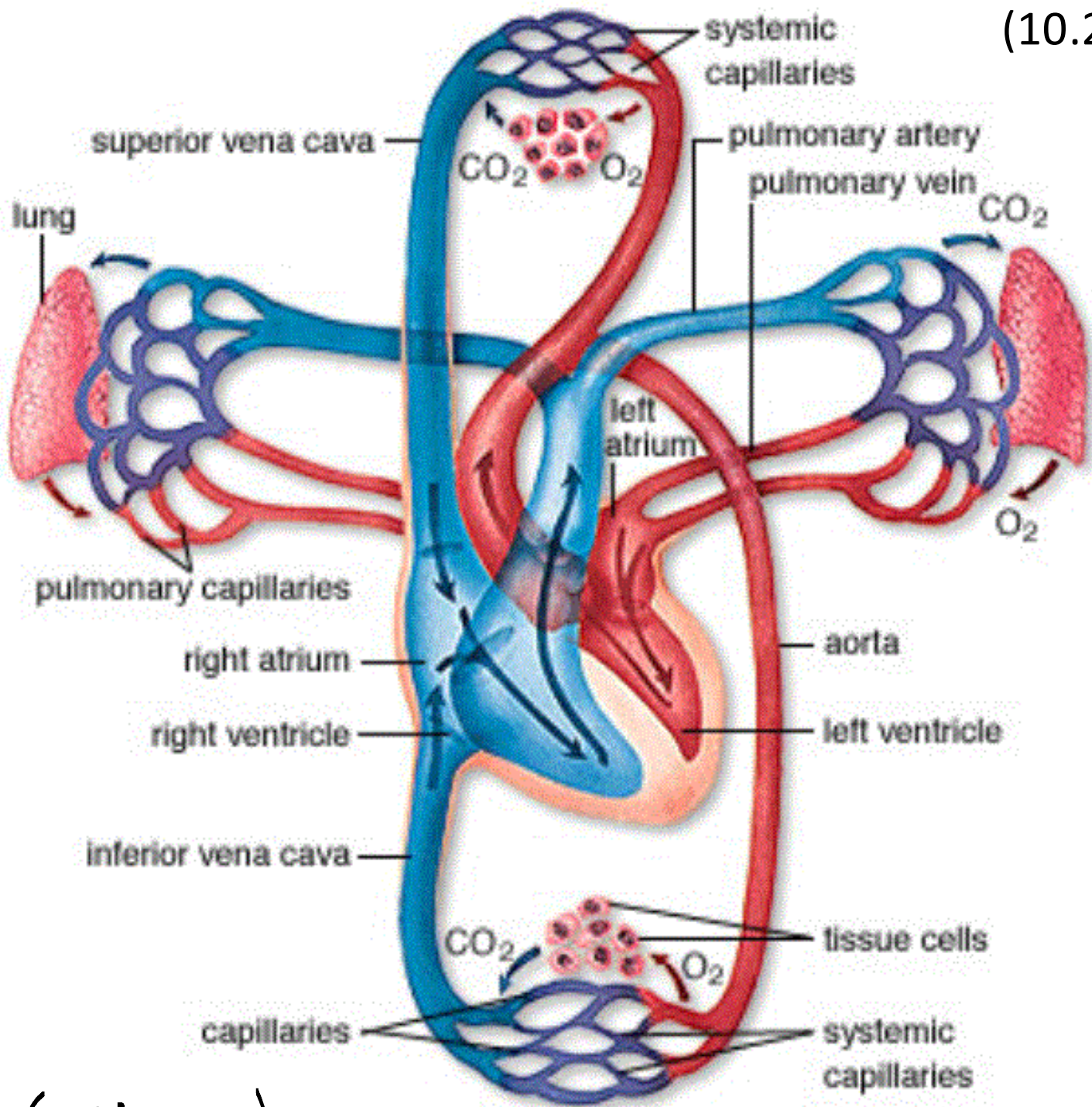
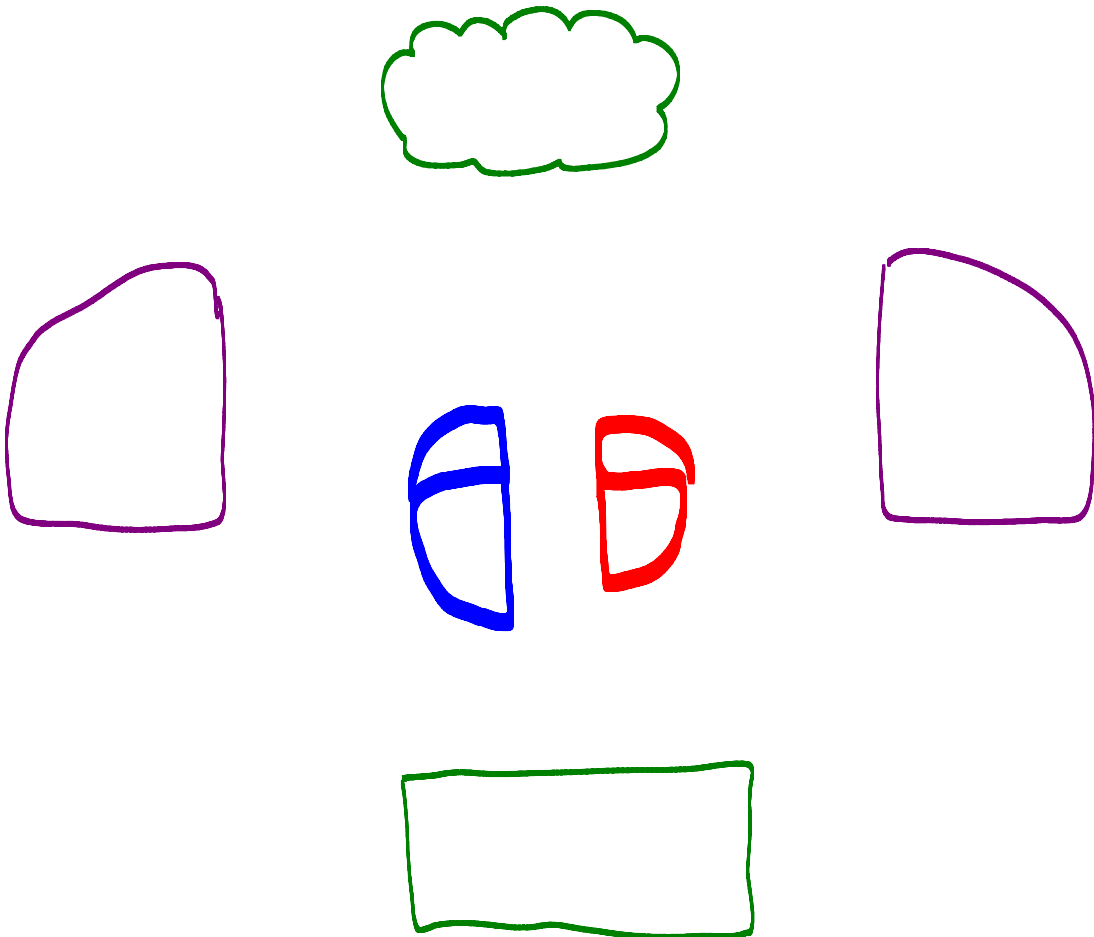
- HIGH blood pressure

- LOW blood pressure



B. Circulatory System

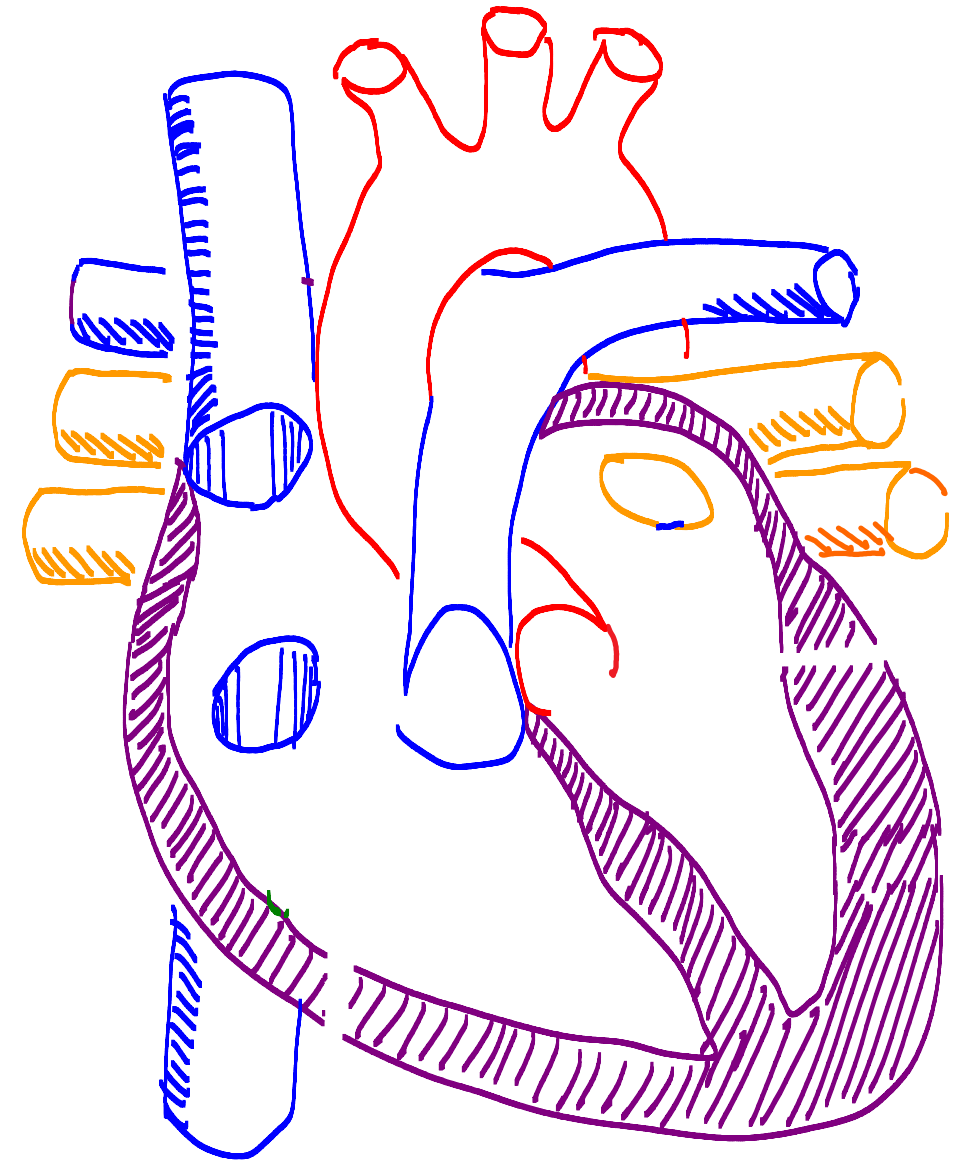
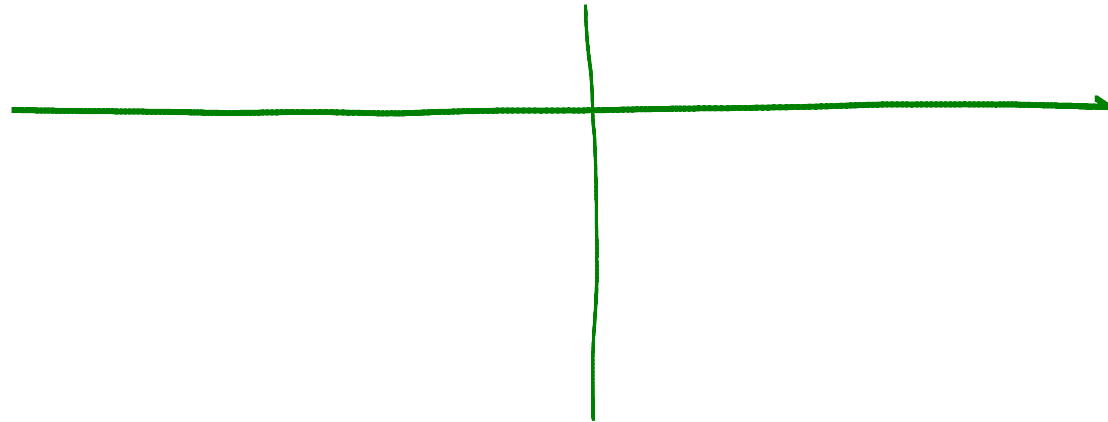
(10.2)



(mhhe.com)

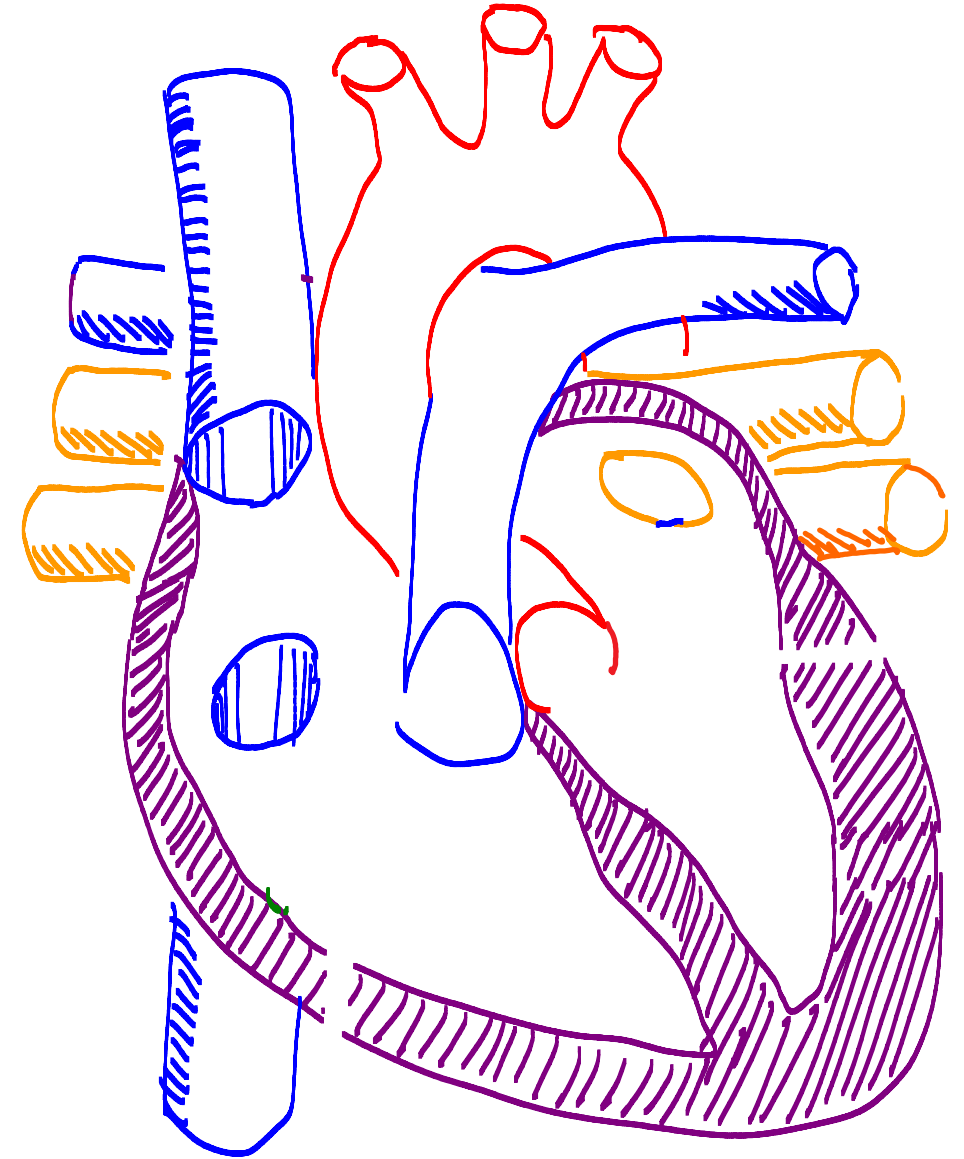
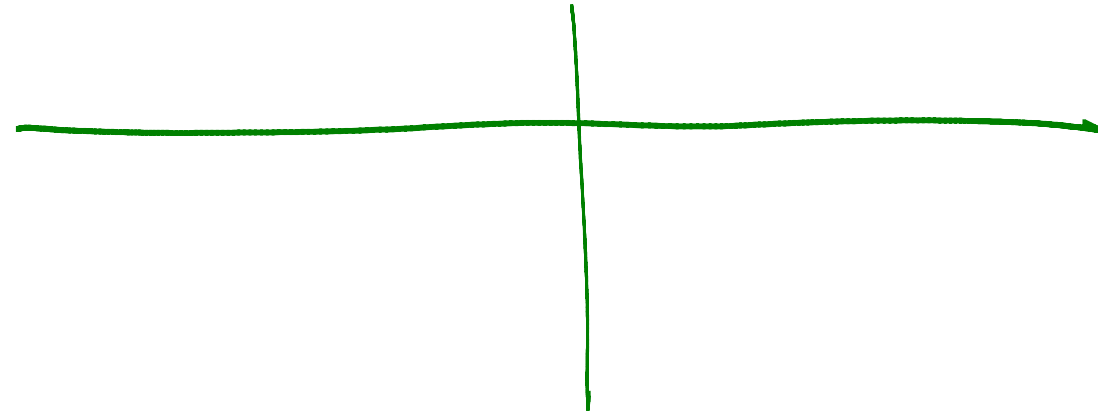
Systole

- Ventricles
- Valves



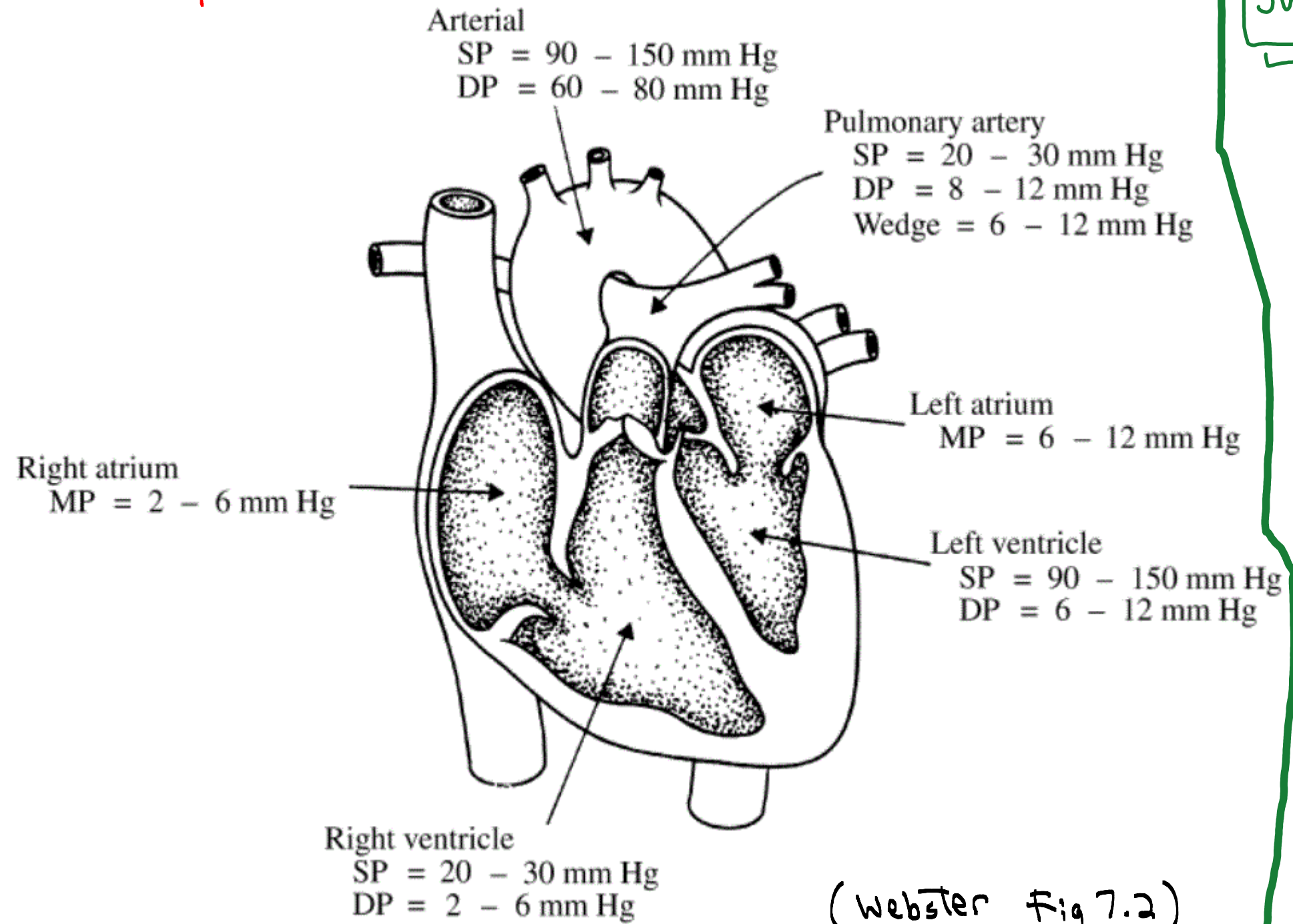
Diastole

- Atria
- Valves



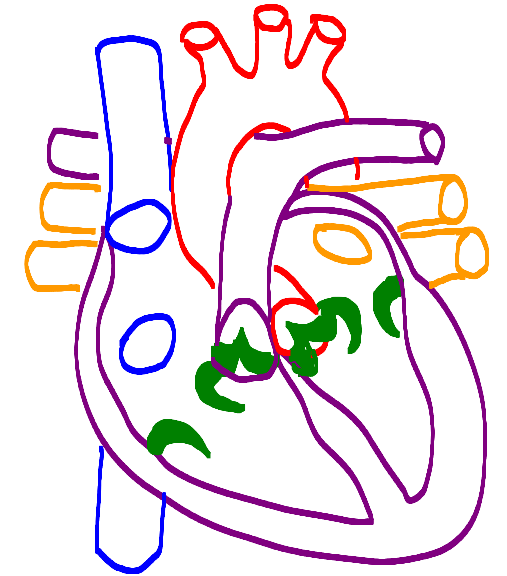
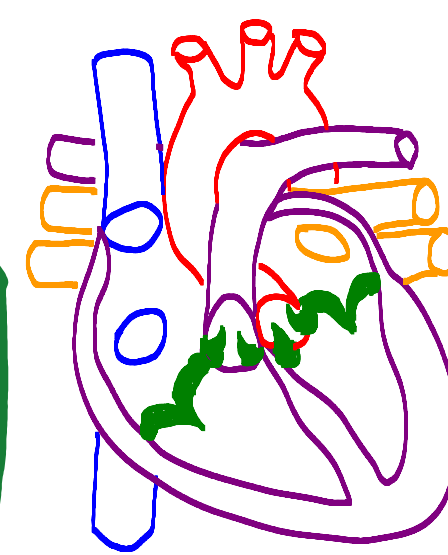
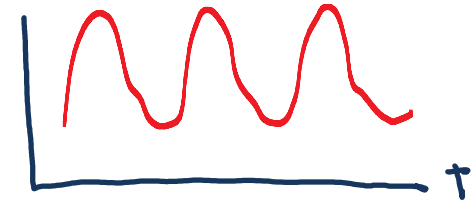
★ we usually measure

(10.5)



(webster Fig 7.2)

Summary



C. Relation to ECG

10.6

①

Aortic
pressure



③

②

④

2. Non-invasive Measurement of Arterial Pressure

Sphygmomanometer =

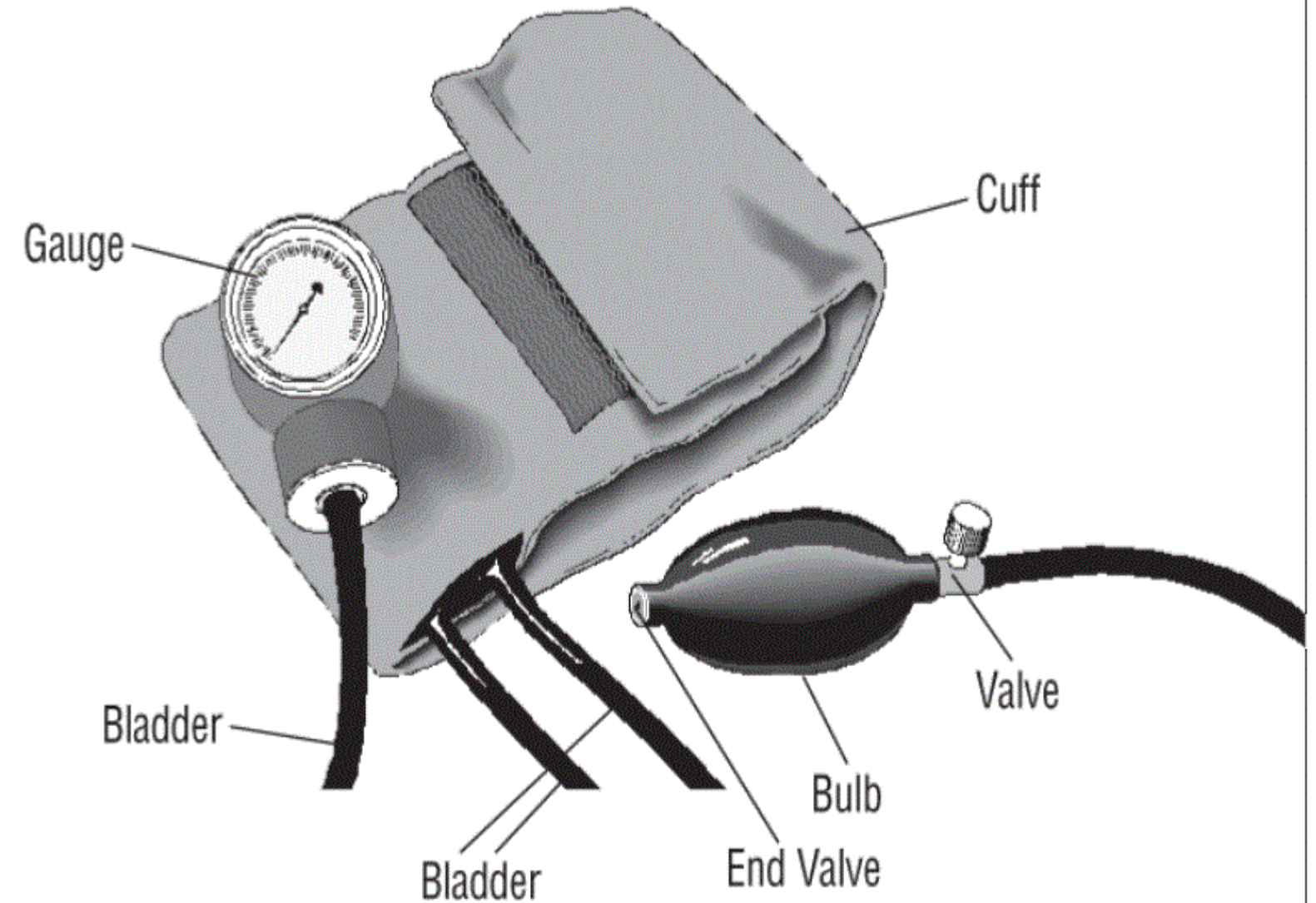
Basic idea:

① Inflate cuff

② Slowly release

③ Record pressure

④ Record pressure

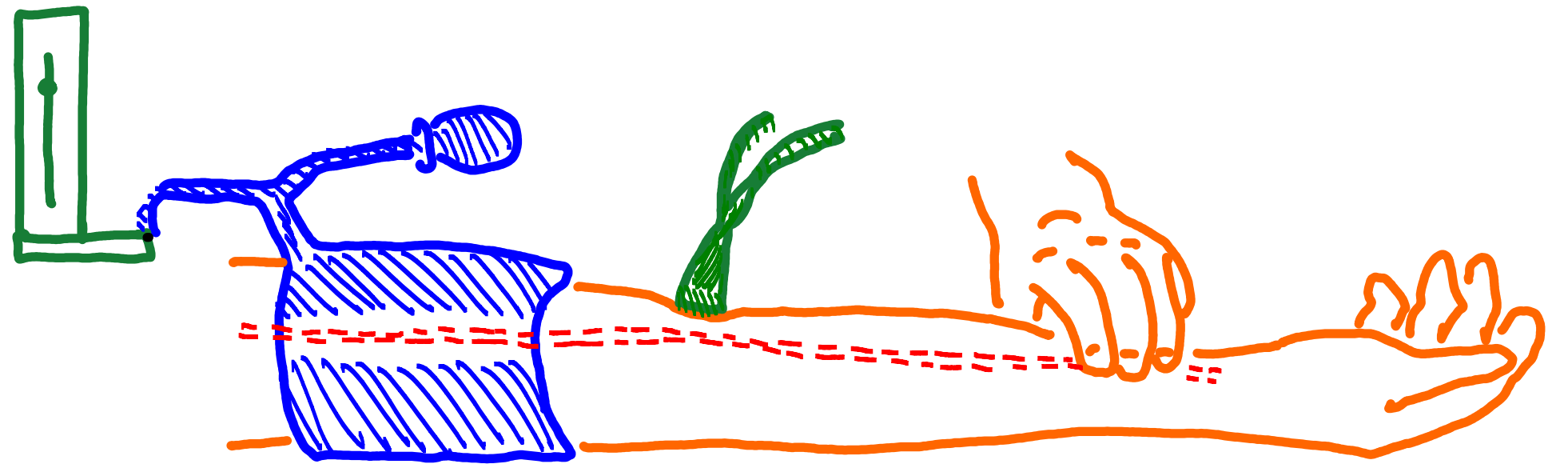
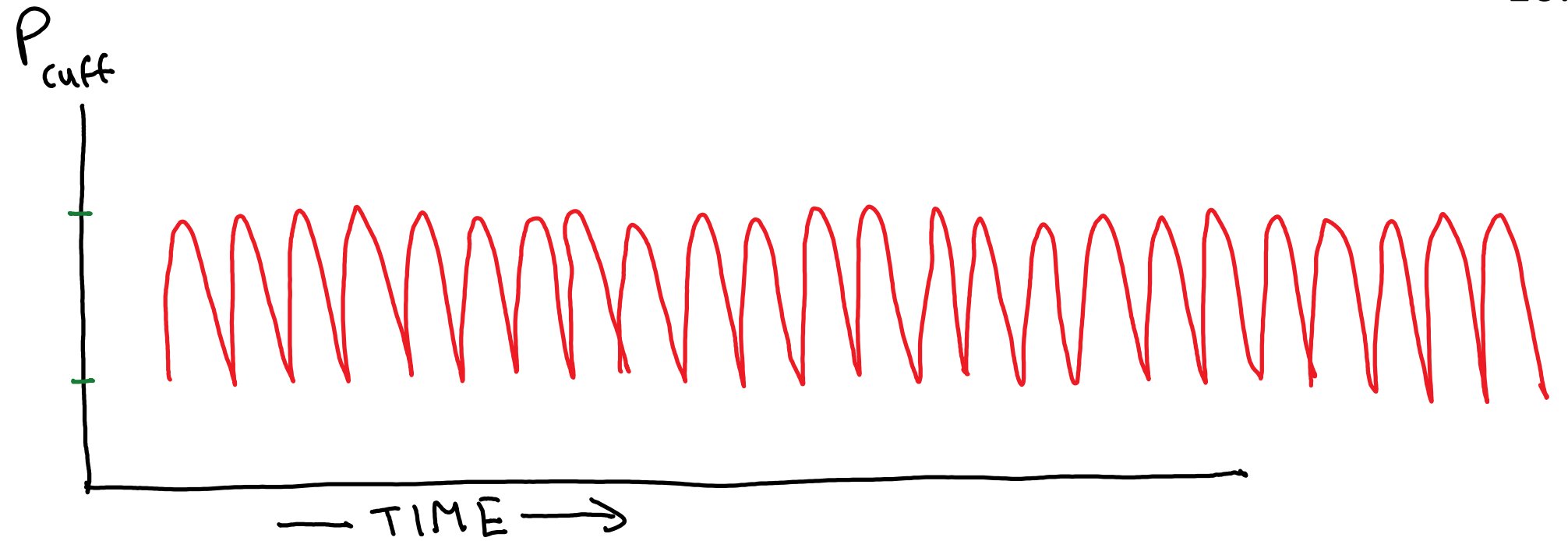


mountainside-medical.com

3. Auscultatory Method

Sphygmomanometer

+ Stethoscope



(Webster Fig 7.20)

Issues:

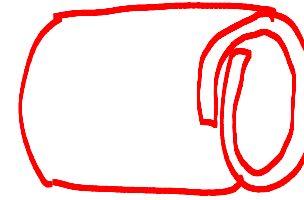
(10.9)

- Should take
- Poor accuracy

-

- Cuff should be placed at

- Cuff



- Cannot be used in
- User must have
- Automated versions