Lab 4 Heart Rate & Blood Pressure

I. ***Attendance*** **– Cards**

II. ***Heart Rate?***

What? **# beats per min**

< 60 (slow)
bradycardia

Wide range!

60-100
normal

> 100 (fast)
tachycardia

Where? **heart or peripheral arteries**

How? **palpation *to feel* vs. ausculation *to hear* vs. EKG...**

Why? **vital sign "Vital signs are vital!" Pilar Bradshaw, MD**

III. ***Blood Pressure?***

What? **force exerted by blood on large systemic arteries**

Where? **peripheral/systemic, large arteries**

How? **direct (cannula) vs. indirect (external cuff, P meter= sphygmomanometer + stethoscope/sensor**

Why? **vital sign + CVD risk indicator low < 120/<80 mm Hg Hypertension ≥140/90 mm Hg. See LLM pp 4-5, 4-6**

IV. ***Practice Tests***

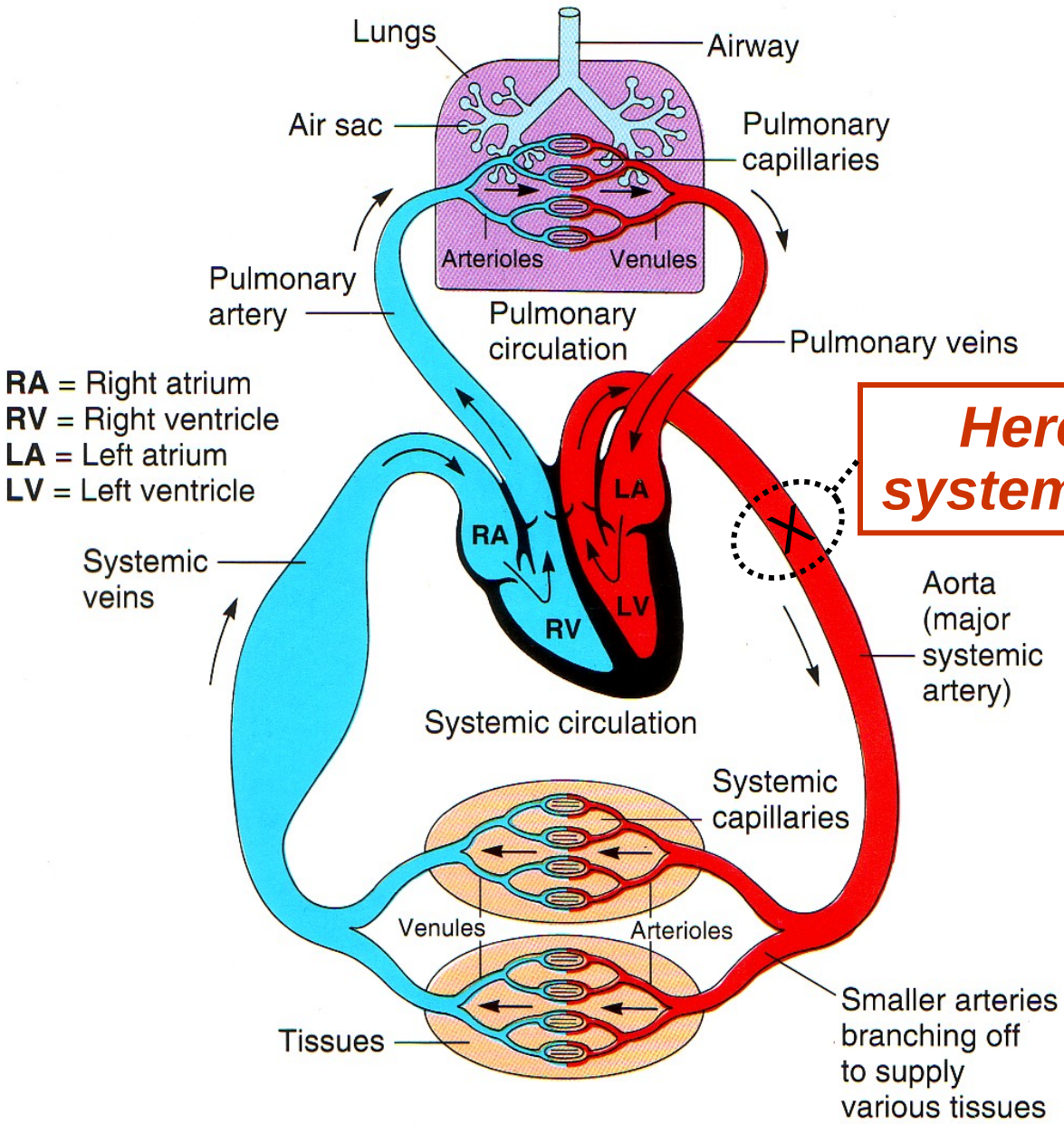
V. ***High Blood Pressure at Time of Diagnosis*** **Time-Life**

Factors that Influence Heart Rate (HR, b/min) & Blood Pressure (BP, mm Hg)

Short list of individual, exercise & environmental variables (superimposed upon genetics) that alter HR & BP:

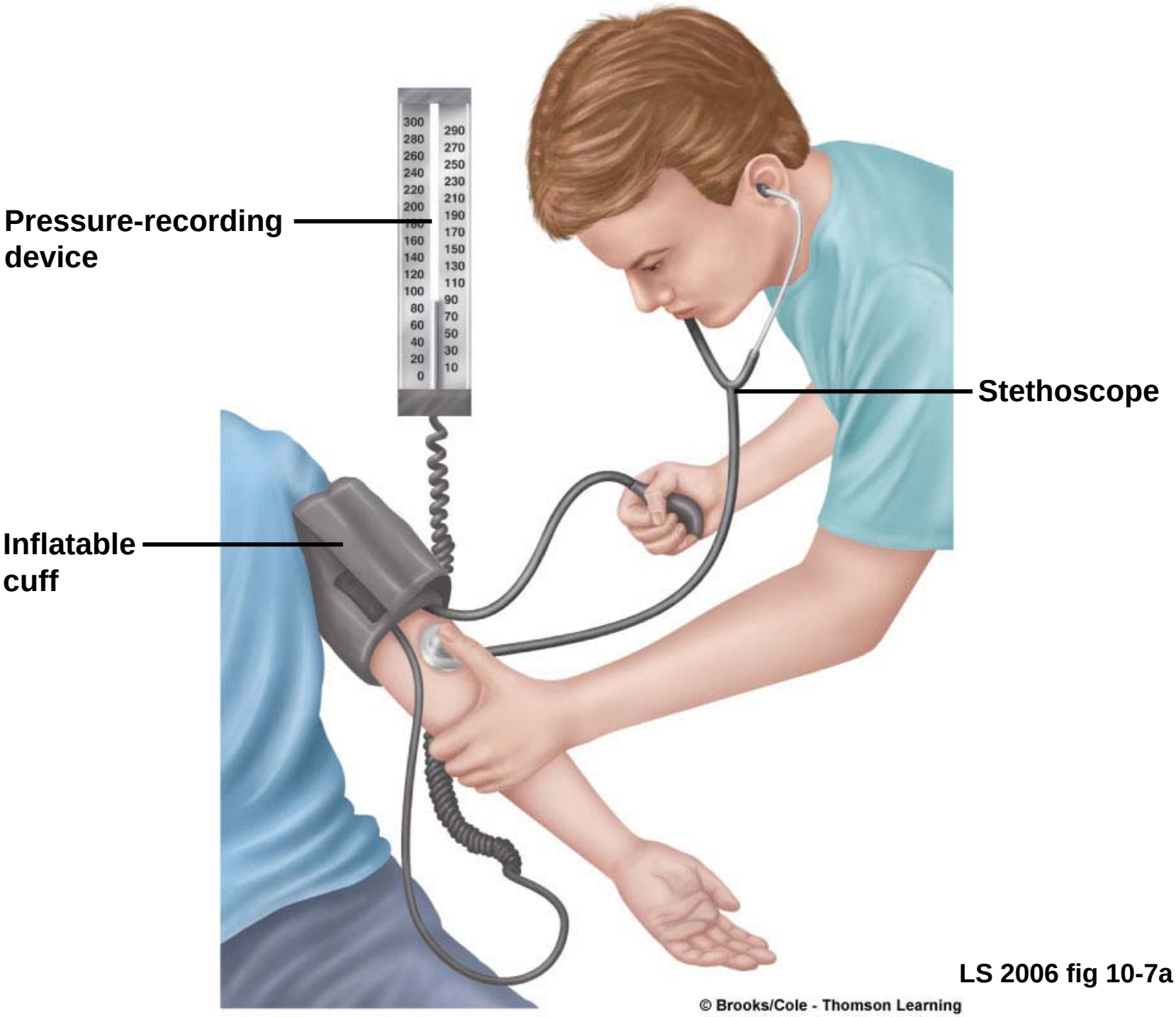
1. arousal state (asleep, awake, drowsy,unconscious...BI 121 lecture!)
2. bladder and/or bowel distention (if > semi-filled, higher BP!)
3. exercise (mode, frequency, intensity, duration, distribution)
4. illness (type, current, past...)
5. menstrual phase (follicular, ovulatory, luteal)
6. nutritional status (alcohol, caffeine, H_2O, meal composition & time)
7. pets (on lap? may lower BP!)
8. posture (supine, seated, standing)
9. sleep (less elevates!)
10. smoking status (# & time)
11. temperature (ambient & body)
12. white-coat effect or white-coat syndrome,...

Where is BP measured?

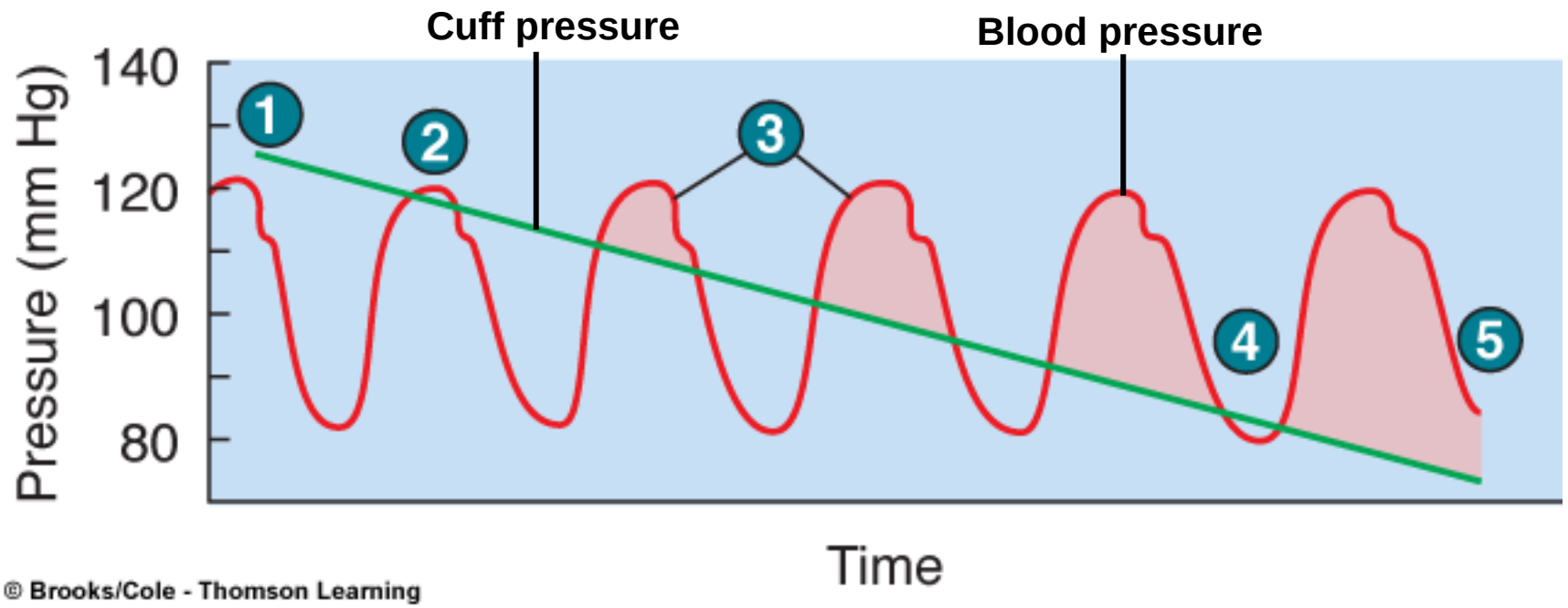


Here! Large, systemic arteries!

LS 1991 fig 8-2 p 225.

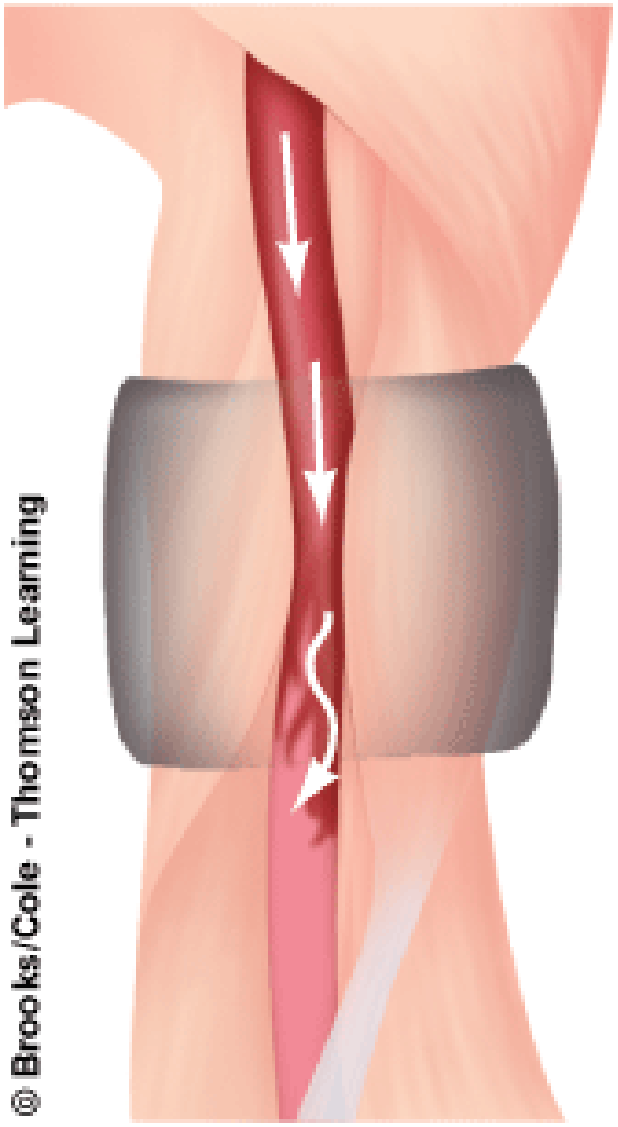


LS 2006 fig 10-7a p 282.



LS 2006 fig 10-7b p 282.

Sounds are heard only when blood jets through a partially occluded artery.



When cuff pressure is between 120 and 80 mm Hg:

Blood flow through the vessel is turbulent whenever blood pressure exceeds cuff pressure.

Intermittent sounds are heard as blood pressure fluctuates throughout the cardiac cycle.

LS 2006 fig 10-7c p 282.

Personal Measurements

***Heart Rate (HR)*: Record on p 4-3, Q 1.**

6-sec → add 0 to end or multiply by 10

15-sec → multiply by 4

60-sec → record as is; seated resting HR

Each of you place stethoscope over your heart to detect *lub-dup*, *lub-dup*...

***Blood Pressure (BP)*: Record on p 4-3, Q 2.**

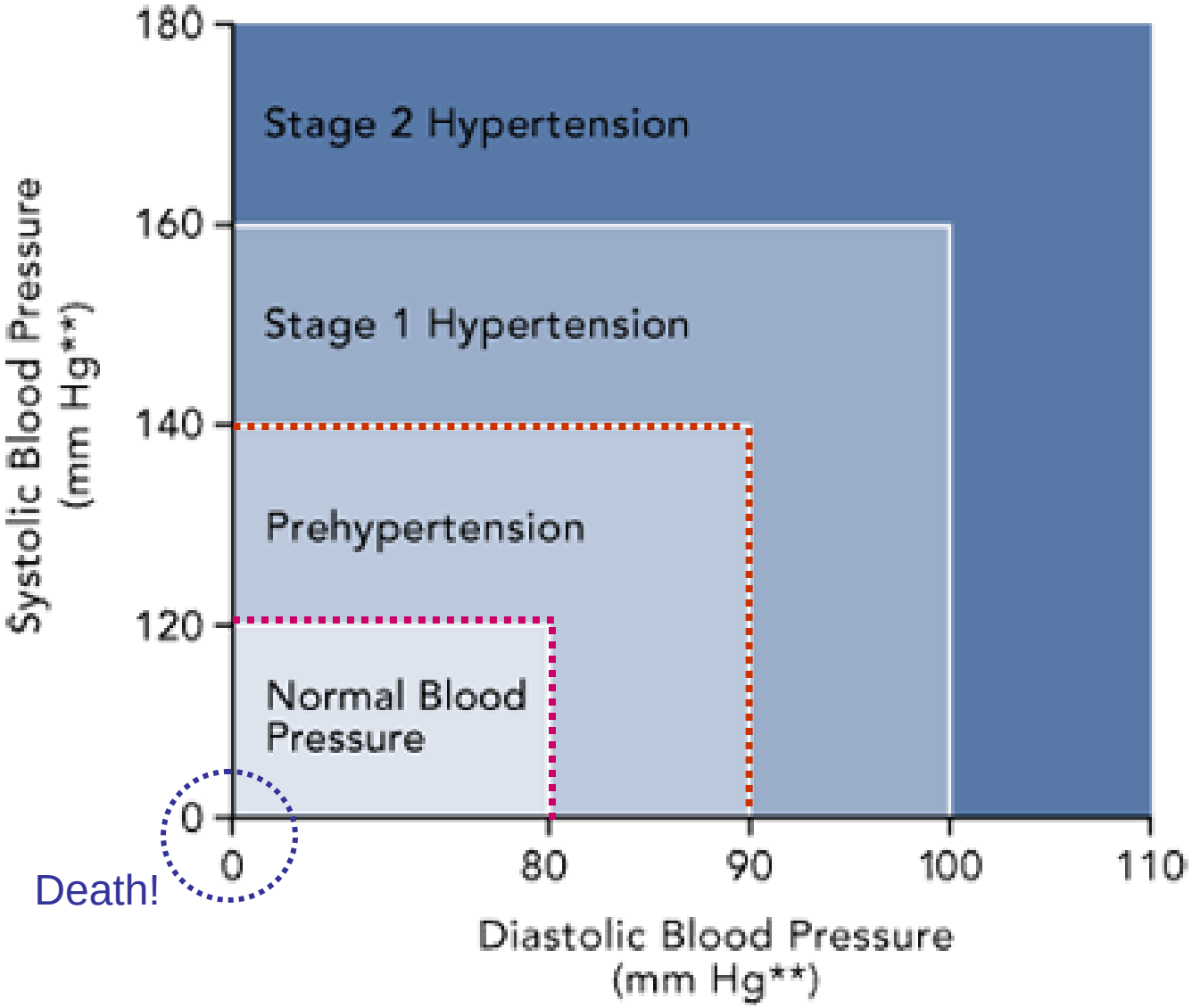
R arm x 2 → SBP/DBP & HR

L arm x 2 → SBP/DBP & HR

Try to detect Korotkoff sounds w/stethoscope during a few automated BP measurements.

Evaluate values & answer Q 3, p 4-3 @ later time.

Where does your pressure fall?



What can I do if I have prehypertension or hypertension?

1. See your doctor & have your BP checked regularly.
   Also, see if it's safe to start an exercise program.

2. Exercise, exercise, exercise!
   20-60 min of aerobic exercise on most days.

3. Lose weight, if overweight.
   Exercise, exercise, exercise!

4. Add spice to your life, not salt.
   Garlic, cilantro, oregano, pepper & onion instead of salt!

5. Do the *DASH*, don't overdine!
   Dietary Approaches to Stop Hypertension, plant-based Mediterranean diet w/plenty of vegetables, fruits, whole grains & non-/low-fat dairy to ensure much Ca^{2+}, K^{+} & Mg^{2+} intake.

6. Limit alcohol intake.
   No more than 1-2 drinks/d for ♀, 2-3 drinks/day for ♂.

High Blood Pressure at the Time of Diagnosis

Time-Life Educational Videos