

Review Questions for Blood Pressure topic

Review questions will not be collected and are not worth any points. Doing them will, however, help you prepare for the midterms and quizzes in this course. Furthermore, some of these review questions will appear on the final exam (although the numbers within the questions may be changed).

=====

- 1) Blood pressure is the _____ force of the _____ on the _____.
 - A) Outward, Blood, Blood vessel walls
 - B) Inward, Blood pressure cuff, patient's brachial region
 - C) Inward, Blood vessel walls, Blood
 - D) Outward, Heart contractions, Blood

- 2) An average adult blood pressure is
 - A) 12-24
 - B) 70
 - C) 72
 - D) 120/80

- 3) The following list of events for taking a patient's blood pressure is NOT in the correct sequence. Which arrangement is the correct order of events?
 - 1 = The sounds of Korotkoff disappear
 - 2 = The systolic pressure is determined
 - 3 = The sphygmomanometer reads about 160
 - 4 = The diastolic pressure is determined
 - 5 = The sounds of Korotkoff appear
 - 6 = The valve on the sphygmomanometer is opened
 - A) 6, 3, 2, 1, 4, 5
 - B) 1, 3, 5, 6, 4, 2
 - C) 3, 6, 5, 2, 1, 4
 - D) 2, 5, 3, 4, 1, 6

- 4) The three major factors that determine a person's blood pressure are (select three answers)
 - A) Heart size
 - B) Vein length
 - C) Cardiac output
 - D) Peripheral resistance
 - E) Blood volume
 - F) Artery length

- 5) Which increases blood pressure but **not** by increased peripheral resistance?
- A) Higher cardiac output
 - B) Smaller lumen size
 - C) Larger blood volume
 - D) Atherosclerosis
- 6) The body changes the blood flow to organs mostly through changes in _____
- A) vessel radius.
 - B) blood viscosity.
 - C) vessel length.
 - D) pressure differential.
- 7) The disease _____ is defined as plaques (fatty deposits) in the arteries.
- A) Cardiovascular edema
 - B) Congestive heart failure
 - C) Atherosclerosis
 - D) Chronic hypertension
- 8) Blood pressure that is consistently above 140/90 is defined as _____.
- A) Cardiovascular edema
 - B) Congestive heart failure
 - C) Atherosclerosis
 - D) Chronic hypertension
- 9) This substance is called a clot buster, and is often immediately given to people suffering from a heart attack or stroke.
- A) anti-embolane
 - B) thrombin
 - C) TPA (tissue plasminogen activator)
 - D) fibrin
- 10) Explain how the body can decrease blood flow to one organ, and yet maintain normal blood flow to all the other organs.
- 11) When the lumen of a blood vessel becomes smaller due to contraction of the smooth muscle in the vessel's wall, the vessel is said to be _____. When the lumen becomes larger due to the muscle relaxing, the vessel is said to be _____.

12) Define the following terms, as they were define din class:

- a) Ischemia
- b) Infarction
- c) Thrombus
- d) Plaque
- e) Atherosclerosis
- f) Blood pressure
- g) Cardiac output
- h) Peripheral resistance
- i) Laminar flow
- j) Turbulent flow
- k) Sounds of Karotkoff
- l) Pulse pressure
- m) Mean arterial pressure
- n) Antihypertensive drugs
- o) Diuretics
- p) Orthostatic reflex

13) What are the units of blood pressure? _____. What is an average blood pressure reading? _____

14) Blood pressure readings always contain two numbers. The higher is called the _____ pressure and the lower is called the _____ pressure.

15) The blood pressure during the contraction of the ventricles is the _____ pressure, and is normally _____ (a number) in a healthy adult.

16) The blood pressure during the relaxation of the ventricles is the _____ pressure, and is normally _____ (a number) in a healthy adult.

17) The blood pressure in arteries is higher/lower (circle one) compared to the blood pressure in veins.

18) When a person cuts an artery, blood usually spurts out. The blood spurts out during systole/diastole (circle one).

19) Blood pressure is measured by using an inflatable cuff device called a _____.

20) When taking the blood pressure of a patient with the sphygmomanometer, you are measuring the pressure in the patient's _____ artery.

21) The first sounds heard through the stethoscope (after fully inflating the cuff and then letting a small amount of air out) during a blood pressure measurement are called the sounds of _____. They are caused by _____. The cuff pressure at this point is equal to the patient's _____ pressure.

22) During a blood pressure determination, the point at which sounds of blood flow can no longer be heard during the release of pressure from the cuff corresponds to the _____ pressure. The blood is flowing smoothly and silently at this point, a type of flow called _____ flow.

23) The three factors that determine a patient's blood pressure are _____, _____, and _____.

24) The resistance to blood flow by the blood vessels is called the _____.

25) The two things that can change the peripheral resistance are _____ and _____.

26) As blood volume increases, peripheral resistance increases/decreases (circle one).

27) Blood loss causes blood pressure to increase/decrease (circle one).

28) For each pair of terms below, circle the term in that has higher blood pressure or that results in higher blood pressure.

- a) Systole/diastole
- b) Artery/Vein
- c) Large lumen size/small lumen size
- d) High blood volume/Low blood volume
- e) Relaxation/Stress
- f) Low salt diet/High salt diet
- g) High cardiac output/Low cardiac output
- h) Sympathetic/Parasympathetic nervous systems

29) Two factors that affect blood pressure (by changing peripheral resistance) are blood volume and lumen size.

- a) If blood volume increases, blood pressure will increase/decrease (circle one)
- b) If lumen size increases, blood pressure will increase/decrease (circle one)
- c) Eating a diet that is high in sodium will increase your blood pressure. The sodium increases blood pressure by changing lumen size/blood volume (circle one).
- d) Eating a diet that is high in fat will increase your blood pressure. The fat increases blood pressure by changing the lumen size/blood volume (circle one).

30) The larger/smaller (circle one) the blood vessel diameter, the higher the peripheral resistance. The change in diameter that you circled would make the blood pressure increase/decrease (circle one).

31) Excess fat in the diet increases your blood pressure because it increases _____.

32) _____ is the clogging of blood vessels (especially coronary arteries) by fatty deposits.

33) Long-term high blood pressure is known as _____. It damages the heart and, if untreated, eventually can cause congestive heart failure.

- 34) Blood pressure is in the 'hypertensive' range when it is _____ or greater. (Give the exact blood pressure numbers).
- 35) A blood clot in an unbroken blood vessel is called a(n) _____.
- 36) A heart attack is caused by sudden blockage of the _____ arteries.
- 37) Unexplained pain in the left arm should be treated seriously because it may be _____.
- 38) A heart attack is also called a _____.
- 39) The _____ arteries deliver oxygen-rich blood to the muscles of the heart itself.
- 40) During a myocardial infarction, chest pain called _____ is often also felt as pain in the _____.
- 41) Blood pressure is always measured in _____ (One of the three types of blood vessels).
- 42) When blood pressure measurements are taken, the first sound of Korotkoff occurs when the cuff pressure equals the _____ pressure. The last Korotkoff sound occurs when the cuff pressure equals the _____ pressure.
- 43) Blood pressure is always given as two numbers. Explain what makes the first number higher than the second.
- 44) Suppose a person's blood pressure is 168/112.
- What is the systolic pressure? _____
 - What is the diastolic pressure? _____
 - What condition does this person have? _____
 - What disease might be the cause of their condition? _____

45) A person has a blood pressure of 142/92.

a) What is the pulse pressure? _____

b) What is the mean arterial pressure? _____

46) Describe what is meant by “laminar flow” and “turbulent flow”. Before you inflate the blood pressure cuff, which term more closely describes the blood flow in the brachial artery?

47) Explain (at a tissue and organ level) what causes the sounds of Korotkoff:

48) Explain why the first sounds of Korotkoff occur when the cuff pressure equals the systolic pressure and explain why the sounds of Korotkoff disappear when the cuff pressure equals the diastolic pressure.

49) What is the major determinant of peripheral resistance? In other words, what controls how much peripheral resistance there is in a person’s cardiovascular system?

50) In our lab on blood pressure, were the blood pressure measurements different when they were taken in the standard sitting position, reclining, and standing up? Explain what might have caused any differences observed.

51) High blood cholesterol, along with other risk factors, is a contributing factor in the disease _____.

Answers for Review Questions for Blood Pressure topic:

1) A

2) D

3) C

4) C, D, and E

5) A

6) A

7) C

8) D

9) C

10) To decrease blood flow to one organ and yet maintain normal blood flow to all the other organs, the body usually contracts the blood vessels leading to the one organ.

11) Contracted
Dilated

- 12) a) Ischemia = Below normal oxygen to an organ due to reduced blood flow (usually due to partially blocked blood vessel)
- b) Infarction = Tissue death due to complete lack of blood flow to an organ (usually caused by a thrombus)
- c) Thrombus = A blood clot in an unbroken blood vessel
- d) Plaque = Deposits of cholesterol and fat in an artery
- e) Atherosclerosis = Arteries partially blocked by plaques
- f) Blood pressure = The outward force of the blood on the vessel walls
- g) Cardiac output = The volume of blood pumped by the heart per minute
- h) Peripheral resistance = The resistance of the blood vessels to blood flow
- i) Laminar flow = The normal smooth and silent flow of blood through a vessel
- j) Turbulent flow = The abnormal spurting flow of blood through a blood vessel, where the blood only flows during systole of the heart
- k) Sound of Korotkoff = The sounds of turbulent flow of the blood
- l) Pulse pressure = The difference between the systolic blood pressure value and the diastolic blood pressure value (Pulse pressure = systolic pressure – diastolic pressure)
- m) Mean arterial pressure = The average blood pressure value in the arteries (mean arterial pressure = diastolic pressure + pulse pressure/3)

n) Antihypertensive drugs = Drugs that reduce blood pressure

o) Diuretics = Drugs that increase urine volume (and thereby reduce blood volume, which decreases blood pressure)

p) Orthostatic reflex = The contraction of arteries upon standing, to raise the blood pressure to prevent light headedness and fainting.

13) Millimeters of mercury (mmHg)

120/80 mmHg

14) Systolic pressure

Diastolic pressure

15) Systolic pressure

120 mmHg

16) Diastolic pressure

80 mmHg

17) Higher

18) Systole

19) Sphygmomanometer

20) Brachial

21) Korotkoff

Turbulent flow of the blood

Systolic

22) Diastolic

Laminar flow

23) Cardiac output
Peripheral resistance
Blood volume

24) Peripheral resistance

25) Total blood volume
Lumen size of the blood vessels

26) Increases

27) Decrease

28) a) Systole
b) Artery
c) Small lumen size
d) High blood volume
e) Stress
f) High salt diet
g) High cardiac output
h) Sympathetic nervous system

29) a) Increase
b) Decrease
c) Blood volume
d) Lumen size

30) Smaller
Increase

31) Peripheral resistance (by making the lumen sizes smaller by partially clogging the blood vessels with plaques)

32) Atherosclerosis

33) Chronic hypertension

34) 140/90 mmHg

35) Thrombus

36) Coronary arteries

37) Myocardial infarction (heart attack)

38) Myocardial infarction

39) Coronary arteries

40) Angina pectoralis
Left shoulder

41) Arteries

42) Systolic pressure
Diastolic pressure

43) The first number is the systolic pressure. It is always the higher of the two numbers because it is the pressure in the arteries when the ventricles of the heart are in systole (contraction), and when a liquid is contracted upon, the liquid's pressure always increases.

- 44) a) 168 mmHg
b) 112 mmHg
c) Hypertension
d) Atherosclerosis

- 45) a) 50 mmHg
b) 109 mmHg

46) Laminar flow is the normal smooth and silent flow of blood in the blood vessels. Turbulent flow is an abnormal spurting blood flow, where the blood only flows during systole of the heart. Before inflating the sphygmomanometer, the blood in the brachial artery is flowing with laminar flow, since this is the normal type of blood flow.

47) The sounds of Korotkoff are caused by turbulent flow of blood. The sphygmomanometer squeezes on the patient's brachial artery. When the pressure in the sphygmomanometer is below the patient's systolic pressure but above the patient's diastolic pressure, then only during systole is the patient's blood pressure sufficient to squirt passed the cuff. Therefore, the blood flow is turbulent flow, which is what causes the sounds of Korotkoff.

48) When the pressure in the sphygmomanometer equals and falls below the patient's systolic pressure (but is above the patient's diastolic pressure) then only during systole is the patient's blood pressure sufficient to squirt past the cuff. The sounds of Korotkoff are the squirting noises of the blood's turbulent flow. When the sphygmomanometer pressure equals and falls below the patient's diastolic pressure, the blood will flow smoothly because both the systolic and the diastolic pressures are sufficient to move the blood past the cuff. Since smooth blood flow is silent laminar flow, the sounds of Korotkoff disappear.

49) The major determinant of peripheral resistance is the size of the blood vessel lumen. If the lumen is smaller, peripheral resistance (and blood pressure) will be higher. If the lumen is larger, peripheral resistance (and blood pressure) will be lower. Peripheral resistance is also controlled by the total blood volume, but changes in total blood volume are usually not what causes chronic hypertension.

50) The blood pressure measurements were usually not the same for sitting, reclining, and standing. Usually reclining flat is the lowest blood pressure (because the heart does not have to pump the blood hard enough to move it against gravity), followed by sitting. Standing is usually the highest of the three blood pressure measurements. This is because when standing, the heart has to pump the blood with enough force to move against gravity. Also, when we stand, our orthostatic reflex increases our blood pressure by causing contraction in the arteries of the lower body.

51) Atherosclerosis