

Study Guide Chapter 20  
Blood Vessels

Section 20.1

- 1 What do arteries do? What do veins do? What is significant about capillaries?
- 2 Compare and contrast the structure of arteries, veins, and capillaries? Which vessel has the thickest layer of smooth muscle? Which vessel has two layers of elastic tissue? Which vessel(s) have an endothelium? Which vessel(s) have a basement membrane? Which vessel has “one way valves”?
- 3 What is the function of the endothelial layer? What is the molecule produced by the endothelial layer to make this layer “slippery”? What happens to the endothelial layer in areas of inflammation?
- 4 What is vasomotion? What layer of the artery is responsible for vasomotion? Where is the control center for vasomotion?
- 5 The inner lining of the blood vessel receives nutrients from the circulating blood. How do the cells in the outer surface of the blood vessel get their nutrients? Structure name?
- 6 How are arteries defined by function? Which one function as pressure reservoirs? Which one is able to regulate blood flow into different organs and to change blood pressure?
- 7 (Study slide #17) What is the relationship between cross sectional area and blood velocity? Significance?
- 8 Where are sense organs for blood pressure located? Where is this information sent? What are the most important functions regulated by these pressure sensors? What are they called?
- 9 What function is associated with capillaries? What are the three type of capillaries? What are their structure and function? Give examples where you will find each type of capillary?
- 10 What is the structure and function of a capillary bed? Draw a picture and label the following structures: arteriole, metarteriole, thoroughfare channel, venule, precapillary sphincters. What is the function of these structures? What structure is responsible for peripheral resistance? Is it possible to perfuse the area with blood without exchanging nutrients with cells? Explain
- 11 Are arterioles regulated by the vasomotor center? Are precapillary sphincters regulated by the vasomotor center? What structure is regulated by local regulations? How? What is the significant molecule? Why does this make sense?
- 12 What is the metabolic theory of auto-regulation?
- 13 Across the capillary bed fluid filtration occur on the arteriole side and fluid reabsorption occurs on the venule side of the capillary bed. Explain the forces associated with this mechanism. What is the role of the precapillary sphincters? Is all the fluid lost reabsorbed on the venule side? Net result? What is the function of the lymphatic capillary?
- 14 Why are veins called capacitance vessels?

- 15 What are venous sinuses? Two examples? Function? Capable of vasomotion?
- 16 What is the skeletal muscle pump? Significance?
- 17 What is a portal system? Significance?
- 18 What is an anastomosis? Significance?
- 19 What is an aneurysm? Significance?

#### Section 20.2

- 20 Where is blood pressure measured? What “units” are used to express blood pressure? If the blood pressure is 120/80 then what term is used to express the upper and lower limits? What is pulse pressure? Why is blood pressure called the “silent killer”?
- 21 What is hypertension? Associated dangers?
- 22 What four events may increase blood pressure?
- 23 What are the two functions of the vasomotor center?
- 24 What is edema? Three primary causes?
- 25 What is circulatory shock? What happens to blood pressure? What is septic shock? Anaphylactic shock?

#### Section 20.3 Special Circulatory Routes

- 26 What is the placenta? Where is the origin for the umbilical arteries? Where is the destination for the umbilical artery? What is the function of the foramen ovale and ductus arteriosus? Why? What happen to these structures after birth? Why?
- 27 What is the structure and function of the hepatic portal circulation?