

# [Vessels chapter 19 summary](https://assignbuster.com/vessels-chapter-19-summary/)

3 Basic structures of blood vesseltunica intimatunica mediatunica adventitiaTunica intima partsendothelium, subendothelial layer, elastic laminaTunica mediaexternal elastic laminaTunica externaexternal wall, not much to it realllyWhat do arteries do? convert output of heart to steady flow through the capillariesWhat does elastic artery do? conducts

they’re thick walled arteries near heart, like the aorta and its major branchesmost elastic

diameter ranges from 2. 5 cm to 1 cm

What does muscular artery do? distributeWhat do arterioles do? they function as high resistance vessels which regulate distribution of flow to capillary bedsArteries do what? carry blood AWAY from heartVeins do what? carry blood TO heartPulmonary arteries? carry deoxygenated blood from Right VentricleArteries branch into? smaller branches called arteriolesArterioles branch into? capillariesCapillaries are what? site of nutrient exchange, fluid exchange, gas exchange, etc. Every cell is near a capillary for pick me ups.

They flow into larger vessels that head back to heart later, called venules

Venulescollection of capillaries that are headed back to the heart

in the vein category

and venules flow into bigger vessels called veins, which drain into the heart

Artery structurebig, thick, round. They can stand up on their own.

Surrounded by smooth muscle, which is regulated by Autonomic NS, so it can change diameter as necessary.

Finally, it has a Fibrous CT that surrounds whole artery, so it provides structure cuz of toughness.

very flexible. It has to be because heart pump force.

All vessels contain what layer? endothelium, made of special endothelial tissue that lines vesselsCapillaries are only made of what? endothelium, thin layer of squamous endothelial tissue because it exchanges nutrients, so it’s easier for things to get throughArterioles structureNO fibrous tissue

lots of smooth muscle, NO elastic tissue

Arterioles, because of lots of smooth muscle, function in changing diameter of the vessel which changes the amount of blood that can be in that part of the body

Capillaryjust endothelium

entire function is nutrient and gas exchange

Venulesurrounded by fibrous tissuenot too stretchyThe first vessels to branch off ascending aorta areR and L Coronary ArteriesVenous blood is collected in what? before it empties into R Atrium? coronary sinusElastic arteries areconducting arteries, large arteries close to heart, expand during contraction acting as pressure reservoirs, and then recoil during diastole to keep blood moving. Muscular arteries are what? distributing arteries that carry blood to specific organs

they’re less stretchy and more active in vasoconstriction

Arteriosclerosisdegenerative vascular disease that decreases elasticity of arteries

due to formation of fatty subendothelial lesions

The most permeable capillaries aresinusoids, which are wide channels. 2nd most permeable capillaries arefenestrated capillaries with poresLeast permeable capillaries arecontinuous capillaries, due to lack of poresVascular shunts do what? connect terminal arteriole and postcapillary venule at opposite ends of capillary bedMost true capillaries arise from and rejoin theshunt channelsAmount of blood flowing into true capillaries is regulated byprecapillary sphinctersVeins have larger what? than arterieslumensWhy are most veins only partially filled? so they can be blood banks or reservoirsJoining together of arteries to provide alternate channels for blood to reach same organ is calledanastomosis.

Vascular anastomosis also forms between veins, between arterioles, and between venules

What is blood flow? amount of blood flowing through a vessel, an organ, or entire circulation in a given period of time. What is blood pressure? Blood pressure is the force per unit area exerted on a vessel wall by the contained blood. Blood resistance? opposition to blood flow

blood viscocity aka thickness and vessel length and diameter contribute to reesistance

Blood viscocity? thickness or gooeynessBlood pressure is directly proportional to \_\_\_\_\_\_\_\_\_ and inversely proportional to \_\_\_\_\_\_\_. directly proportional to blood pressure

inversely proportional to resistance

Systematic BP is highest and lowest in what area? highest in aorta

lowest in venae cavae

Steepest drop in BP occurs in \_\_\_\_\_\_\_\_, where resistance is greatest. arteriolesArterial BP depends on what? compliance fo elastic arteries and on how much blood is forced into them. Systolic pressureArterial blood pressure is pulsatile and peaks during contractionDiastolic pressureduring diastole, the phase of the heartbeat when the heart muscle relaxes and allows the chambers to fill with blood,

as blood is forced distally into circulation by rebound of elastic arteries, Arterial BP drops to its lowest value.

Pulse pressure issystolic pressure minus diastolic pressureMean arterial pressure isdiastolic pressure plus one third of pulse pressure and is the pressure that keeps blood moving throughout the cardiac cycleWhy is Capillary pressure low? so the delicate walls don’t rupture, and it allows enough nutrient exchange through the wallsBP varies directly withCO, peripheral resistance, and blood volume.

Vessel diameter is major factor determining resistance, and small changes in the diameter of vessels, especially arterioles, affect BP

BP regulated byAutonomic neural reflexes involving baroreceptors or chemoreceptors,

the vasomeotor center, which is a medullary center that regulates blood vessel diamter,

and Sympathetic vasomotor fibers, which act on vascular smooth muscle

when BP falls, what happens to get it back up? the fall stimulates vasomotor center to increase vasoconstriction and the cardioacceleratory center to increase heart rate and contractility. when BP is too high, what happens to get it down? rising BP inhibits the vasomotor centerandactivates cardioinhibitory centerTrue or False? Higher brain centers like cerebrum or hypothalamus may modify neural controls of BP via medullary centersTruelist Hormones that increase BP by promoting vasoconstrictionEpinephrineNE, ADH, angiotensin IIlist Hormones that reduce BP by promoting vasodilation includeatrial natriuretic peptide, which also causes a decline in blood volumeHow do Kidneys regulate blood Volume? rising BP enhances filtrate formation and fluid losses in urine

falling BP causes kidneys to retain more water, increasing blood volume

How do you assess cardiovascular efficiency? measure pulse and BPWhat is Pulse anyway? alternating expansion and recoil of arterial walls with each heartbeat. are Pulse and Pressure points the same thing? Yes sirNormal BP in adults is? 120, 80.

the first number is systolic, and the second is diastolic

BP numbers for people with Hypertension140 over 90High BPindicates increased peripheral resistance, which strains the heart and promote vascular complications of other organs, particularly the eyes and kidneys. It is a major cause of myocardial infarct, stroke, and renal disease. Risk factors are high fat, high salt diet, obesity, diabetes, mellitus, advanced age, smoking, stress, being black? Blood flow is involved indelivering nutrients and wastes to and from cells, gas exchange, absorbing nutrients, andforming urineBlood flows fastest when \_\_\_\_\_\_\_\_\_\_and slowest when \_\_\_\_\_\_\_\_\_\_\_\_\_\_. fastest where the cross sectional area of the vascular bed is least, like in the aorta

slowest where the total cross sectional area is greatest, like in the capillaries. Slow flow in capillaries allows for nutrient-waste exchange time.

Auto-regulation is? local adjustment of blood flow ti individual organs based on their immediate requirements.

so it involves myogenic or muscular control that maintain flow despite change sin BP and local chem factors

Vasodilators are and include? medicines that help to widen vessels to lower BP

they include increased CO2, hydrogen, and nitric oxide.

Decreased Oxygen concentrations also cause vasodilation.

other factors like endothelins, decrease blood flow

In most instances, autoregulation is controlled byoxygen deicits and accumulation of local metabolitesAutoregulation in the brain is controlled byprimarily by a drop in pH and by myogenic mechanisms

vasodilation of pulmonary circuit vessels occurs in response to high levels of O2

What passes through capillary walls by diffusion? nutrients, gases, and other solutesWhat moves through clefts or fenestrations? water soluble substancesWhat moves through lipid portion of endothelial cell membrane of capillary? fat soluble substancesLarger molecules that can’t pass through capillary walls or apparatus are transported by? pinocytotic vesicles aka the infoldings in the membrane like a pouch,

or caveolae

In general, fluid flows out of the capillary bed at the \_\_\_\_\_\_ end and reenters at the \_\_\_\_\_\_\_\_ end. enters at arterial end

reenters at venule end

The small net loss of fluid and protein in interstitial space is collected by \_\_\_\_\_\_\_\_\_ and returned to the cardio system. lymphatic vesselsCirculatory shock occurs when \_\_\_\_\_\_ is inadequateperfusion, the process of a body delivering blood to a capillary bed in its tissue. Pulmonary circulation transportsO2 poor, CO2 laden blood to lungs for oxygenation. Systematic circulation transportsO2 rich blood from Left Ventricle to all body via Aorta and its branches

Venous blood returning is delivered to Right Atrium via Vena Cavae

All arteries are \_\_\_\_\_\_\_\_, while veins are both \_\_\_\_\_\_\_ and \_\_\_\_\_\_\_. all Arteries are Deep

Veins are both deep/superficial, and superificial veins have tons of interconnections

what are some unique venous drainage patterns? Dural venous sinuses, andHepatic portal circulationConducting arteries areelastic arteries with large lumens, low resistance pathways that conduct blood from heart to medium sized arteries3 types of capillaries? CONTINOUS capillaries, abundant in skin and muscles, most common. Have unjoined membrane gaps called intercellular clefts, which are big enough to allow limited passage of fluids + small solutes

FENESTRATED capillaries, similar to continuous, except have pores, which are more permeable to fluids + solutes

SINUSOIDAL capillaries. highly modified, leaky capillaries only in Liver, Boen marrow, Spleen, and Adrenal Medulla. Big, weird shaped lumens. They have pores or fenestrations.

Why different types of capillaries? allow large molecules and even blood cells to pass between blood and surrounding tissues. Hepatic macrophages, do what where? remove and destroy contained bacteria,

in lining of sinusoid capillaries in Liver

Microcirculation is? flow of blood from an arteriole to a venule, through a capillary bed. Capillary bed consists of 2 types of vessels1. Vascular Shunt, a short vessel that directly connects arteriole and venule at opposite ends of bed

2. True Capillaries, actual exchange vessels.

Flow through capillary bedThe terminal arteriole that feeds bed leads into a

metarteriole, which is continuous with the

thoroughfare channel, which is an intermediate between arteriole and capillary bed,

joins the post-capillary venule that drains the bed

Pre-Capillary Sphincter is? cuff of smooth muscle fibers that surrounds root of each true capillary at metarteriole and acts as a valve to

regulate blood flow into capillary