

## REVIEW SHEET EXAM 1: CHPTS. 19, 20 & 21

### Chpt. 19: Blood

Components of Blood:

formed elements what percent of whole blood?

plasma, (% of whole blood, what it contains, plasma is mostly?)

functions of albumin? globulins? (what are immunoglobulins? TBG? apolipoproteins? metalloproteins?)

what is the function of fibrinogen?

what organ synthesizes plasma proteins?

what is serum?

hematocrit: what is it? what are normal levels? what effect does Hct have on blood viscosity? how does EPO affect this?

what factors would decrease Hct? what might increase it?

Characteristics of blood: what is the pH? temperature? color?

Functions of Blood (8)

How much blood in typical human? what is meant by hypovolemic, normovolemic and hypervolemic

FORMED ELEMENTS:

Erythrocytes: anucleate, functions, what type of metabolism does a RBC use?

define: hemopoiesis, erythropoiesis, what is hemocytoblast?

erythropoietin & dietary requirements:

what is HbO<sub>2</sub> and HHb? HbCO<sub>2</sub>? which part of hemoglobin transports the O<sub>2</sub>? and the CO<sub>2</sub>?

what is a reticulocyte? why would it be measured? what is normal Hb level?

destruction of erythrocytes how and where is this done?, what happens to end products (Fe, amino acids, bilirubin)? what is the lifespan of RBC

What types of blood can be given/received during blood transfusions?

What 2 situations can cause hemolytic disease in a newborn?

Leukocytes: characteristics, Granulocytes and Agranulocytes

how long do they live? what are the usual numbers? what is diapedesis? what is positive chemotaxis? why is it beneficial?

Granulocytes – what are the granules?

Neutrophils-also known as? what do they fight? how do they kill bacteria? what chemicals do they release?

Eosinophils- how do they defend the body? what are they sensitive to?

Basophils: functions, what types of pathogens do each fight? what do they contain?

Agranulocytes:

Lymphocytes – derived from? what are the 3 types? what do they do?

Monocytes- what do they do?

which cells are stimulated/increase from M-CSF?, GM-CSF?, G-CSF?

which leukocyte is the largest? which is the most numerous? which is the rarest?

Platelets (megakaryocytes) or thrombocytes, what is TPO?

how long do they live? where are they stored? what do they do

what is the megakaryocyte?

what are normal values?

what is thrombocytopenia?

what is thrombocytopoiesis?

HEMOSTASIS

what happens during the vascular phase? why is it beneficial?

what happens during the platelet phase? what is the purpose of the platelet plug?

what are some of the chemicals/proteins that are released during this phase?

which help platelets become sticky and clump together which acts as the brakes to the platelet aggregation?

Coagulation (blood clotting) phase: what are procoagulants? what are some examples? what happens when blood clots?

what factor is stimulated to begin the extrinsic pathway? where does this happen?

what factor is stimulated to begin the intrinsic pathway? where does this happen?

both end up forming what enzyme?

what are the 3 steps for blood clotting (forming the fibrin mesh)  
what is an anticoagulant? What are some examples?  
what is a procoagulant? What are some examples?  
how long does it usually take for a blood clot to form? which electrolyte is critical for clotting?  
what is clot retraction? how does it help the healing process?  
what is fibrinolysis? what protein helps with this?  
-“Clinically speaking” Erythrocyte disorders: anemias- all types & causes,  
polycythemia : what is it? how might it happen? why is it of concern?  
Leukocyte disorders types & causes- what is leukemia?  
Platelet disorders what meds are used for these disorders? what factors increase risk of thrombosis? what is an embolism? Why are they dangerous?  
What is hemophilia? how is it inherited?

## Chpt. 20: Heart

located in mediastinum, apex & base  
where are the membranes (pericardium), visceral pericardium (epicardium)?  
parietal pericardium, pericardial cavity, pericardial fluid what is cardiac tamponade? What is pericarditis?  
4 chambers: know flow of blood through heart  
Chamber Walls consist of 3 layers know these & their functions, what are trabeculae carneae?  
Heart valves: know location & structure of AV & semilunar valves, & which chambers they prevent backflow into  
papillary muscles, chordae tendinae, functions of each  
Coronary Arteries & Veins: know notes, location & part of heart they supply  
Heart physiology: microscopic anatomy, intercalated discs, mitochondria, energy requirements  
contraction: importance of Ca<sup>+</sup>, & differences b/w skeletal & cardiac muscle, what is the RMP of cardiac muscle? and threshold?  
what is an anastomoses?  
conduction system of heart & how it corresponds to EKG  
know volume/pressure relationships in heart (cardiac cycle) – the events that occur during atrial systole, why are isovolumetric contraction and relaxation so important?  
what is the pressure required to open the aortic valve? what happens during ventricular ejection? what is a typical systolic and diastolic pressure? what do the terms systole and diastole mean?  
what is EDV? and ESV?  
Cardiac output = HR X SV: normal values for each, how does gravity affect SV? and HR?  
factors affecting SV: Frank Starling law what is it? what is the most important factor controlling SV? what is meant by venous return? what factors affect it and how?  
what is contractility? what are some examples of chemicals/ions that cause a positive inotropic effect? and those that cause a negative inotropic effect?  
regulation of HR: ANS: symp. fibers release & do what to HR? and parasymp? vagus tone what nerve brings sympathetic info. to the SA node? what exactly happens? what nerve carries parasympathetic info to the SA node? what does ACh do and how? baroreceptors found? function? how do they lower BP? what hormones increase HR? how do emotions affect HR? what effect on HR does nicotine have? which gender has a higher HR?  
Clinical things: heart sounds – what causes them?  
Define valve disorders – types, what is the most common problem?  
Why might one need prophylactic antibiotics before dental treatment if there is a valve problem? Definitions of MI, angina pectoris, CABG, balloon angioplasty, ectopic focus – how are each treated?  
What are cardiac enzymes? Why are they important for clinical testing?  
Why is heart disease often an inherited problem?  
What is CHF? Why does it happen? What are some signs/symptoms?  
what types of meds used to treat heart disease? Why do they work?  
understand the physio-ex heart lab and why the various chemicals/ions affect HR

## Chpt. 21 Blood Vessels

Wall composed of 1 or more (up to 3) tunics

know tunics & lamina (internal/external) characteristics, where found?

hierarchy of blood vessels and structure/function of arteries, arterioles, capillaries, sinusoid,

Which are most numerous? which have thinnest walls? which have highest BP? which have lowest BP? which have the slowest flowing blood?

what is the arterial pulse? what are pressure points – why important clinically?

what is an aneurysm?

venules, veins - differences between arteries and veins

types of capillaries, capillary bed: vessels found there, precapillary sphincter what does it do?

what is the purpose of the vascular shunt? what is meant by a true capillary? when would blood flow through true capillaries and when through shunts?

veins; characteristics, differences b/w arteries & veins how do veins in valves work?

physiology of circulation: blood flow, blood pressure, peripheral resistance. factors affecting resistance

$F = P/R$  what is the main factor that causes resistance?

MAP is ? what information does it provide? what is PP=?

what are normal SBP and DBP values

factors aiding venous return (respiratory and muscular pumps), all does body position affect venous return?

capillary dynamics: pressures, direction of flow at art. & venous ends, values for hydrostatic pressure, osmotic pressure in capillary at arterial and venous ends. Why is fluid lost from capillaries? how much fluid is lost into the interstitial space?

what factor controls hydrostatic pressure? what is the main factor maintaining osmotic pressure? what conditions/organs are most important in maintaining osmotic pressure?

why does edema happen? what are some causes?

regulation of blood pressure: nervous system controls: vasomotor center, baroreceptors,

what are some factors that vasodilate blood vessels? and what makes them vasoconstrict?

how do chemoreceptors, higher brain centers, & chemicals affect BP?

what types of stimuli do chemoreceptors respond to? what hormones affect BP and what is the mechanism for each?

What are the cardiovascular responses to exercise?

know the average blood flow through the brain, heart, skin, kidneys, skeletal muscle, digestive organs and why it may fluctuate

Variations in BP: hypotension, hypertension: primary, secondary

what is the valsalva maneuver? why is it clinically significant?

know all clinical problems and treatment – understand how meds are used to treat hypertension.

what are the differences between fetal and newborn circulation? what are the shunts?

what is the purpose of the hepatic portal system?