**IMPORTANT POINTS OF BLOOD PHYSIOLOGY**

• Total circulating blood is 8% of total body weight

• Active bone marrow forming the blood cells is called red marrow and inactive marrow is called yellow marrow. Inactive marrow is filled with fats.

• 75% bone marrow belongs to white blood cells producing myloid series

• Neutrophils and monocytes are produced from single precursor. There are se[arate pools for proginators of megakaryocytes, lymphocytes, erythrocytes, eosinophils, and basophils

• Mast cells, kupffer cells, dendritic cells, osteoclasts and langerhans cells also originate from bone marrow

• Best source of hematopoitic stem cells is umbilical cord blood

• Average half life of nutrophils in circulation is 6 hours

• Nutrophils, eosinophols and basophills are collectively called granulocytes/polymorphonuclear cells

• Eosinophils are abundant in GIT and respiratory mucosa

• Mast cells are abundant in areas rich in connective tissue eg beneath epithelium

• Monocyte leave the circulation and become macrophages in tissues. They donot reenter the circulation.

• Pluripotent uncommitted stem cells become committed by the action of IL1, IL6 followed by IL3(I,3,6 commits the stem cells, kind of love guru )

• Cytokines are hormone like molecules that act generally in paracrine fashion

• IL1 increases slow wave sleep and reduces apetite

• Platelets don’t have nuclei.They have half life of 4 days and life span of 8 to 10 days..

Remember the above difference between life span n half life of platelets

• Splenectomy causes increase in circulation platelets.

• Cytoplasm of platelets contains actin, myosin, glycogen, lysosomes, and two types of granules

a. Dense granules: they have nonprotein substances. They contain serotoninand ADP

b. Alpha granules: contain clotting factors, PDGF

• Platelet production is controlled by colony stimulating factor and thrombopoitin. Thrombopoitin controls the maturation of megakaryocytes and is produced by kidney and liver.

• Osmotic fragility of RBC starts at 0.5% saline. Almost half the RBCs are lysed at 0.40 to 0.42% saline. Complete lysis occurs at 0.35% saline.

• 2.5 % hb in adults is HbA2

• Hb F has the ability to decrease the polymerization of deoxygenated HbS. Hydroxyurea causes HbF production and is used in treatment of HbS

• Blood group antigens are called aglutinogens

• Blood group antibodies are called agglutinins

• Blood group antigens are also present in salivery gland, saliva, kidney, pancrease, liver, lungs, testes, semen, and amniotic fluid

• A and B antigens are actually oligosaccharides that differ in their terminal suger. In RBCs they are mostly OLIGOSPHINGOLIPIDS and in other tissues they are glycoprotiens.(past MCQ)

• An antigen called H antigen is present in all RBCs in all individuals. In blood group A the A antigen is attached to H antigen, in blood group B the B antigen is attached to H antigen where as in blood group O no antign is attached to H antigen i.e terminal part of blood group O is H antigen(past MCQ). Blood group AB has both antigens at the terminal.

• Bilirubin rarely penetrates Blood brain barrier in adults. But in neonates and fetus the BBB is permeable to it an in erythroblastosis feotalis it causes KERNICTERUS

• If whole blood is allowed to clot and clot is removed, remaining is called serum. (plasma minus factor 2,5,8,fibrinogen is called serum)(past MCQ)

• Serum has high serotonin level due to breakdown of platelets.

• Thrombomodulin is produced by all endothelial cells except that of microcicculation of brain

• Thombin is procoagulant in circulation blood. It becomes anticoagulant when it binds to thrombomodulin

• Lymph has lower protein content than plasma..

**Blood Storage**

1. "Storage of different blood products"!

\* Whole blood is stored at 4° C for 3 weeks.

\* Packed cells (RBCs) are stored at 1-6° C for 35 days.

\* FFP (fresh frozen plasma) and cryoprecipitate can be stored at -40° C for 2 years.

\* Platelets are stored at 22° C for 5 days.

mitral regurgitation =pansystolic murmur

\*mitral stenosis =mid diastolic murmur

\*aortic regurgitation =end diastolic murmur

\*aortic stenosis =ejection Systolic murmur

\*pulmonary regurgitation =diastolic murmur

\*pulmonary stenosis =Systolic murmur

\*throtoxicosis=innocent murmur

\*decrease hematocrit =continuous murmur

Gastric Motility increased by GASTRIN.

Gastric Motility decreased by CCK.

Intestinal Motility increased by CCK.

Intestinal Motility decreased by SECRETIN.

Gastric Emptying increased by Motilin.

Gastric Emptying decreased by CCK.

Gastric secretions inhibited by SECRETIN

1)If Newborn to 14 yr of age the most common cause is acute lymphoblastic leukemia

2)If age is between 40 to 60 most likely cause will be AML and CML

3)If age is more than 60 most likely causes r CLL and CML..

Repeated blood Transfusion.....HAEMCHROMOTOSIS

Multiple Transfusions....HYPOCALCEMIA

Massive Transfusion. ....HYPERKALEMIA, HYPOCALCEMIA nd HYPOTHERMIA