

THE BLOOD

Anemia - decreased hematocrit, hemoglobin content & oxygen-carrying capacity of the blood (small number of erythrocytes)

1. hemorrhagic anemia - due to severe bleeding
2. aplastic anemia - failure of myeloid tissue (marrow) to produce RBCs
3. iron deficiency anemia - when RBCs can't synthesize functional Hb
4. pernicious anemia - RBCs can't mature due to lack of vitamin B₁₂

Oxyhemoglobin - oxygen bound to heme in erythrocytes (RBCs) to supply tissues

Carbaminohemoglobin - carbon dioxide bound to globin in erythrocytes (RBCs) from the systemic tissues to be exchanged for oxygen in the pulmonary circuit

Thalassemia - the inability to produce adequate amounts of one of the four globin chains

Sickle cell anemia - a Thalassemia caused by changes in the amino acid sequence in one of the globin chains of hemoglobin (beta)

Erythroblasts - immature erythrocytes (RBCs) that synthesize hemoglobin

Reticulocytes - immature cells that shed their organelles to become mature erythrocytes (RBCs)

Thrombin - molecule that converts fibrinogen to fibrin for clot formation

Plasmin - enzyme that digests fibrin

Leukocytes (WBCs) - remove toxins, wastes, abnormal or damaged cells & defends the body against pathogenic invasion

1. most found in peripheral tissue (diapedesis)
2. do not circulate for extended periods of time
3. drawn by chemotaxis to invading pathogens

Lymphocytes - primary WBCs of the lymphatic system produced in the bone marrow, and lymphoid organs (thymus, spleen & nodes)

Hematocrit - the percentage of whole blood occupied by cellular elements

Polycythemia - elevated hematocrit with a normal blood volume

Polycythemia vera - elevation of all formed elements due to hematopoiesis

Hemophilia - an inherited inability to produce one or more of the necessary blood clotting factors

Disseminated intravascular coagulation (DIC) - bacterial toxins remove circulating fibrinogen by activating thrombin which converts fibrinogen into fibrin within the circulating blood. A complication of septicemia

<u>Blood Type</u>	<u>Agglutinogens</u> (Surface antigens)	<u>Agglutinins</u> (Plasma antibodies)	<u>Compatibility</u>
A	A	anti-B	A,O
B	B	anti-A	B,O
AB	A B	none	A,B,AB,O
O	none	anti-A, anti-B	O
Rh -	none	none	
Rh +	Rh	none	

Universal Donor: O neg

Universal Recipient: AB pos