

Structure and Function of the Hematologic System

1. Identify and describe the constituents of whole blood: formed elements (WBCs, RBCs, platelets), plasma proteins, and solutes (electrolytes, gases, nutrients, and waste products).
2. Identify the structural characteristics, normal values, and function of red blood cells.
3. Describe the following laboratory tests for red blood cells: hematocrit, hemoglobin, mean corpuscular volume (MCV), mean corpuscular hemoglobin (MCH), and mean corpuscular hemoglobin concentration (MCHC).
4. Identify the structural characteristics, normal values, and functions of the various types of white blood cells (leukocytes): neutrophils, basophils, eosinophils, lymphocytes, monocytes, and macrophages.
5. Identify common clinical disorders causing an increase in each type of white cell.
6. Identify and describe the primary and secondary lymphoid organs and the mononuclear phagocyte system (MPS).
7. Describe and identify the effects of colony-stimulating factors.
8. Describe the process of hematopoiesis.
9. Describe the sequence of events in hemostasis.
10. Describe specific substances that activate the intrinsic and extrinsic pathways of the coagulation system.
11. Describe the role of the fibrinolytic system.
12. Describe the types of information that can be obtained from a bone marrow biopsy, a complete blood count, a white blood cell differential, a bleeding time, a protime (PT), an activated partial thromboplastin time (APTT), and a reticulocyte count.
13. Describe changes that occur within the hematologic system with aging.

Alterations of Erythrocyte Function

1. Define anemia.
2. Classify the anemias in one of the following groups: macrocytic-normochromic, microcytic-hypochromic, and normocytic-normochromic.
3. Describe the common clinical manifestations of anemia.
4. Describe the pathophysiology and any unique clinical manifestations of the following anemias: iron deficiency, pernicious anemia, folic acid deficiency, sideroblastic anemia, aplastic anemia, hemorrhagic anemia, hemolytic anemia, and anemia of chronic disease.
5. Describe the types, causes, manifestations, and treatment of polycythemia.