Review Sheet for Blood and Immune System Exam

Blood Review

1. Formation of cells (Erythrocytes, Leukocytes, Platelets)
   a. Know whether the cells develop from myeloid or lymphoid stem cells.
   b. What is the stimulus for the formation of erythrocytes?
   c. What chemical is responsible for the production of erythrocytes and leukocytes?

2. Red blood cells
   a. Know the structure and functions of hemoglobin.
   b. How do we dispose of dying and aged RBC’s?
   c. How do we refer to hemoglobin when it carries oxygen or carbon dioxide? Is it acting as a weak acid or a weak base?
   d. Know the abnormalities of blood cell counts, causes and cures (anemias, polycythemia).

3. Leukocytes
   a. Differentiate between the types of leukocytes (granular or agranular).
   b. What are their functions?
   c. If they are granular, what type of chemicals do they contain?
   d. Know the abnormalities of leukocytes (leukocytosis, leukemia, leukopenia).

4. Platelets
   a. What proteins assist the platelets in adhering to the collagen? To each other?
   b. Once they have formed a plug, what chemicals do they release? What do those chemicals do?
   c. What do your blood vessels form to inhibit plug formation?

5. Plasma
   a. What is plasma composed of?
   b. Know the general functions of the different blood proteins (create BOP, act as transporters, clotting protein, anticlotting protein, antibodies).

6. Acid-Base Balance
   a. Know the difference between an acid and a base.
   b. Know the 3 buffer systems in the notes (bicarbonate/carbonic acid; protein buffers [plasma proteins and hemoglobin]) and how they help to buffer the blood.
   c. Which portion is a weak acid or a weak base?

7. Steps in clot formation
   a. What initiates the extrinsic pathway to begin? The intrinsic?
   b. What occurs after we activate factor X?
   c. Also know what we can use as anticoagulants and clot busters.

8. Blood typing
   a. Know the antigens and antibodies present for each blood type.
   b. Understand transfusion compatibilities.
   c. Who are the universal donor and recipient?
Immune Response

1. What nonspecific (innate) forms of protection do we have?
   a. 1st lines of defense: Physical barriers.
   b. 2nd lines of defense: Chemical barriers (acid, lysozyme, interferon, complement) and Biological barriers (macrophages and the inflammatory response)

2. What helps us form an adaptive immune response (3rd line of defense)?
   a. Know which cells have which receptors and the functions of those receptors.
   b. What occurs when lymphocytes become naïve in the thymus or bone marrow?
   c. How do we activate T8 cells? T4 cells?
   d. After they are activated what cells do they become (Cytotoxic (Killer) T cells, delayed hypersensitivity cells, regulatory (suppressor) cells, helper T cells)? What are the functions of these cells?
   e. What types of chemicals do the helper T cells release and how do they help to stimulate other cells of the immune system?
   f. How do we activate B lymphocytes? After they are activated what cell do they become?
   g. Know the functions of the different types of antibodies.

3. Know the different types of acquired immunity you can develop
   a. Innate vs. acquired (naturally and artificially)

4. Know any immune abnormalities we got to discuss.
   a. Graft vs. Host, Autoimmune diseases, Primary and secondary immunodeficiencies

Lymphatic Organ

1. Know the structure and functions of the different lymphatic organs (lymph vessels, nodules, tonsils, nodes, thymus, spleen)
   a. How is lymph moved through the vessels and where does it end up?
   b. What type of cells are found in each structure?