**Unit 7: Hematology**
**Chapter 33 & 34**
**ONLINE CONTENT (2H)**

**Complete the worksheet and submit in the Unit 7: Hematology dropbox by March 17, 2025 at 0800. Please be sure to bring a copy to class on March 17, 2025.**

| Table 1 | **Iron Deficiency Anemia** | **Thalassemia** | **Cobalamin (Vitamin $B_{12}$) Deficiency** | **Folic Acid Deficiency** |
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| **Etiology** | - Inadequate dietary intake, malabsorption, blood loss, and increased demand of iron | Genetic disorder causing defective hemoglobin synthesis | Autoimmune destruction of gastric parietal cells leading to lack of intrinsic factor | Inadequate intake, malabsorption, increased demand, drug interfering with folate absorption |
| **Clinical Manifestations** | - Fatigue<br>- Weakness<br>- Pallor<br>- Brittle nails | In mild cases this is typically asymptomatic but in more severe cases you can see jaundice, bone deformities, and iron overload | Fatigue, pallor, glossitis (red swollen tongue), neurologic symptoms | Macrocytic anemia, fatigue, pallor, glossitis, no neuro issues |
| **Diagnostic Studies** | - Lab tests such as Hct, Hgb, iron | Low Hgb, low MCV, normal iron levels, hemoglobin electrophoresis | Low serum B12, positive Schilling test, elevated homocysteine levels | Low serum folate levels, high MCV, elevated homocysteine levels |
| **Drug Therapy** | - Oral iron supplements such as ferrous sulfate or ferrous gluconate | Frequent blood transfusions to maintain Hgb levels Deferoxamine to prevent iron overload | Parenteral B12 injections, oral or sublingual B12 | Oral folic acid supplementation (1mg/day) |
| **Nursing Management** | - Encourage iron rish food (red meat, spinach)<br>- Monitor for signs of bleeding Managing constipation | Monitor for signs of iron overload (cardiac/liver dysfunction) Encourage folic acid supplements Genetic counseling for affected families | Educate on lifelong B12 injections, encourage animal bases foods or fortified cereals in diet, monitor for neurologic issues | Educate on folic rich foods like leafy greens, citrus fruits, and legumes, encourage supplements during pregnancy to prevent neural tube defects |

| Table 2 | **Anemia of Chronic** | **Aplastic Anemia** | **Acute Anemia due** | **Chronic Anemia** |
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| | Disease | | to Blood Loss | due to Blood Loss |
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| **Etiology** | Chronic diseases cause altered iron metabolism, decreased erythropoiesis, and shortened RBC lifespan | Bone marrow failure leads to low RBCs, WBCs, and platelets | Acute hemorrhage (trauma, GI bleed, surgery), hypovolemia occurs first | Slow, persistent blood loss that leads to iron deficiency anemia over time |
| **Clinical Manifestations** | Weakness, fatigue, pallor, symptoms of underlying condition (joint pain in RA) | Infections, bleeding, petechiae, ecchymosis, fatigue, pallor | Tachycardia, hypotension, dizziness, shock symptoms (confusion, low BP, weak pulse) | Brittle nails, melena, menorrhagia, fatigue, pallor, weakness |
| **Diagnostic Studies** | Low serum iron, normal of high ferritin, low erythropoietin levels | Pancytopenia, low reticulocyte count, bone marrow biopsy | Low Hct and Hgb, normal MCV initially, reticulocytosis | Stool occult blood test, colonoscopy or endoscopy, low iron, low ferritin |
| **Drug Therapy** | Epoetin alfa, darbepoetin alfa, iron therapy | Immunosuppressive therapy: antihemolytic globulin and cyclosporine, and corticosteroids, bone marrow transplant, blood transfusions, antibiotics | Immediate volume resuscitation (IV fluids), blood transfusions, iron supplements | Iron supplements (oral ferrous sulfate), treat underlying cause (PPI for ulcers, surgical interventions for polyps) |
| **Nursing Management** | Monitor for worsening anemia, encourage balanced nutrition, educate on erythropoietin therapy in CKD, manage fatigue and activity intolerance | Monitor for infection and bleeding, educate on hand hygiene and avoiding crowds, administer blood products as needed, prepare for possible stem cell transplant | Monitor vital signs, stop the bleeding source (pressure, surgery, meds), ensure adequate IV access for fluids and transfusions, and oxygen if needed | Identify and treat source of blood loss if possible, encourage iron rich foods, educate on iron supplementation (avoid dairy/calcium) |

| Table 3 | **Acquired Hemolytic Anemia** | **Hemochromatosis** | **Polycythemia** |
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| **Etiology** | RBCs are prematurely destroyed due to external factors such as immune medicated destruction, mechanical destruction, infections, drugs, and toxins | Disorder of iron overload, leading to excess iron disposition in organs | Increased RBC production, leading to increased blood viscosity and a risk of clot formation |

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| **Clinical Manifestations** | Jaundice, dark urine, hemolytic crisis leading to shock and hypotension, fatigue, pallor, weakness | Fatigue, joint pain, bronze skin pigmentation, cardiac complications such as dysrhythmias and HF | Ruddy complexion, hypertension, headache, pruritus, splenomegaly |
| **Diagnostic Studies** | CBC, indirect bilirubin and lactate dehydrogenase, haptoglobin, and Coombs test | Serum iron, ferritin, and transferrin saturation, liver biopsy, and genetic testing | CBC, WBCs, and platelets, erythropoietin levels |
| **Drug Therapy** | Corticosteroids (prednisone), intravenous immunoglobin (IVIG), plasmapheresis, and blood transfusions if anemia is severe | Phlebotomy (blood removal) is the main treatment, iron chelation therapy | Phlebotomy, hydroxyurea (suppress bone marrow activity), low dose aspirin |
| **Nursing Management** | Monitor for signs of hemolysis (jaundice, dark urine, and fatigue), ensure adequate hydration to prevent kidney damage, prevent and monitor infections, educate pts o9n avoiding meds that could trigger hemolysis | Encourage low iron diet (avoiding red meat), monitor for complications such as liver damage, diabetes, and heart disease, and provide genetic counseling for pts and their families | Monitor for signs of thrombosis such as swelling, pain or neuro deficits, encourage hydration to reduce blood viscosity, educate pts on their phlebotomy schedule, advise against smoking and excessive alcohol intake which can worsen the condition |

***In order to receive full credit (2H class time) for this assignment, it must be completed in its entirety by the due date/time assigned. Any assignment not completed in its entirety by the due date and time will result in missed class time and must be completed by the end of the semester to pass the course.***