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Unit 7: Hematology
Chapter 29 & 30
ONLINE CONTENT (1.5 H)

Complete the worksheet and submit in the Unit 7: Hematology dropbox by March 20, 2023 at 0800. Please be sure to bring a copy to class on March 20, 2023.

Table 1	**Iron Deficiency Anemia**	**Thalassemia**	**Cobalamin (Vitamin B_{12}) Deficiency**	**Folic Acid Deficiency**
Etiology	Inadequate dietary intake. Blood loss Hemolysis	Due to absent or reduced globulin proteins. Autosomal recessive gene based.	Lack of proper protein IF that allows absorption of Cobalamin.	Chronic ETOH Chronic HD Dietary deficiency, drug interference, increased requirement, malabsorption syndromes.
Clinical Manifestations	No symptoms early on Pallor, Glossitis,cheilitis, headache, paresthesias, burning sensation of tongue	Minor- often asymptomatic. Hypochromia, mild splenomegaly, bronzed color of skin and bone marrow hyperplasia. Major- Physical/Mental growth is often slowed. Palor, Jaundice, Pronounced splenomegaly, Hepatomegaly and Cardiomyopathy may occur. Bone marrow space expansion, Thickening of cranium and maxillary cavity. ThrombocytosisLung disease, hypertension, diabetes, osteoporosis, pulm hypertension, thrombosis.	Symptoms occurs due to tissue hypoxia. Sore red beefy shiny tongue. Anorexia, nausea and vomiting, ABD pain. Weakness, paresthesia of feet and hands, reduced vibratory and position sense. Ataxia and impaired thought process ranging from confusion to dementia. May take several months to manifest.	Stomatitis, Cheilosis, Dysphagia, flatulence, and diarrhea. Thiamine deficiency,.
Diagnostic	Blood work, Occult blood stool test, endoscopy,	Hgb/Hct, MCV, Reticulocytes, Serum Iron, TIBC,	Routine labs as previously stated and serum	Routine labs a previously stated. Serum Folate levels

Studies	colonoscopy. Bone marrow biopsy if required.	Transferrin, Ferritin, Bilirubin, B12, Folate.	Cobalamin levels. Serum test for Ant-IF antibodies, Upper GI study/biopsy due to possible increased cancer risk. Serum MMA which would be high.	are key.
Drug Therapy	Iron tablets, give with Vitamin C for better absorption. Iron may be given IM or IV as well.	Blood transfusions or exchange transfusions with chelating agents. Vit C. Zinc supplements, Iron supplements, Stem Cell transplant	Cobalamin administration PO, IM, or Parenteral, Intranasal, or Sublingual.	Replacement therapy. Either medication or dietary or both.
Nursing Management	Give tablets 1 hour before food. Give with orange juice or vitamin for better absorption. Advocate for stool softners if constipation occurs. Encourage increase of dietary iron intake.	Encourage rest periods. Prevent and monitor for signs of infections. Monitor for signs of bleeding and prevent bleeding.	Assess neurologic function. Reduce risk for injury. Protect patient from falling, burns or trauma. Physical therapy may be required.	Protect patient from injury. Ensure compliance or medication.

Table 2	**Anemia of Chronic Disease**	**Aplastic Anemia**	**Acute Anemia due to blood loss**	**Chronic Anemia due to blood loss**
Etiology	Caused by cancer, autoimmune and infectious disorders such as HIV, hepatitis, and malaria. HF or chronic inflammation. Bleeding episodes can contribute as well. Associated with the underproduction of RBC's	Autoimmune, toxic injury to bone marrow stem cells or stem cell defect.	Caused by blood loss from trauma, surgery complications, or conditions that disrupt vascular integrity	Hemorrhoids, menstrual/post-menopausal blood loss. Bleeding ulcers.

Clinical Manifestations	Reduced RBC lifespan and surpressed reduction of erythropoietin. And an ineffective bone marrow response.	Fatigue and dyspnea. Cariovascular and cerebral responses could be seen. Ow neutrophil count. Thrombocytopenia- petechiae, bruising, nosebleeds.	Hypotension, tachycardia. Vasovagal syncope. Shock lactic acidosis. Cool clammy skin	Pallor, Glossitis,cheilitis, headache, paresthesias, burning sensation of tongue
Diagnostic Studies	Serum Ferritin. Iron studies. Folate, B12	Hgb, WBC, platelets. RBC. Iron studies- serum iron. TIBC. Bone marrow biopsy/aspiration and pathologic examination.	CBC focusing on RBC, Hgb,Hct.	CBC/Iron studies.
Drug Therapy	Correct the underlying disorder. Blood transfusion may be required. Possible Erythropoeitin therapy.	Immunosuppressive therapy. Cyclosporine, Steroids, and eltrombopag. Blood transfusions. Iron binding agent to prevent overload.	Replacing blood volume. Stopping source of the hemorrhage. IV fluids. Blood transfusions, platelets, plasma, cryoprecipitate.	Identifying the source and stopping the bleeding. Blood transfusions and iron supplementation.
Nursing Management	Monitor for signs of bleeding. Protect patient from injury.	Remove the causative agent. Possible Neutropenic precautions. Monitor and protect from bleeding.	Prevent blood loss. If post-op monitor drain output. Monitor for signs/symptoms of infection. Prevent injury.	Monitor/prevent bleeding. Ensure medication compliance.

Table 3	**Acquired Hemolytic Anemia**	**Hemochromatosis**	**Polycythemia**
Etiology	Hemolysis of RBC's from either physical destruction, antibody reactions, infectious agents or toxins.	Caused by iron overload. Genetic defect is the most common cause. May be caused by liver disease and chronic blood transfusions.	Primary- increased production of RBC's, WBC's and platelets. Secondary- Hypoxia driven or hypoxia independent. O2 need from high altitude, lung disease,

			cardiovascular disease, alveolar hypoventilation, defective O2 transport or tissue hypoxia.
Clinical Manifestations	Hemolysis of RBC's Weakness, pallor, jaundice, dark-colored urine, fever, possible heart murmur.	Fatigue, impotence, arthralgia, abd pain, and weight loss. Liver enlargement and eventual cirrhosis. Diabetes. Bronzing of skin, cardiomyopathy, testicular atrophy.	HA, vertigo, tinnitus, and visual changes. Generalized pruritus. Paresthesia, angina, HF, intermittent claudication, and thrombophlebitis. Inadequate platelet function, bruising nosebleeds, or GI bleeding. Hepato/splenomegaly. Increased urice acid levele, myelofibrosis, leukemia.
Diagnostic Studies	CBC, iron studies	Iron studies- serum iron, tibc, and serum ferritin. Genetic testing for diagnosis confirmation.	CBC, uric acid, b12, histamine level, bone marrow examination.
Drug Therapy	Corticosteroids or blood products. Possible splenectomy. Monoclonal antibodies. Aggressive hydration and electrolyte replacement.	Iron removal- removing 500ml of blood per week for 2-3 years until iron stores return to normal. Iron chelating agents.	Myelosuppresive agents such as hydroxurea, busulfan, and chlorambucil. Low dose ASA, allopurinol.
Nursing Management	Supportive care. Monitoring vitals. Monitoring/preventing any bleeding/injury.	Education on dietary restrictions such as vitamin c, iron supplements, uncooked seafood, and iron rich foods.	Therapeutic phlebotomy, Assess fluid intake and output. Ensure med compliance and education on side effects. Monitor nutrition status. Encourage physical activity to prevent thrombus formation. Monitor for complications.