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

Complete the worksheet and submit in the Unit 7: Hematology dropbox by March 18, 2024 at 0800. Please be sure to bring a copy to class on March 18, 2024.

Table 1	**Iron Deficiency Anemia**	**Thalassemia**	**Cobalamin (Vitamin B_{12}) Deficiency**	**Folic Acid Deficiency**
Etiology	Inadequate diet intake, malabsorption, blood loss, or hemolysis.	Inadequate production of normal Hgb due to absent or reduced globulin protein.	Chronic alcohol use, diet deficiency, celiac, gastrectomy. Gastric bypass, helicobacter pylori, pernicious, pregnancy, intestinal malabsorption	Chronic alcohol use, hemodialysis, diet deficiency, use of metformin or phenytoin, pregnancy, celiac, Crohn's, small bowel resection.
Clinical Manifestations	As it becomes chronic s&s start to show including pallor, glossitis, cheilitis, headache, paresthesia's, and burning sensation of tongue.	Minor: mild splenomegaly, bronzed skin, bone marrow hyperplasia. Major: growth and development deficits starting at age 2, paleness and other general anemia symptoms, jaundice, pronounced splenomegaly	Beefy, red, swollen tongue, anorexia, nausea, vomiting, abd pain, weakness, paresthesia of hands and feet, ataxia, impaired cognition.	Stomatitis, cheilosis, dysphagia, gas, diarrhea, neurological symptoms
Diagnostic Studies	Labs: H&H, RBC count, reticulocyte count, serum iron, ferritin, transferrin, TIBC, stool sample for occult blood.	Labs: H&H, MVC, reticulocytes, serum iron, TIBC, transferrin, ferritin, bilirubin, B12, folate.	Larger RBC, cobalamin, folate levels, MMA, serum homocysteine	Folate levels
Drug Therapy	PO: ferrous sulfate or ferrous gluconate IM or IV: iron dextran, sodium ferrous gluconate, iron sucrose	Oral deferasirox, deferiprone or IV, Subcutaneous deferoxamine, luspatercept-aamt	Parenteral vitamin B12, or intranasal.	Folic acid
	Treat the underlying	Minor: no treatment	Assess for any	Give medications,

Nursing Management	cause, replace iron, education of food rich in iron, and possible medications or packed RBC.	needed Major: blood transfusions or exchange transfusions in conjunction with chelating agents. May need splenectomy, HSCT only for sure cure.	neurologic problems. Fall precautions, low sensory function so protects from cold and heat. Some patients might need PT.	possible need for O2, alternate rest and active periods, educate on good nutrition, monitor the patients cardiorespiratory response.

Table 2	**Anemia of Chronic Disease**	**Aplastic Anemia**	**Acute Anemia due to Blood Loss**	**Chronic Anemia due to Blood Loss**
Etiology	Develops 1-2 months into disease. These include cancer, autoimmune and infectious disorders, HF, or chronic inflammation.	70% is due to autoimmune activity by autoreactive T lymphocytes. Other causes are toxic injury to bone marrow stem cells or inherited stem cell deficit.	Surgery, trauma, problems that disrupt the vascular system.	Depleted iron stores.
Clinical Manifestations	High serum ferritin and increased iron stores	Can occur abruptly or over weeks, fatigue, dyspnea, cardiovascular and cerebral responses.	Vasovagal syncope (500ml or 10%), increased HR with exercise and slight postural hypotension (1000mL or 20%), postural hypotension and increase HR with exercise (1500mL or 30%), BP/CVP/CO below normal, air hunger, rapid thready pulse, and cold clammy skin (2000mL or 40%), shock, lactic acidosis, and potential death (2500mL or 50%)	Fatigue. Pallor, normal generalized anemia symptoms.
Diagnostic Studies	Serum ferritin, H&H, RBC count, folate, and coablumin	H&H, CBC, Reticulocyte count, serum iron, TIBC, bone marrow biopsy.	Values may seem normal or high for 2-3 days. After plasma is replaced then RBC, H&H will be low.	Labs: H&H, RBC count, reticulocyte count, serum iron, ferritin, transferrin, TIBC, stool sample for occult blood.
Drug Therapy	If severe blood transfusion, EPO therapy if renal or	HSCT, immunosuppressive therapy with antithymocyte	Packed RBC, whole blood, platelets, plasma, and cryoprecipitate may be	Iron supplements

	cancer are the cause.	globulin and cyclosporine. Eltrombopag, cyclophosphamide, alemtuzumab, androgens	given. NS, LR, iron supplements.	
Nursing Management	Treat the underlying cause of the anemia, only use EPO for a short time due to increased risk of thromboembolism.	Identify and remove the causative agent when possible. Provide supportive care, interventions appropriate for a patient with pancytopenia, interventions aimed at preventing infection and bleeding	Assess and control pain, IV access, blood type cross and match, control bleeding, supportive care emotionally, prevent and treat shock.	Keep bleeding controlled, identify the cause.

Table 3	**Acquired Hemolytic Anemia**	**Hemochromatosis**	**Polycythemia**
Etiology	Hemolysis of RBC is caused by macrophages in the spleen, liver, and bone marrow.	Genetic defect that increases iron absorption in the intestines.	Production and increased levels of RBC in the body. 2 types
Clinical Manifestations	Jaundice, enlarged spleen and liver, fatigue, weakness, pallor.	Fatigue, arthralgia, impotence, abdominal pain, weight loss, liver enlargement in later stages, bronzing of the skin, cardiomyopathy, arthritis, testicular atrophy,	HTN, hypervolemia, headache, vertigo, dizziness, tinnitus, visual changes, erthromelaliga.
Diagnostic Studies	UA, measurement of lactate dehydrogenase, haptoglobin, reticulocyte, bilirubin levels.	Serum iron, TIBC, serum ferritin. Genetic testing, MRI, liver biopsy,	H&H, bone marrow biopsy, CBC, low EPO, cobalamin
Drug Therapy	Folic acid, corticosteroids, rituximab, IVIG	Iron-chelating drugs (deferasirox and deferiprone), iron supplements	81mg aspirin, hydroxyurea, busulfran, ruxolitinib,
Nursing	Maintain renal function.	Educate on limiting vitamin C, avoiding uncooked seafood,	Provide required phlebotomy, I&O, give medications, keep

Management		and increasing iron rich foods. Manage DM and HF.	follow up appointments, education on inadequate food intake side effects.

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.