Unit 7: Hematology
Chapter 33 & 34
ONLINE CONTENT (2H)
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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**
Etiology	Iron deficiency anemia may develop from inadequate diet intake, malabsorption, blood loss, or hemolysis. may occur after certain types of gastrointestinal (GI) surgery and in malabsorption syndromes.	group of diseases involving inadequate production of normal Hgb, which decreases RBC production. -Due to absent or reduced globulin protein.	Without IF, we do not absorb cobalamin, the gastric mucosa does not secrete IF because of either gastric mucosal atrophy or autoimmune destruction of parietal cells.	Folic acid (folate) deficiency can cause megaloblastic anemia. Folic acid is needed for DNA synthesis leading to RBC formation and maturation.
Clinical Manifestations	patient may not have any symptoms. Pallor Glossitis (inflammation of the tongue) Cheilitis (inflammation of the lips headache, paresthesias, and a burning sensation of the tongue.	often asymptomatic. -mild to moderate anemia with microcytosis (small cells) -hypochromia (pale cells), -mild splenomegaly - bronzed skin color, and bone marrow hyperplasia.	sore, red, beefy, and shiny tongue; anorexia, nausea, and vomiting; and abdominal pain. Weakness, paresthesia's of the feet and hands, ataxia, muscle weakness, and impaired cognition	Symptoms may be attributed to other coexisting problems (e.g., cirrhosis, esophageal varices). GI problems may include stomatitis, cheilosis, dysphagia, flatulence, and diarrhea.
Diagnostic Studies	stool occult blood test -Endoscopy and colonoscopy may detect GI bleeding. - A bone marrow biopsy	CBC, BMP Monitor liver, heart, and lung function	RBC, folate level A serum test for anti-IF antibodies is specific for pernicious anemia.	Folic acid, Thiamine levels
Drug Therapy	Iron/ Folic acid Vitamin C	oral deferasirox or deferiprone, or IV or subcutaneous deferoxamine.	parenteral vitamin B12 (cyanocobalamin, hydroxocobalamin) or intranasal cyanocobalamin.	folic acid deficiency with replacement therapy. dosage is 1 to 5 mg/day by mouth.
	Assess the Hgb and	Minor = NO tx	Protect the patient	Teach the patient to

Nursing Management	RBC count Stress adherence with diet and drug therapy.	Major = blood transfusions or exchange transfusions in conjunction with chelating agents that bind to iron.	from falling, burns, and trauma. reduce the risk for injury	eat foods high in folic acid

Table 2	**Anemia of Chronic Disease**	**Aplastic Anemia**	**Acute Anemia due to Blood Loss**	**Chronic Anemia due to Blood Loss**
Etiology	due to autoimmune activity by autoreactive T lymphocytes.1 The cytotoxic T cells target and destroy the patient's own hematopoietic stem cells.	disease in which the patient has peripheral blood pancytopenia (decrease of all blood cell types—RBCs, white blood cells [WBCs], platelets) and hypocellular bone marrow.	occurs with sudden bleeding. loss include trauma, surgery complications, and problems that disrupt vascular integrity.	Anemia can result from primary hematologic problems or develop because of diseases or disorders of other body systems.
Clinical Manifestations	anemia, such as fatigue and dyspnea, as well as cardiovascular and cerebral responses	anemia, such as fatigue and dyspnea, as well as cardiovascular and cerebral responses, may occur	postural hypotension, bleeding	↑ HR, ↑ pulse pressure, systolic murmurs, intermittent claudication, angina, HF, MI
Diagnostic Studies	Hgb, WBC, and platelet values are decreased. Other RBC indices are generally norma	marrow elements, Hgb, WBC, and platelet values are decreased	RBC, Hgb, and hematocrit levels are low and reflect the actual blood loss. Laboratory data do not reflect the RBC loss	Folic Acid, iron Heme and plasma membrane synthesis and structure
Drug Therapy	immunosuppressive therapy with antithymocyte globulin (ATG) and cyclosporine.1 Eltrombopag (Promacta), an oral thrombopoietin receptor agonist, can increase platelet counts.	antithymocyte globulin (ATG) and cyclosporine.1 Eltrombopag (Promacta), an oral thrombopoietin receptor agonist, can increase platelet counts.	Blood transfusions (packed RBCs) can be used depending on the volume lost.	PRBCs, , cobalamin deficiency, folic acid deficiency)
Nursing Management	Early consideration of an HSCT is critical.	Nursing actions are aimed at preventing complications from	Assess the patient for pain. Internal bleeding may cause	Monitor the patient's cardiorespiratory

	identifying and removing the causative agent	infection and bleeding.	pain due to tissue distention, organ displacement, and nerve compression.	response to activity (e.g., tachycardia, dysrhythmias, dyspnea, diaphoresis, pallor, tachypnea).

Table 3	**Acquired Hemolytic Anemia**	**Hemochromatosis**	**Polycythemia**
Etiology	results from hemolysis of RBCs from extrinsic factors. These factors include (1) physical destruction, (2) antibody reactions, and (3) infectious agents and toxins	iron overload disorder characterized by increased intestinal iron absorption.	production and presence of increased numbers of RBCs.
Clinical Manifestations	Blood transfusion reactions	symptoms usually do not develop until after age 40 years in men and after 50 years in women.11 Early symptoms are nonspecific.	headache, vertigo, dizziness, tinnitus, and visual changes.
Diagnostic Studies	Aggressive hydration and electrolyte replacement to reduce the risk for kidney injury caused by Hgb (from RBC lysis) clogging the kidney tubules and subsequent shock.	Laboratory values show a high serum iron, TIBC, and serum ferritin. Testing for known genetic mutations confirms the diagnosis. MRI can measure liver and cardiac iron.4 Liver biopsy can quantify the amount of iron and establish the degree of organ damage.	high Hgb, hematocrit, and RBC mass; (2) bone marrow examination showing hypercellularity of RBCs, WBCs, and platelets; and (3) presence of JAK2 V617F or JAK2 exon 12 mutation.1
Drug Therapy	immunosuppressive agents may be used, such as glucocorticoids or rituximab (Rituxan), a monoclonal antibody to B-cell CD20.	Iron-chelating drugs may be used. Deferoxamine chelates and removes iron via the kidneys.	Give myelosuppressive agents as ordered. Observe the patient and teach them about drug side effects.
Nursing Management	general supportive care until the causative agent can be eliminated or at least made less injurious to the RBCs.	We manage problems from organ involvement (e.g., diabetes, HF) with the usual treatment for these problems.	Assess intake and output during hydration therapy to avoid fluid overload (which worsens circulatory congestion) or fluid deficit (which makes the blood more viscous).

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.