

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	Pg 719 Inadequate diet intake, malabsorption, blood loss, hemolysis	pg 720 inadequate production of Hgb which decreases RBC production. It is due to an absent or reduced globulin protein. Those that are released into the blood are rapidly destroyed by macrophages in the spleen.	Pg 722 Pernicious anemia is the most common cause. Caused by an absence of intrinsic factor (IF). Without IF we cannot absorb cobalamin.	Pg 722 Chronic alcohol use, hemodialysis, diet deficiency, drugs interfering with absorption or use of folic acid, pregnancy, celiac disease, chrons, or small bowel resection.
Clinical Manifestations	Pallor, glossitis, cheilitis, headaches, paresthesia's, and burning sensation of the tongue.	Minor thalassemia is often asymptomatic with mild splenomegaly, bronzed skin color and bone marrow hyperplasia. Major is developed in childhood and the person is pale with prominent jaundice and pronounced splenomegaly.	Sore, red beefy, and shiny tongue, anorexia, nausea and vomiting, abdominal pain. Weakness, paresthesia's of the feet and hands, reduced vibratory and position senses, ataxia, muscle weakness and impaired cognition.	Stomatitis, cheilosis, dysphagia, flatulence, and diarrhea.
Diagnostic Studies	Stool occult blood test, endoscopy, colonoscopy, and bone marrow biopsy. Hgb and hct levels, RBC count, serum iron and serum transferritin	Increased reticulocytes, increased serum iron, decreased TIBC, decreased transferrin, increased bilirubin, decreased folate	Low hgb, hct, increased MCV, increased ferritin, decreased serum B12. RBC are large and abnormal in shape. Serum test for anti-IF antibodies is specific for pernicious anemia.	Low serum folate level with a normal serum cobalamin level.
Drug Therapy	100-200 mg of	Oral deferasirox, deferiprone, or IV subcutaneous	Need cobalamin administration or may die in 1 to 3	Replacement therapy with 1-5 mg/day by mouth.

	elemental iron supplements taken in 3-4 daily doses	deferoxamine. Luspatercept-aamt can be given subcutaneously ever 21 days.	years. May need parenteral vitamin B12. 1000 mcg/day of cobalamin IM for 2 weeks, then weekly until Hgb is normal then monthly for life.	
Nursing Management	Treat underlying problem that is causing iron loss, reduced intake, or poor iron absorption. Educate on good sources of iron in foods. May need packed RBC transfusion.	Minor: Does not need treatment because the body adapts to the reduction of normal Hgb. Major: blood transfusions or exchange transfusions in conjunction with chelating agents.	Assess for neurological problems that are not corrected by replacement therapy. Implement measures to reduce the risk for injury from the decreased sensitivity to heat and pain. Protect from falls, burns and trauma.	Teach patient to 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	Develops after 1-2 months of disease activity. Causes include cancer, autoimmune and infectious disorders, HIV, hepatitis and malaria, HF or chronic inflammation. Usually associated with an underproduction of RBCs.	Usually related to autoimmune activity by the autoreactive T lymphocytes. Other causes include toxic injury to bone marrow stem cells or an inherited stem cell defect.	Pg 723 Occurs with sudden bleeding. Causes include trauma, surgery complications and problems that disrupt vascular integrity.	Bleeding ulcers, hemorrhoids, menstrual and postmenopausal blood loss. Hemolysis of RBC can also cause.
Clinical Manifestations	Based on the underlying cause.	May have symptoms caused by suppression of any or all bone marrow elements. Fatigue, dyspnea (anemia), susceptible to infection, and at risk for bleeding,	Increased HR with exercise and slight postural hypotension. Postural hypotension and increased HR with exercise. Air hunger, rapid thready pulse and	The effects are usually due to depleted iron stores.

		petechiae, bruising and nosebleeds.	cold, clammy skin, shock, lactic acidosis and potential death.	
Diagnostic Studies	High serum ferritin and increased iron stores. Normal folate and cobalamin blood levels	Laboratory studies confirm the diagnosis. Because it affects all marrow elements, Hgb, WBC, and platelet vales are decreased. Bone marrow biopsy, aspiration, and pathologic examination will be done to confirm the laboratory findings.	Values will be normal or high for 2-3 days. Once the plasma volume is replaced, the RBC mass is less concentrated. Then RBC, hgb and hematocrit levels are low and reflect the actual blood loss.	Monitor Lab values. Once the plasma volume is replaced, the RBC mass is less concentrated. Then RBC, hgb and hematocrit levels are low and reflect the actual blood loss.
Drug Therapy	Blood transfusions may be needed. EPO therapy is used for anemia from renal disease	Identify and remove the causative agent. Early consideration of HSCT is critical. Immunosuppressive therapy with antithymocyte globulin and cyclosporin. Eltrombopag can increase platelet counts.	Blood transfusions can be used depending on the volume loss. Whole blood, platelets, plasma and cryoprecipitate may be given.	Iron supplements, whole blood, platelets, plasma, and cryoprecipitate may be given.
Nursing Management	Correct the underlying cause.	Prevent complications from infection and bleeding.	Replacing blood volume to prevent shock. Promoting coagulation to prevent further bleeding. Finding the source of the bleeding and stopping the blood loss.	Identify the source and stop the bleeding. Replacing blood volume to prevent shock. Promoting coagulation to prevent further bleeding. Finding the source of the bleeding and stopping the blood loss.

Table 3	Acquired Hemolytic Anemia	Hemochromatosis	Polycythemia
Etiology	Hemolysis of RBC from physical destruction, antibody reactions, and infectious agents and toxins.	Genetic defect is most common cause. Increased intestinal iron absorption.	Increased RBCs that can be so great that blood circulation is impaired because of increased blood viscosity and volume.

Clinical Manifestations	Weakness, paleness, jaundice, dark-colored urine, fever, inability to do physical activity, heart murmur.	Typically, don't develop until after 40 years in men and 50 years in women. Fatigue, arthralgia, impotence, abdominal pain, and weight loss. In later stages there is liver enlargement and cirrhosis.	Headache, vertigo, dizziness, tinnitus, and visual changes. Itching*. Painful burning and redness of the hands and feet. Angina, HF, and intermittent claudication and thrombophlebitis.
Diagnostic Studies	RBC levels	Exceed total iron concentrations of 50 g. high serum iron, TIBC and serum ferritin. Testing for genetic mutation confirms the diagnosis.	High Hgb, hct and RBC mass. Bone marrow examination showing hypercellularity of RBCs, WBC, and platelets. The presence of JAK2 V617F or JAK2 exon 12 mutation.
Drug Therapy	Aggressive hydration and electrolyte replacement to reduce the risk for kidney injury caused by Hgb . Corticosteroids and blood products.	Iron-chelating drugs may be used. Deferoxamine chelates and removes iron via the kidneys. Avoid vitamin C and iron supplements, uncooked seafood, and iron rich foods.	Myelosuppressive agents such as hydroxyurea may be given. Phlebotomy to reduce hct.
Nursing Management	Aggressively hydrate and replace electrolytes.	Remove excess iron from the body and minimize symptoms the patient may have. Remove 500 mL of blood each week until the iron stores are depleted.	Phlebotomy to reduce the hct. Assess I and O to avoid fluid overload or deficit. Assess nutrition status. Inadequate food intake can result from GI symptoms.

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.