

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 B₁₂) Deficiency	Folic Acid Deficiency
Etiology	Iron malabsorption, blood loss, hemolysis	Reduced or absent globulin protein. Hemolysis occurs due to mononuclear phagocytes destroying erythroblasts.	Absence of intrinsic factor in gastric mucosa.	Insufficeint DNA synthesis due to deficiency of folic acid related to chronic alcohol use, chronic hemodialysis, diet deficiency, increased requirement, celiac disease, Crohn's, small bowel resection
Clinical Manifestations	No symptoms early on, progress to pallor, glossitis, cheilitis, headache, paresthesia, burning sensation of tongue.	Often asymptomatic in minor. In major symptoms start at 2 years old and can be pale color, jaundice, pronounced splenomegaly, hepatomegaly, cardiomyopathy, HTN	Sore, red, beefy, shiny tongue; anorexia, nausea, vomiting, and abdominal pain, weakness, paresthesia of feet, and impaired digestion	Cirrhosis, esophageal varices, stomatitis, cheilosis, dysphagia, flatulence, diarrhea, neurological deficits.
Diagnostic Studies	BMP: Decreased Hgb/Hct, stool occult blood test, endoscopy or colonoscopy to detect GI bleed, bone marrow biopsy.	BMP: Decreased Hgb/Hct, normal or decreased MCV and Ferritin, , decreased folate and TIBC.	BMP: Decreased Hgb/Hct, increased MCV, elevated transferrin, increased ferritin, decreased B12. Abnormal RBC shapes, upper GI endoscopy or biopsy	BMP: Decreased Hgb/Hct, decreased MCV, decreased serum iron, increased TIBC, decreased ferritin, low serum folate levels
Drug Therapy	Iron supplement via oral route, or occasional IV, packed RBC if due to blood loss.	Oral deferasirox, deferiprone, IV or subq deferoxamine, luspatercept-amp subq every 21 days, transfusion if Hgb<7	Parenteral vitamin B12, intranasal cyanocobalamin	1-5 mg folic acid PO/day, length of treatment depends on deficiency,
Nursing Management	Encourage iron rich diet, Identify underlying cause, administer ferrous	Monitor lab results, educate patient on disease and medications	Assess neurological problems, implement measures to decrease risk of	Assess lab results, provide supplement therapy, assess neurological status,

	sulfate or ferrous gluconate, iron dextran, sodium ferrous gluconate or iron sucrose	received, monitor liver, heart, and lung function.	injury from decreased perception of heat and pain, protect the patient from falls, burns, and traumas	monitor patient energy level, collaborate with dietician to determine dietary plan for patient.
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Table 2	Anemia of Chronic Disease	Aplastic Anemia	Acute Anemia due to Blood Loss	Chronic Anemia due to Blood Loss
Etiology	Anemia of inflammation is related to disease activity such as cancer, autoimmune and infectious disorders, HF, or chronic inflammation, cytokines are released and lead to uptake and retention of iron within macrophages.	Decreased of all blood cell types due to autoimmune activity by autoreactive T lymphocytes.	Sudden bleeding due to trauma, surgery complications, and problems that disrupt vascular integrity.	Constant blood loss due to bleeding ulcers, hemorrhoids, menstrual, and post menopausal blood loss.
Clinical Manifestations	Fatigue, weakness, dizziness, headache, pallor, irritability reduced exercise tolerance.	Fatigue, dyspnea, infection, fever, bleeding	Pallor, decreased temperature, vasovagal syncope, increased HR with exercise and slight postural hypotension, air hunger, cold and clammy skin, pain	Pallor, headache, fatigue, weakness, dyspnea, postural hypotension, increased heart rate
Diagnostic Studies	BMP: Decreased Hgb/Hct, decreased serum iron, decreased TIBC	BMP: Decreased Hgb/Hct, decreased reticulocytes; decreased WBC, plt, and bone marrow elements; bone marrow biopsy	BMP: Decreased Hgb/Hct, and RBC after 3 days	BMP: Decreased Hgb/Hct, decreased MCV, decreased serum iron, decreased TIBC,
Drug Therapy	Treat underlying issue, may need blood transfusion in severe cases, EPO therapy for anemia stemming from renal disease and cancer.	HSCT – best for younger patients who have had limited blood transfusions, antithymocyte globulin, cyclosporine, eltrombopag, cyclophosphamide, alemtuzumab	Blood transfusion, IV fluids	Blood transfusion, IV fluid, iron supplement
Nursing Management	Provide emotional support for patient, cluster care, provide patient with simple exercises, protect from harm and	Protect patient from harm and blood loss, limit venipuncture, monitor for signs of bleeding, provide soft bristle brush,	Monitor vital signs, keep patients temperature up with a warmer room and warm blankets, monitor for signs of	Identify source of blood loss and stop the bleeding. Administer fluids or blood, obtain IV access, monitor vital

	injury, implement precautions, determine underlying cause	monitor labs and platelet levels	shock such as decreased BP, increased HR, low temperature, assess neurological status for confusion.	signs and report abnormal findings, monitor labs, protect patient from harm.
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Table 3	Acquired Hemolytic Anemia	Hemochromatosis	Polycythemia
Etiology	Hemolysis of RBCs from extrinsic factors such as physical destruction, antibody reactions, and infections agents and toxins.	Iron overload from intestinal iron absorption from genetic defects.	Increased number of RBCs that causes impaired circulation due to increased viscosity. Causes vary. Believed to be a genetic link to make a protein that promotes cell proliferation.
Clinical Manifestations	Pallor fatigue, jaundice, dark urine output, dyspnea, weakness	After 40 years old in men and over 50 in women: fatigue, arthralgia, impotence, abdominal pain, weight loss, skin pigment changes, arthritis, testicular atrophy	Headache, vertigo, dizziness, tinnitus, visual changes, itching, paresthesia, angina, bruising.
Diagnostic Studies	BMP: Decreased Hgb/Hct, increased reticulocytes, increased bilirubin.	Genetic testing and assess history involving first degree relatives; BMP: high serum iron, TIBC, and serum ferritin; MRI for measuring liver and cardiac iron, liver biopsy	High Hgb, Hct, and RBC mass; bone marrow examination showing hypercellularity of RBCs WBCs and platelets; presence of JAK2, V617F, or JAK2 exon 12 mutation
Drug Therapy	Electrolyte replacement therapy, blood transfusion, increased fluids, immunosuppressant: glucocorticoids, rituximab.	Reduce amount of iron in body by removing 500 mL of blood each week or by taking iron-chelating drugs such as deferoxamine, deferasirox, and deferriprone	Phlebotomy; removal of blood every couple of days; myelosuppressive agents: hydroxyurea, busulfan ruxolitinib; hydration therapy
Nursing Management	Provide support for patient, decrease risk of injury, maintain patent IV access, monitor vital signs, monitor urinary output to assess for kidney function.	Assess patient history and family history, educate patient of avoiding iron in their diet, this can mean avoiding things such as supplements, uncooked seafood, and iron-rich foods, manage DM and HF if needed, provide emotional support for patient.	Assess intake and output to ovoid overload or deficit, administer myelosuppressive agents as ordered, observe the patient for fluid over load and fluid deficits, maintain IV access and check patency.

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.