

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

Table 1	<b>Iron Deficiency Anemia</b>	<b>Thalassemia</b>	<b>Cobalamin (Vitamin B<sub>12</sub>) Deficiency</b>	<b>Folic Acid Deficiency</b>
<b>Etiology</b>	Malabsorption, insufficient intake, blood loss or hemolysis, greater demand/insufficient intake for menstruating or pregnant women	Disease involving Hgb production. Genetic link (autosomal) Absent or decreased globulin protein. A-globin leads to a-thalassemia and B-globin leads to B-thalassemia.	“Pernicious anemia” is the most common cause. Typically begins around 60yrs of age. Related to insufficient intake or insufficient absorptions of vitamin B-12	“Megaloblastic anemia” related to insufficient supply of folic acid
<b>Clinical Manifestations</b>	Can range from Asymptomatic to Pallor, Glossitis, Cheilitis Headache, Parathesis, and Burning sensation in the tongue	Can range from asymptomatic to life-threatening. Delayed/slowed growth (physical and mental) pallor, (anemia symptoms) May see Jaundice, Splenomegaly, Hepatomegaly, and/ or Cardiomyopathy	Gastrointestinal symptoms - Red, beefy, sore, and/or shiny tongue, Anorexia, N/V, and/or Abdominal pain Neuromuscular symptoms - Weakness, Paresthesia in the hands and/or feet, Ataxia, and Impaired cognition	Related to Cirrhosis and Esophageal varices. Gastrointestinal - Stomatitis, Dysphagia, Flatulence, Diarrhea, and Cheilosis. Thiamine deficiency. Some neurological symptoms
<b>Diagnostic Studies</b>	Stool occult blood, Hgb, Hct, Bilirubin, RBC, serum iron, serum ferritin, serum transferrin, TIBC, Endoscopy, Colonoscopy, and/or Bone marrow biopsy	Folate, Hgb, Hct, Bilirubin, RBC, Serum iron, Serum ferritin, Serum transferrin, and TIBC	Folate, Hgb, Hct, Bilirubin, RBC, Serum iron, Serum ferritin, Serum transferrin, TIBC, Endoscopy, and Biopsy	Folate, Hgb, Hct, Bilirubin, RBC, Serum iron, Serum ferritin, Serum transferrin, TIBC
<b>Drug Therapy</b>	PO: Ferrous sulfate or Ferrous gluconate IM or IV: Iron dextran, Sodium ferrous gluconate, and Iron sucrose	PO: Deferasiroz, Deferiprone IV: Deferoxamine No specific drugs are known to offer effective treatment.	Parenteral: Vitamin B-12 Intranasal: Cyanocobalamin PO or IM: Cobalamin	PO: Folic acid 1-5mg/day
<b>Nursing</b>	Nutritional therapy Iron supplements Transfusion packed	Can range from no treatment to blood transfusions.	Fall risk precautions. Assess neurologic difficulties.	Pt education – Increase intake of foods high in

<b>Management</b>	RBC's (aimed to treat underlying cause)			folic acid
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Table 2	<b>Anemia of Chronic Disease</b>	<b>Aplastic Anemia</b>	<b>Acute Anemia due to blood loss</b>	<b>Chronic Anemia due to blood loss</b>
<b>Etiology</b>	Can be caused by Autoimmune disorders, Infectious disorders, Cancer, HF, and/or Chronic inflammation. Related to Underproduction of RBC, or shortening of RBC survival.	Peripheral blood pancytopenia (decrease of all types of blood cells), Hypocellular bone marrow related to abnormal autoimmune activity (by autoreactive T lymphocytes).	Abrupt onset. Hemorrhage Trauma, (i.e., Complications of surgery)	Bleeding ulcer, Hemorrhoids, Menstrual and postmenopausal blood loss related to iron depletion
<b>Clinical Manifestations</b>	High serum ferritin and increase in iron stores. Expect to see normal folate and cobalamin blood levels	Abruptly (days) or Insidiously (weeks to months) Can range from mild to severe Fatigue, Dyspnea, Cardiovascular and/or Cerebral response.	Rapid thready pulse and/or Cool clammy skin. Related to hypovolemic shock and Lactic acidosis	Pallor, Glossitis Cheilitis, Headache, Parathesis, and/or Burning sensation of the tongue
<b>Diagnostic Studies</b>	Folate, Hgb, Hct, Bilirubin, RBC, serum iron, serum ferritin, serum transferrin, and TIBC	Labs: RBC, WBC, platelets, reticulocyte, Hgb, Hct, Bilirubin, serum iron, serum ferritin, serum transferrin, TIBC, folate Bone marrow biopsy	RBC, WBC, Platelets, Hgb, and Hct	Hgb, Hct, Bilirubin, RBC, Serum iron, Serum ferritin, Serum transferrin, TIBC, Stool occult blood , Endoscopy, Colonoscopy, and/or Bone marrow biopsy
<b>Drug Therapy</b>	Erythropoietin for anemia related to renal disease	Erythropoietin, Steroids, and/or Immune support therapy	IV: Dextran, Albumin, Hetastarch, Crystalloids, and Electrolyte solutions	PO: Iron supplement
	Correct underlying cause (i.e., Severe anemia)	Removing causative agent, Provide	Find source, Monitor blood loss, Replace	Identify the source

<b>Nursing Management</b>	Blood transfusions)	supportive care, Blood transfusions	blood volume.	and Stop the bleeding
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Table 3	Acquired Hemolytic Anemia	Hemochromatosis	Polycythemia
<b>Etiology</b>	Can be related to Autoimmune/Antibody Responses or other sources outside the body such as Infectious agents and/or toxins.	Most common causes include Iron overload disorder and Genetic defect. Can be related to liver disease and/or chronic blood transfusions.	Production & presence of excessive RBC's. 2 Types - Primary: Chronic myeloproliferative disorder which involves increased production of RBC, WBC and Platelets. Secondary: Related to effects of Hypoxia
<b>Clinical Manifestations</b>	Weakness, Paleness, Jaundice, Dark-colored urine, Fever, and Decreased tolerance for physical activity.	Early: Nonspecific; Fatigue, Arthralgia, Abdominal pain, and/or Weight loss Later: Liver enlargement, Liver cirrhosis, Diabetes, Skin changes (bronze pigment), Cardiomyopathy, Arthritis, and/or Testicular atrophy	Early: Headache, Vertigo, Dizziness, Tinnitus, Visual changes, and Generalized pruritis. Later: Parathesis, Erythromelalgia, Angina, HF, Intermittent claudication, Petechiae, Bruising, Nosebleeds, GI bleeds, and/or Thrombosis
<b>Diagnostic Studies</b>	Folate, Hgb, Hct, Bilirubin, RBC, serum iron, serum ferritin, serum transferrin, and TIBC	Folate, Hgb, Hct, Bilirubin, RBC, Serum iron, Serum ferritin, Serum transferrin, TIBC, and/or Liver biopsy	Hgb, RBC, EPO, WBC, Platelets, Leukocyte alkaline phosphatase, Uric acid, Cobalamin, Histamine, and/or Bone marrow exam
<b>Drug Therapy</b>	Corticosteroids Folate replacement Glucocorticoids Rituximab	PO: Deferasirox, Deferiprone SQ or IV: Deferoxamine	PO: Low dose ASA, Allopurinol, Myelosuppressive (hydroxyurea, busulfan, chlorambucil), and/or Ruxolitinib
<b>Nursing Management</b>	Identify/eliminate causative agent can be eliminated or minimized. General/symptomatic support, Hydration, Electrolyte replacement, and Blood products	Minimize symptoms and Remove excess iron. (Iron removal involves 500 ml of blood each week for 2 to 3 years) Encourage dietary changes - Avoid vitamin C, Iron supplements, Iron rich foods, and/or Uncooked seafood	Reduce blood volume and blood viscosity and decrease bone marrow activity, Reduce Hct, Monitor/assess I/Os and Nutritional status. Education related to medications.