**ANEMIA AND POLYCYTHEMIA**

| DEFINITION | Anemia is defined as a hematocrit <34% or hemoglobin <11. Although there are many different types of anemias, this protocol focuses on iron-deficiency anemia, which is the most common anemia. Iron deficiency anemia is found in 9-12% of non-Hispanic Caucasians and in nearly 20% of Afro-Americans and Mexican-Americans. Iron-deficiency anemia itself has many etiologies. It can result from acute hemorrhage due to trauma or cancer. More commonly, it results from excessive menstrual blood loss in women or chronic disease, such as renal failure and lead poisoning. Other risk factors for iron deficiency include obesity and vegetarian diet. In pregnancy, anemia puts the mother at risk for multiple perinatal complications. Management depends upon correct diagnosis.  

Polycythemia is defined as hematocrit ≥48% or hemoglobin ≥16 for more than 2 months. Polycythemia increases the risk of venous thromboembolism, stroke and leukemia. See below. |

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<th>Anemia</th>
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| **SUBJECTIVE** | May include:  
1. Fatigue, weakness, pallor, paresthesia.  
2. Palpitations, dyspnea, headaches.  
3. Weight loss, anorexia, bone and joint pains.  
4. Acute blood loss (i.e., hematemesis, melena, hematuria).  
5. Chronic blood loss (i.e., hemorrhoids, GI bleeding, tarry stools, intermenstrual or heavy menstrual bleeding).  
6. Inadequate nutrition.  
7. Frequent pregnancies, short intervals between pregnancies.  
8. Excessive alcohol ingestion.  
9. History of drug ingestion (e.g., aspirin, Dilantin, sulfa).  
10. History of gastric or intestinal surgery.  
11. Family history of anemia or hemolytic disorder.  
13. History of liver disease, gallstones before age 30, lupus erythematosus, rheumatoid arthritis, renal disease, hypothyroidism, hypopituitarism, intestinal absorption disorder, epistaxis (nose bleeds).  
| **OBJECTIVE** | Must include: Documentation of orthostatic blood pressure and pulse measurements, if either of the following is true:  
1. Patient is symptomatic.  
2. Patient has severe anemia (HBG ≤ 9 or HCT ≤ 27).  

May include:  
1. Pallor of conjunctiva, nail beds, mucous membranes.  
2. Jaundice.  
3. Heart murmur (systolic flow murmur).  
4. Tachycardia, bounding pulse.  
5. Petechiae, purpura or ecchymosis.  
6. Heavy vaginal bleeding.  
7. Cervical lesions or enlarged uterus.  
8. Hemorrhoids, melena, rectal carcinoma.  
9. Abdominal mass, hepatomegaly, splenomegaly.  
10. Paraesthesia, numbness in hands and feet, unsteady gait and weakness of legs, bone tenderness.  

Must exclude:  
1. Patient with unstable vital signs. (Refer to ER immediately).  
2. Patient with excessive active bleeding that can not be stopped by measures available on an outpatient basis. (Refer to ER immediately). |
## Anemia

### LABORATORY

Must include:
1. HCT <34%; Hbg <11
2. Microcytosis indicating iron deficiency.

May include:
1. Low serum ferritin (preferred initial diagnostic test, if possible)
2. Stool with occult blood (due to GI bleeding).
3. Sickle Cell test (generally hemoglobin electrophoresis) if patient is member of an at-risk ethnic group and has not had this testing done before.

### Mild Anemia

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<th>PLAN</th>
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| Non-pregnant: HCT 28.1-34%; Hbg 9.1-11. | 1. Provide ferrous sulfate 300 mg 1 tab orally once or twice a day, 1 hour before or 2 hours after meals, unless she is unable to tolerate without food.  
   a. Do not treat patient with iron if she has Sickle Cell disease, unless she has low indices on CBC or low ferritin or iron.  
   2. Offer stool softener to prevent constipation from iron therapy.  
   3. If anemia is due to heavy or prolonged bleeding, also refer to Acute and or Chronic Heavy or Prolonged Menstrual Bleeding protocol.  
   4. Have patient return in 2-4 weeks for repeat hemoglobin check.  
   5. If repeat hemoglobin has increased by 1 to 2 g per dL in one month, continue ferrous sulfate. Adjust prescription to match patient’s hemoglobin. Continue once daily dosing for 3 month after normalization of hemoglobin levels to rebuild iron stores, particularly if her original blood loss was due to a chronic condition.  
   6. Advise patients taking iron supplements to avoid foods rich in tannates (tea) or phytate (beans, cereals) or medications that raise gastric pH (antacids, proton pump inhibitors, histamine H2 blockers).  
   7. If hemoglobin is not improved on iron therapy, see Plan for Severe Anemia. |

### Severe Anemia

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| Non-Pregnant: HCT ≤ 28% or Hbg ≤ 9. | 1. Refer patient to ER if patient has at least one of the following:  
   a. HCT <20% or Hbg <7.  
   b. Active, uncontrollable or excessive bleeding.  
   c. Orthostatic changes in vital signs.  
   d. Patient acutely symptomatic.  
   e. Exam suspicious for internal hemorrhage or other significant acute blood loss.  
   2. If the patient is stable:  
   a. Order CBC, reticulocyte count, serum iron, TIBC, B12, folate, ferritin (if possible).  
   b. Test for coagulation factors (PT, PTT, platelets), especially if patient has history of easy bruising, gum bleeding, or heavy or prolonged menstrual bleeding. Also see Acute and or Chronic Heavy or Prolonged Menstrual Bleeding protocol.  
   c. Consider ordering TSH if other symptoms suggest she may be hypothyroid.  
   d. Test stool for occult blood with three specimens if the patient is not acutely bleeding.  
   If stool positive:  
   1) Test for ova and parasites x 3 if has had recent travel in developing countries  
   2) Refer to MD/ primary care to rule out colon cancer and/or polyps if no indication of parasites.  
   e. Work up and treat identified underlying causes, as needed (e.g., remove expelling IUD, correct hypothyroidism etc.).  
   f. Provide ferrous sulfate 300 mg. 1 tab orally 3 times a day to be taken 1 hour before or 2 hours after meals, unless patient unable to tolerate gastric side effects. If patient unable to tolerate on empty stomach, offer with food.  
   g. Provide stool softener (e.g., docusate 100 mg orally twice daily or Metamucil 2 TBS in 8 oz. water nightly). |
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<th>PLAN (Continued)</th>
<th>h. Have patient RTC in 1 to 2 weeks for reevaluation. The more severe her anemia, the sooner she should be checked for response.</th>
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| PATIENT EDUCATION | 1. Counsel on nutrition and encourage use of therapies.  
2. Advise patient with anemia to seek immediate care if she develops symptoms, such as weakness, dizziness, lightheadedness, or an increase in blood loss.  
3. When possible encourage patient with anemia to take FeSO4 on an empty stomach to aid in absorption. |
| REFER to MD/ER | 1. Refer to ER any patient with unstable vital signs or severe acute bleeding.  
2. Refer to MD if any pathology found on exam which does not require immediate ER referral.  
3. Patients whose indices are not consistent with iron-deficiency anemia.  
4. Patients who are not responsive to therapies outlined above to evaluate malabsorption, continued bleeding or unknown pathology. |

### Polycythemia

| SUBJECTIVE | May include:  
1. Headaches.  
2. Tinnitus.  
3. Vertigo.  
4. Blurred vision.  
5. Sweating and night sweats.  
6. Pruritus.  
7. Weight loss.  
8. Bone pain (ribs and sternum).  
10. Smoking tobacco.  
11. Fatigue. |
|-------------|----------------------------------------------------------------------------------------------------------------------------------|
| OBJECTIVE | May include:  
1. Weight loss.  
2. Splenomegaly.  
3. Hepatomegaly.  
4. Bone tenderness (ribs and sternum). |
| LABORATORY | Must include:  
1. HCT ≥48%; Hbg ≥16 for at least 2 months.  
2. Elevated platelet count. |
| ASSESSMENT | Polycythemia |
| PLAN | 1. Send CBC, LFTs, renal function tests.  
2. ASA 80 mg orally daily.  
3. Management depends upon etiology of excessive RBC count, such as Polycythemia Vera  
4. Advise smoking cessation.  
5. Refer to MD. |
| PATIENT EDUCATION | Advise patient with polycythemia that she may require periodic blood draws and medical therapy to reduce her risks for serious blood clots, stroke and leukemia. Also strongly urge her to seek preconception care with a specialist should she desired pregnancy. |
| REFER to MD/ER | All patients who are symptomatic should be seen promptly (ER or urgent MD). Asymptomatic women can be sent for MD evaluation at their convenience.  
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