

# Anemia Testing

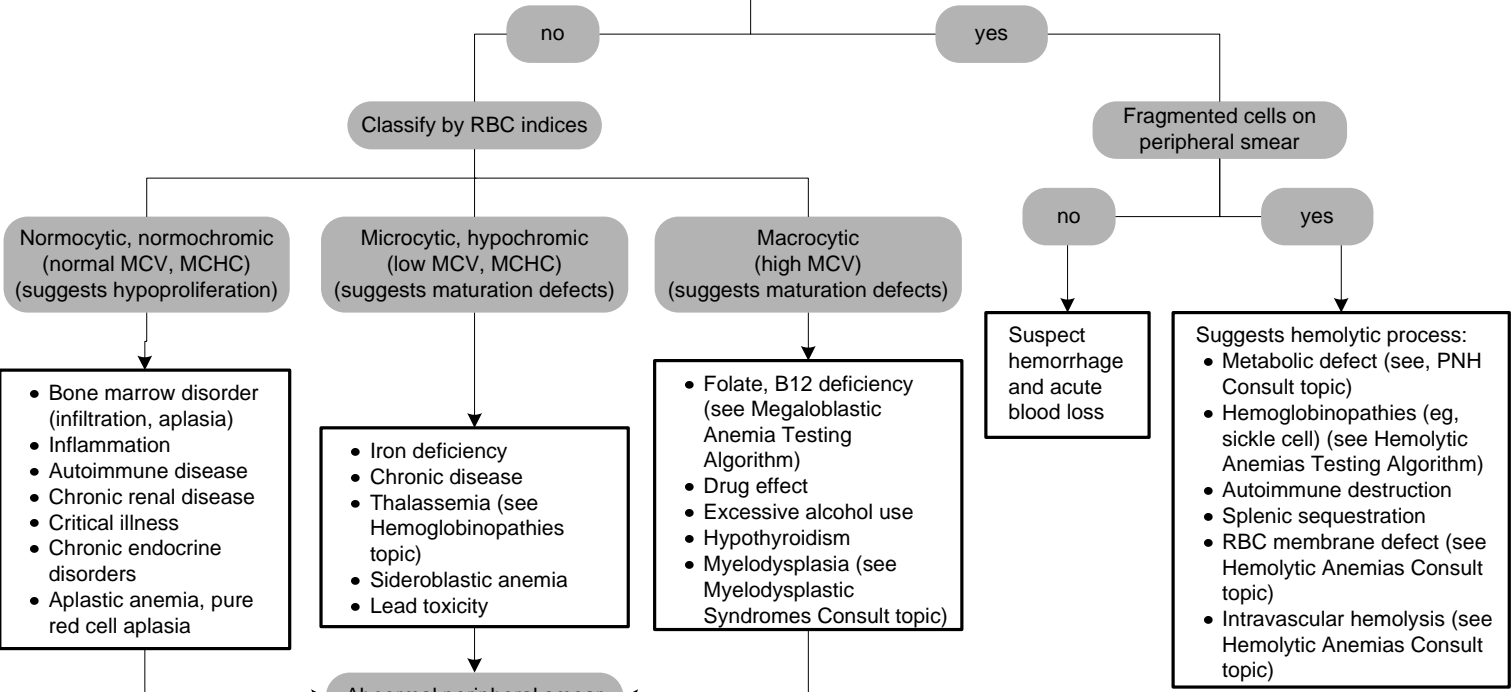
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**INDICATIONS FOR TESTING**  
Fatigue, weakness, pallor, dizziness, fainting

**ORDER**

- CBC with Platelet Count and Automated Differential (including RBC indices and morphology on manual differential)
- Reticulocytes, Percent & Number

Anemia present on CBC (males Hgb < 13g/dL, females Hgb < 12g/dL)  
**AND**  
Corrected reticulocyte index ≥ 2.5



- Bone marrow disorder (infiltration, aplasia)
- Inflammation
- Autoimmune disease
- Chronic renal disease
- Critical illness
- Chronic endocrine disorders
- Aplastic anemia, pure red cell aplasia

- Iron deficiency
- Chronic disease
- Thalassemia (see Hemoglobinopathies topic)
- Sideroblastic anemia
- Lead toxicity

- Folate, B12 deficiency (see Megaloblastic Anemia Testing Algorithm)
- Drug effect
- Excessive alcohol use
- Hypothyroidism
- Myelodysplasia (see Myelodysplastic Syndromes Consult topic)

- Suggests hemolytic process:
- Metabolic defect (see, PNH Consult topic)
  - Hemoglobinopathies (eg, sickle cell) (see Hemolytic Anemias Testing Algorithm)
  - Autoimmune destruction
  - Splenic sequestration
  - RBC membrane defect (see Hemolytic Anemias Consult topic)
  - Intravascular hemolysis (see Hemolytic Anemias Consult topic)

Abnormal peripheral smear

**ORDER**

- Iron and Iron Binding Capacity
- Ferritin

Low/normal TIBC  
Normal/high ferritin  
Low/normal iron

Suggests:

- Inflammation
- Chronic disease

If no obvious chronic disease present, consider bone marrow biopsy

High TIBC  
Low iron  
Low ferritin

Iron deficiency

Workup based on smear characteristics

Bone marrow biopsy may be necessary

no

B12, folate studies

**Abbreviations and Formula**

MCV = mean cell volume  
MCHC = mean cell hemoglobin concentration  
TIBC = total iron binding capacity

Reticulocyte correction for anemia:

$$\text{ReticCount}\% \times \frac{\text{Hgb}}{\text{Htc}} \times \frac{1}{\text{Maturation time correction (use 2 for most patients)}}$$