PREOPERATIVE ANEMIA MANAGEMENT ALGORITHM

Hgb less than 13?

If transferrin saturation (TSat) greater than 20% and ferritin greater than 100 ng/ml and MCV less than 80 consider thalassemia or hemoglobinopathy.

MCV less than or equal to 105?

Add testing for vitamin B12 if MCV greater than or equal to 90 plus reticulocyte count, creatinine and folate.

Ferritin less than 100 ng/ml?

Reticulocyte count, iron, iron binding capacity, ferritin, creatinine.

Consistent with iron deficiency. Consider possible sources of chronic blood loss, malabsorption, dietary deficiency, medications.

Consistent with anemia of inflammation (functional iron deficiency) or combined anemia of inflammation and iron deficiency.

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Vitamin B12 less than or equal to 300?

Is folate less than 3.3 ng/ml?

Folate 1 mg daily.


Reticulocyte count elevated?

Probable Vitamin B12 Deficiency.

Creatinine greater than 1.3 mg/dl or eGFR less than 60 ml/min?

Consider Vitamin B12 supplements.

Possible anemia of chronic kidney disease.

Consider renal consult if clinically appropriate.

Consider Pre-op ESA treatment with appropriate iron supplementation.

Consider DAT, haptoglobin, LDH to rule out hemolysis if elevated reticulocyte count. Consider acute blood loss if elevated reticulocyte count. Consider Hematology consult to rule out plasma cell dyscrasia or other primary marrow process if clinically indicated.
NOTES TO PREOPERATIVE ANEMIA MANAGEMENT ALGORITHM:

1. If absolute iron deficiency is detected and cause is unknown, gastroenterologist or other appropriate referral to rule out malignancy as a source of chronic blood loss is indicated.

2. If ferritin, iron saturation values, or both or other markers of iron-restricted erythropoiesis are inconclusive, further evaluation to rule out iron deficiency or iron sequestration due to inflammation/chronic disease may be necessary.

3. A therapeutic trial of oral iron therapy would confirm absolute iron deficiency but may be impractical in the presurgical patient. No response to iron therapy may not rule out absolute iron deficiency because of patient non-compliance, ongoing blood (iron) losses in excess of oral iron absorption, and/or diminished gastrointestinal absorption and transport of iron due to inflammation.

4. Anemia in the setting of decreased transferrin saturation (< 20%) in the setting of decreased glomerular filtration rate (GFR < 60) will often respond to intravenous iron. Referral to a nephrologist may be indicated.

5. Additionally, iron-restricted erythropoiesis due to iron sequestration, functional deficiency, or both must be considered.

REFERENCE