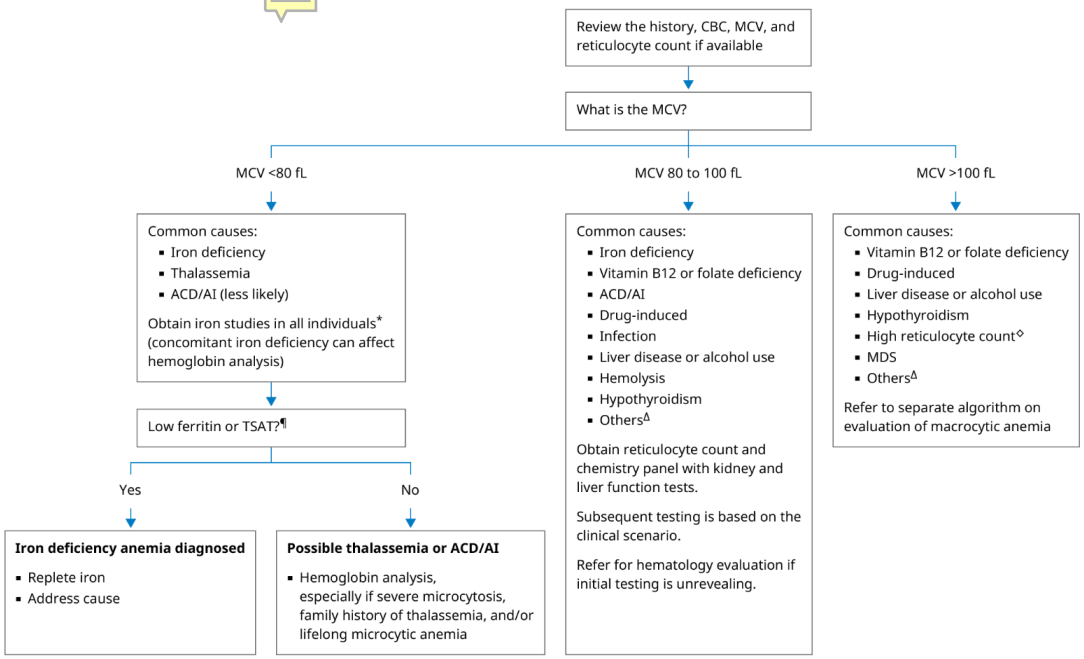
What are the changes we want to see out of this guidelines?

1. Early screening for and identification of preoperative patients with anemia in primary care and presurgical settings
2. Standardized pathway for determination of further evaluation of underlying cause of anemia before procedure
3. Swift identification of effective treatment for iron deficiency anemia preoperatively, with referral for treatment and practical optimization steps before surgery
4. Recommended measures or metrics for monitoring quality in health systems
5. Explicit business case for delivery systems and health plans

Preoperative Providers (Primary Care, etc.) (following guidelines are for patients who are undergoing procedure for which there is 500ml + expected blood loss or >10% chance of needing transfusion)

- As early as possible in the presurgical process, screen for anemia (Hb <13g/dL);
    - For patients with hemoglobin <13 g/dL, reflexively test iron studies.
- Identify underlying cause of anemia. Assessment should include the following
    - Comprehensive medical and medication history and physical exam
    - Order appropriate lab tests to diagnose underlying cause. Consider the following algorithm for evaluation of anemia in healthy individuals in outpatient setting.



- If iron deficiency anemia is suspected, complete further evaluation to determine underlying cause in preoperative period, such as:
    - Blood loss (e.g., gastrointestinal, gynecological)
    - Pregnancy
    - Iron-poor diet
    - Decreased absorption due to gastrointestinal illness (celiac disease, gastrectomy, gastric bypass, resection, H. pylori, inflammatory bowel disease), medications (antacids, proton pump inhibitors, ESAs) or food (calcium, tannins, phytates)
- Consider delaying procedure as able until underlying cause of anemia can be identified.

- Discuss and determine goals of treatment for anemia with the patient, given likely cause of anemia and individual patient factors and circumstances.
- Treat anemia appropriately and in accordance with patients' preferences.
    - For patients with iron deficiency anemia, supplement with iron formulation. IV supplementation should be considered in patients with <4 weeks until surgery, oral iron is not effective or tolerated, or with severe anemia (Hb <10g/dL)
    - Consider IV iron with erythropoietin stimulating agents in patients with anemia of inflammation (e.g., kidney disease)
- Consult pharmacy as able to support selecting iron supplementation methods that meet hemoglobin/iron goals, cost and timeline limitations.
- Complete repeat lab testing to assess response to treatment for iron deficiency anemia prior to procedure (CBC, iron studies, etc.)
    - Assess effectiveness of supplementation at 2 – 4 weeks after initiation. If hemoglobin is not increasing sufficiently on oral supplementation, consider intravenous.
- Communicate anemia optimization plan with the surgical team, including relevant lab values, underlying cause as identified, and treatment goals and plan.
    - Ideally, set goal to Hb >13g/dL; however, any improvement in hemoglobin levels will provide protection against transfusion and complications.
- Refer as needed to continue treatment for anemia after procedure complete.
- Special considerations for patients that cannot receive blood products:
    - Take a full medical history including history of anemia, abnormal bleeding, coexisting conditions, medical/surgical history, and current medications that could impact hemostasis
    - Consider discontinuation of medications that could induce coagulopathies (e.g., analgesics like NSAIDS, antibiotics), anticoagulants and review other medications or supplements that impact coagulations/platelet function
    - Take steps to optimize preoperative red blood cell production, such as administering supplementary iron (even with normal iron stores) or using r-HuEPO to increase slightly low hematocrit before anticipated major blood loss or for patients with ischemic heart disease
    - Consider higher hemoglobin level goals for preoperative management (e.g., Hb 13-14g/dL)
    - Determine with patient what blood products are acceptable/unacceptable. Clearly identify them in the medical record.

    - Follow Evidence-informed guidelines for anemia optimization in patients that cannot accept blood products, such as: Clinical Strategies for Avoiding and Controlling Hemorrhage and Anemia without Blood Transfusion in Surgical Patients or more updated

Surgical Teams

- When patient is scheduled for surgery, identify if they have a history of anemia; evaluate for presence of anemia
- Discuss goals for anemia optimization with patient and preoperative care team, including when delay of procedure should be considered (e.g., lack of response to treatment, suspected blood loss causing anemia, etc.)
- Ensure recent relevant lab values (hemoglobin, iron studies) were completed to
- For urgent or emergent procedures
    - As early as possible in the presurgical process, identify if the patient is anemic (Hb <13g/dL)

Delivery Systems

- In preoperative materials, develop patient-facing education on importance of presurgical optimization that includes glycemic control and anemia
- Adopt standardized clinical pathway for evaluation of underlying cause of anemia, and referral to primary care for ongoing management of anemia
- Promote adjustment of anemia policies through educational opportunities like in-services
- Incorporate auto-reflexive testing of ferritin, iron and transferrin for presurgical patients with Hb <13g/dL (regardless of sex at birth) for procedures with estimated blood loss of 500ml or a risk of transfusion 10% or higher
- Dedicate quality improvement initiatives for anemia optimization in presurgical patients.
    - Identify surgical populations with highest risk for transfusion and/or blood loss in procedure to pilot anemia optimization protocols
    - Identify champion in each targeted surgical specialty to promote change
    - Set relevant quality goals to track progress
        - % of patients receiving appropriate preoperative tests
        - % of patients with IDA receiving iron supplementation preoperatively
        - Blood transfusion rates
        - Postoperative anemia rates

Health Plans

- Cover iron formulations with lowest cost to patient while maintaining effectiveness/safety
- Minimize cost-sharing for outpatient infusion therapy for patients with diagnosed IDA.
- Ensure network adequacy for infusion centers as appropriate
- Coordinate infusion therapy appointments with primary care office
- Incentivize preoperative optimization of anemia through value-based payment models that include:
    - Targets for widespread preoperative anemia screening
    - Reduction of RBC transfusions in patients with preoperative anemia

Table A. IV Iron Formulations[1]

Medication	Concentration of Elemental Iron	Dosing (adults)	Premedication
Ferric Carboxymaltose (FCM)	50 mg/mL	Weight ≥50 kg: 1 or 2 doses of 750 mg, given 7 or more days apart or Weight <50 kg: 1 or 2 doses of 15 mg/kg, given 7 or more days apart	• Do not routinely premedicate for any of the IV iron products. • For patients with asthma or multiple drug allergies, often give methylprednisolone and a histamine 2 (H2) receptor blocker prior to the iron infusion. • For patients with inflammatory arthritis, often give methylprednisolone followed by a brief course of oral prednisone. • Do not give diphenhydramine as a premedication.
Ferric derisomaltose (previously called iron isomaltoside)	100 mg/mL	Weight ≥50 kg: Single dose of 1000 mg or Weight ≥50 kg: Up to 3 doses of 500 mg given over 7 days or Weight <50 kg: Single dose of 20 mg/kg	
Ferric gluconate	12.5 mg/mL	Multiple doses of 125 to 250 mg	
Ferrumoxytol	30 mg/mL	Single dose of 1020 mg or 2 doses of 510 mg, given 3 to 8 days apart	
Iron Dextran, low molecular weight (LMW)	50 mg/mL	Single dose of 1000 mg (diluted in 250 mL normal saline) given over 1 hour or Multiple doses of 100 mg	
Iron sucrose	20 mg/mL	Multiple doses of 100 to 300 mg	

[1] Auerbach, M., & DeLoughery, T. G. (2025, June 16). Treatment of iron deficiency and iron deficiency anemia in adults. In UpToDate. Retrieved June 23, 2025, from https://www.uptodate.com