

Peri-operative iron therapy

Preoperative patients should be screened early for anemia and/or sub-optimal hemoglobin, so that appropriate treatment can be prescribed, allowing enough time for iron repletion and anemia correction prior to surgery. In patients who are iron deficient and undergoing surgery, oral iron is recommended if tolerated, and the time interval between start of therapy and surgery is not too short (>4 weeks). IV iron is indicated if oral iron trial fails or is not tolerated, in severe iron deficiency (ferritin <15 mcg), or in very high risk patients (hemoglobin <110 g/L and high risk blood loss procedure), or if the time to surgery is less than 4 weeks.

Background

Peri-operative anemia is an independent risk factor for increased length of stay, intensive care stay, post-operative complications, and increased mortality¹. It is also a predictor of peri-operative blood transfusion which contributes to poor outcomes^{1,2}. Treatment of iron-deficiency and anemia prior to surgery improves patient outcomes and cost-effectiveness in reducing blood transfusions¹.

Peri-operative anemia management should consider the patient's current iron and anemia status, the risk of blood loss associated with the procedure, and the time available to implement treatment prior to surgery. Early screening and treatment of iron deficiency and anemia in the pre-operative assessment period optimizes patient outcomes and maximizes sustainability. Ideal time of screening is at 'Decision to Treat' or at least 4-8 weeks prior to surgery.

Guidance³

Anemia Risk Level	Risk Level <u>C</u> riteria	Recommended Intervention	Comments
Low	Pre-op Hb >130g/L and/or low risk blood loss procedure or Day Surgery (e.g., laparoscopic surgery, D & C)	<ul style="list-style-type: none"> High iron diet 	
Moderate-High	Pre-op Hb <130g/L and moderate risk blood loss procedure (e.g., total hip replacement, total knee replacement, open abdominal surgery)	<ul style="list-style-type: none"> Oral iron every other day with oral vitamin C (+/- oral folate, and vitamin B12) Goal dose 150-200 mg elemental iron daily 	Start at least 4 weeks prior to surgery, stop 2 days prior to surgery
Very high risk	Pre-op Hb <110g/L and high-risk blood loss procedure (e.g., major vascular surgery, open heart surgery (CABG, valve replacement), total hip revision)	<ul style="list-style-type: none"> Elective surgery: Consider procedure delay until anemia corrected If time permits: Use oral iron with oral vitamin C (+/- oral folate and vitamin B12) every other day Short time to surgery or severe deficiency: Consider IV iron 	Consider referral. Calgary: Patient Blood Management Program Edmonton: Anemia Management Clinic

- If oral iron therapy unsuccessful or not tolerated, or iron deficiency is severe (ferritin <15 mcg), short duration to High-risk surgery, or ongoing blood, loss then consider IV iron
- Goal dose with oral iron: 150 to 200 mg elemental iron every other day
- IV iron dose is based on patient-specific iron deficit calculation (typical Total Dose: is 800 to 1200 mg, given in divided doses)
- See [Optimizing Oral Iron](#) and [Iron Dosing](#) Drugs and Therapeutics Backgrounders for more information

References

1. Thakar SV, Clevenger B, Mallett S. Patient blood management and perioperative anaemia. *BJA Education*, 2017;17(1):28–34.
2. Munoz M, Gomez-Ramirez S, Campos A, et al. Pre-operative anaemia: prevalence, consequences and approaches to management. *Blood Transfusion*, 2015; 13:370-9.
3. Perioperative Blood Conservation Program Pre-operative anemia correction and hemoglobin optimization, FMC Calgary.