Preoperative Hemoglobin Optimization and Anemia Management

Goal: Transfusion avoidance in adult surgical patients

Risk Factors for Transfusion: Hemoglobin (HGB) less than (<) 130 g/L, weight less than 65 Kg, elderly, female, complex or repeat surgical procedure, renal insufficiency (creatinine clearance <40 ml/min), antiplatelet agents, anticoagulants, some supplements

Transfusion Avoidance Strategies: Early assessment (28 days before surgery) and evidence based, coordinated interventions as required.

Interventions must take into consideration age, gender, anticipated surgical blood loss and pre-existing medical conditions.

HGB
Less than (<) 100 g/L
Consider delaying procedure. Refer to appropriate physician for investigation.

Evaluate for blood loss (GI, menstrual, recurrent epistaxis) anticoagulant status, renal/hepatic failure. Refer to appropriate physician for investigation to treat underlying cause if able.

Check: CBC, differential, reticulocyte count (retic), *Ferritin, Iron indices, Creatinine, Serum B12. Folate testing may be helpful
*False elevations may occur with inflammation, infection and chronic disease.

HGB 100 – 130 g/L
Microcytic (MCV <80)
Consider: iron deficiency, thalassemia, anemia of chronic disease, Sideroblastic anemia. Refer to appropriate physician for investigation.

Sign: Iron deficiency, low TIBC, Ferritin <30 mcg/L
Iron deficient

Start Iron Therapy
1. Oral iron: 100 – 200 mg elemental iron by mouth per day e.g. Ferrous Fumarate 300 mg, 1-2 tabs; Feramax® 150 mg per day or 2. Proferin®11 mg, 1–3 tabs per day
2. IV Iron infusion (E.g.iron sucrose**) if oral iron therapy is contraindicated or not tolerated or short time to surgery. Note: New preparations are safer than older formulations

Macrocytic (MCV >100 <110 mild; >110 marked)
Consider: B12 deficiency, hepatic disease, thyroid disease, folate deficiency, alcoholism, medications (HIV antiviral, Hydrea®, Septrin®, Methotrexate®) myelodysplasia, cytopenias, reticulocytosis. Refer to appropriate physician for investigation.

B12 Low
Folate low
Start Folic acid 5 mg po daily
Start Vitamin B12 Therapy 1,000 to 2,000 mcg PO or SL daily OR IM 1000 mcg qweek x 4, then 500 mcg qmonth

HGB ≥ 130 g/L
Consider Erythropoietin With Iron

HGB Greater than (> ) 130 g/L
Evaluate needs of surgical procedure. Consider iron, B12, and folic acid

*Erythropoietin (Erythropoietin)** HGB optimization using erythropoietin: USUAL target is HGB 130 g/L. MAXIMUM target in renal and oncology patients to less than 120g/L. Patients with pre-existing thrombotic events should be monitored closely.

Standard Dosing: Erythropoietin 20,000 – 40,000 units subcutaneously (600 units/kg) weekly to a maximum of 4 doses depending on presenting hemoglobin and time to surgery.

Short dosing schedule is available for urgent cases: Erythropoietin 300 IU/kg given for 10 consecutive days prior to surgery, on the day of surgery, and for four days immediately thereafter.

**May be Accessed in Ontario through Third party provider or Ontario Drug Benefits Plan (Exceptional Access Program, Trillium)

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