Authorizing Prescriber(s)

All Lakeridge Health Orthopedic and General Surgeons

Authorized to Whom

Blood Conservation Nurse (BCN) or Transfusion Safety Officer (TSO) who is registered nurse

The Co-Implementers are nurses working in LHO Preoperative Assessment Clinic, Day Surgery, LHAP Infusion Clinic, and LHB Infusion Clinic

Patient Description/Population

All patients who have been scheduled for lower limb orthopedic or bowel resection surgery

Order and/or Procedure

The BCN/TSO will assess the following:

- The patient's complete health history including contraindications to oral iron, intravenous iron, and epoetin alfa and an assessment for causes of iron deficiency anaemia (e.g. bleeding, previous investigations such as stool for occult blood, gastroscopy, or colonoscopy)
- The patient's existing blood work related to blood conservation interventions
- That the patient meets the indications for the Medical Directive

The BCN/TSO is authorized to perform the following activities under this medical directive:

A. Laboratory Tests
The BCN/TSO may arrange the following laboratory tests for the assessment of anaemia:

Initial:
CBC, reticulocyte count, ferritin, TIBC, transferrin saturation, B12, creatinine

Throughout treatment:
a) CBC and iron studies every 2-3 months
b) CBC prior to each iron infusion and prior to second last dose of Epoetin Alfa

c) reticulocyte count may be ordered during therapy to assess response to Epoetin Alfa
d) CBC will be ordered preoperatively on the day of surgery

B. Medications

1) Oral Iron supplements:
The BCN/TSO may select oral iron supplementation with ferrous gluconate, ferrous sulphate, or Polysaccharide-Iron Complex based on any of the indications listed in the Order Table Form.

See Order Table Form for oral iron supplementation.

The BCN/TSO will review common side effects of oral iron therapy and may suggest over-the-counter medications that may alleviate side effects, i.e. stool softeners, laxatives.
The BCN/TSO will review the "All About Iron" brochure with the patient and instruct patient to call if side effects occur.

2) B12 supplements:

The BCN/TSO may select B12 supplementation as per Order Table Form.

3) IV iron
The BCN/TSO may select IV iron supplementation as per Order Table Form

See Order Table Form for orders

The BCN/TSO will review the side effects of intravenous iron including serious allergic reactions, hypotension (1-2%), gastrointestinal symptoms (nausea, vomiting, diarrhea), myalgia, and headache.

Co-Implementer: Nurses working in LHO Day Surgery, LHAP Infusion Clinic, and LHB Infusion Clinic) are authorized to:

- Administer IV iron as directed by the BCN as per the Order Table Form.

4) Epoetin alfa

See Order Table Form for orders

The BCN/TSO will:

- Notify the MRP

- Refer the patient back to originating physician with recommendations when the patient care issues are beyond the scope of this directive
- Liaise with nephrology, oncology, and hematology regarding treatment plan prior to offering treatment if patient is already being treated by these services

Co-Implementer: Nurses working in LHO Day Surgery, LHAP Infusion Clinic, and LHB Infusion Clinic) are authorized to:

- Administer Epoetin Alfa as directed by the BCN/TSO as per the Order Table Form.

Indications to the implementation of the Directive

The patient has been referred to BCN/TSO via surgeon's office or has been identified in Pre-Surgical Screening Clinic as having:

- Hemoglobin below target of 130 g/L for high blood loss surgery (except renal or oncology patients)
- Hemoglobin below target of 125 g/L for moderate blood loss surgery (e.g. primary single joint replacement) (except renal or oncology patients)
- Hemoglobin below target of 120 g/L for renal or oncology patients

Indications for each medication are listed in the Order Table Form.

Contraindications to the implementation of the Directive

The medical directive must not be implemented in the following circumstances:

- The patient refuses to consent to the procedure
- Patient's advance care planning contraindicates these treatments

Contraindications for each medication are listed in the Order Table Form.

Consent

- The BCN/TSO will review the risks and benefits of any proposed treatment and obtain verbal consent for participation in Blood Conservation. See Order Table Form for risks.

Documentation Requirements

In addition to standard documentation practices, the BCN/TSO implementing this medical directive must document the following in the order section of the patient's health record:

- Medication name, dose, route, and duration
- Name of the Medical Directive
- Name and signature of the implementer including credentials

The patient's primary Health Care Provider will be notified if any blood conservation strategies are initiated, by faxed copy of LH Blood Conservation note.

Review/Evaluation Process

This Medical Directive will be reviewed every 2 years by the Surgical Program

References

Eprex product monograph. October 2011. Jansenn Inc. Retrieved from http://www.janssen.ca/product/117

J Freedman. (2016) Patient Blood management: A ToolKit Guide for Hopsitals, Blood Conservation Algorithm

Ferrous fumarate monograph. (2017) Retrieved 02/01/2018 from https://online.lexi.com/lco/action/doc/retrieve/docid/patch_f/6905

Feramax Product Information. Science and Safety of Polysaccharide-Iron Complex (PIC) Retrieved 02/01/18 from: http://www.feramax.com/science-and-safety-of-polysaccharide-iron-complex.php

Iron: MedlinePlus supplements https://medlineplus.gov/iron.html

VENOFER® iron sucrose injection, USP. Retrieved 03/01/2018 from http://www.bhcmedical.ca/pdfs/VenoferInsertEN.pdf

Approvals and Signatures

Sponsor/Owner Group	_____ Name	_____ Program
Contact	_____ Name	_____ Position/Title

Department Chief	_____ Name	_____ Signature	_____ Date
Medical Director	_____ Name	_____ Signature	_____ Date
Program Director	_____ Name	_____ Signature	_____ Date
Chair of IPPC	_____ Name	_____ Signature	_____ Date
Chair of NPPC	_____ Name	_____ Signature	_____ Date
Chair of P & T	_____ Name	_____ Signature	_____ Date
Final Approval Chair of MAC	_____ Name	_____ Signature	_____ Date

Authorized By	_____ Name	_____ Signature	_____ Date
	_____ Name	_____ Signature	_____ Date
	_____ Name	_____ Signature	_____ Date
	_____ Name	_____ Signature	_____ Date

This table must **not** be used independently apart from the Medical Directive

Order Table Form

Order	Indications	Contraindications	Notes (Optional)
Ferrous gluconate 300 mg by mouth daily until surgery OR Ferrous fumarate 300 mg by mouth daily until surgery	• Patient scheduled for a high blood loss surgery, e.g. revisions and bilateral joint replacement, gastrointestinal surgeries, regardless of hemoglobin level • Patient taking ferrous sulphate or ferrous gluconate that have hemoglobin less than 125 g/L as determined by initial blood work • Patient taking oral iron prior to referral that is non-compliant or experiencing intolerance • Instruct patient to take with juice or Vitamin C	• History of iron overload or hemochromatosis • Patient has allergy to oral iron • Oncology patients with large near-obstructing tumours causing increased risk of bowel obstruction	Noncompliant: the patient is not taking oral iron as prescribed Intolerance: the patient is experiencing side effects which precludes them from taking the supplement Do not take at same time as other medications
Polysaccharide-Iron Complex - FeraMAX® 150 mg by mouth daily preoperatively	Same indication as above in addition: for patients with history of gastric bypass surgery or that do not tolerate ferrous fumarate	• History of iron overload or hemochromatosis • Patient has allergy to oral iron • Oncology patients with large near-obstructing tumours causing increased risk of bowel obstruction	Do not take at same time as other medications

Order	Indications	Contraindications	Notes (Optional)
B12 1000 mcg by mouth daily preoperatively	Patient's B12 level is less than 200 pmol/L		Do not take at same time as other medications
IV Iron sucrose 300 mg every 4-7 days preoperatively for a maximum of 3 doses Dilute in 250 mL 0.9% Sodium Chloride and infuse over 2 hours	• The patient does not tolerate oral iron • The patient has been on oral iron for one month with no effect • The time to surgery is less than 6 weeks, i.e. insufficient time to surgery to enhance iron stores • Hemoglobin is less than 120 g/L due to iron deficiency (ferritin less than 30 mcg/L or ferritin less than 200 mcg/L and transferrin saturation less than 20%) • Weight 50 kg or greater	• active infection • history of iron overload or hemochromatosis	Based on time to surgery, CBC, and ferritin and/or transferrin saturation Side effects: rare serious allergic reactions, hypotension (1-2%), gastrointestinal symptoms, e.g. myalgias and headache
IV Iron sucrose 200 mg every 4-7 days preoperatively for a maximum of 3 doses Dilute in 250 mL 0.9% Sodium Chloride and infuse over 2 hours.	• The patient does not tolerate oral iron • The patient has been on oral iron for one month with no effect • The time to surgery is less than 6 weeks, i.e. insufficient time to surgery to enhance iron stores • Hemoglobin is less than 120	• active infection • history of iron overload or hemochromatosis	Based on time to surgery CBC and ferritin and/or transferrin saturation Side effects: rare serious allergic reactions, hypotension (1-

Order	Indications	Contraindications	Notes (Optional)
	g/L due to iron deficiency (ferritin less than 30 mcg/L or ferritin less than 200 mcg/L and transferrin saturation less than 20%) • Weight less than 50 kg		2%), gastrointestinal symptoms, e.g. myalgias and headache.
Epoetin alfa 40,000 units SUBCUT every 5-7 days pre-operatively according to the schedule below I. Hemoglobin less than 109 g/L every 5-7 days for maximum of 4 doses II. Hemoglobin 110-119 g/L every 5-7 days for maximum of 3 doses III. Hemoglobin 120-129 g/L every 5-7 days for maximum of 2 doses, depending on Hb target for that service. IV. Subsequent doses will be held and the MRP notified if hemoglobin increases more than	• Weight is 50 kg or greater • Hemoglobin is below target of 130 g/L for high blood loss surgery (except renal or oncology patients) • Hemoglobin is below target of 125 g/L for moderate blood loss surgery (e.g. primary single joint replacement) (except renal or oncology patients) • Hemoglobin is below target of 120 g/L for renal or oncology patients • Hemoglobin 110 g/L for colorectal surgery	• Patients with persistent uncontrolled hypertension 160/90 • Known sensitivity to mammalian cell-derived products or any component of the product • History of myocardial infarction in last 5 years • History of cerebral vascular accident in last 5 years • History of venous thromboembolic disease (DVT/PE) in last 5 years • Active malignancy of breast or head and neck or lung • Patients with Stage 4 or 5 Chronic Kidney Disease or Dialysis therapy • Epoetin alfa should be used with caution in patients with a history of seizures	Risks of Eprex include very low chance of blood clots, increase in blood pressure, allergic reaction, burning at injection site, and flu-like symptoms

Order	Indications	Contraindications	Notes (Optional)
10 g/L per week or if hemoglobin rises above target. • Document blood pressure and Hb results prior to administration of eprex			
Epoetin alfa 30,000 units SUBCUT every 5-7 days pre-operatively according to the schedule below if weight less than 50 kg I. Hemoglobin less than 109 g/L every 5-7 days for maximum of 4 doses II. Hemoglobin 110-119 g/L every 5-7 days for maximum of 3 doses III. Hemoglobin 120-129 g/L every 5-7 days for maximum of 2 doses, depending on Hb target for that	• Patient weight is less than 50 Kg • Hemoglobin is below target of 130 g/L for high blood loss surgery (except renal or oncology patients) • Hemoglobin is below target of 125 g/L for moderate blood loss surgery (e.g. primary single joint replacement) (except renal or oncology patients) • Hemoglobin is below target of 120 g/L for renal or oncology patients • Hemoglobin 110 g/L for colorectal surgery	• Patients with persistent uncontrolled hypertension 160/90 • Known sensitivity to mammalian cell-derived products, or any component of the product • History of myocardial infarction in last 5 years • History of cerebral vascular accident in last 5 years • History of venous thromboembolic disease (DVT/PE) in last 5 years • Active malignancy of breast or head and neck or lung • Patients with Stage 4 or 5	Risks of Eprex include very low chance of blood clots, increase in blood pressure, allergic reaction, burning at injection site, and flu-like symptoms

Order	Indications	Contraindications	Notes (Optional)
service. IV. Subsequent doses will be held and the MRP notified if hemoglobin increases more than 10 g/L per week or if hemoglobin rises above target. •Document blood pressure and Hb results prior to administration of eprex		Chronic Kidney Disease or Dialysis therapy Epoetin alfa should be used with caution in patients with a history of seizures	