Outpatient Surgical Preoperative Blood Conservation – Medical Directive

Medical Advisory Committee Approved: 23NOV2021

☑ Harmonized

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Authorizing Prescriber(s)

Lakeridge Health Surgeons for Orthopedics, Colorectal, Gynecology, Thoracic, Urology.

Authorized to Whom

Patient Blood Management Coordinator (PBMC) Nurses who have the knowledge, skill, judgment, and training with Surgical Preoperative Blood Conservation (i.e Patient Blood Management Certificate from the Society for the Advancement of Blood Management), for pre-surgical outpatients with hemoglobin below target for surgery.

The Co-Implementers

- Nurses who are employed at LH providing care for outpatient areas, as co-implementer(s), who have the knowledge, skill and judgment to complete carry out PBMC selected from the Orders Table under this directive.
- Medical Laboratory Assistants/Technologists (MLA/T) employed at LH who have the knowledge, skill and judgement to process blood and other samples as selected by the PBMC from the Orders Table under this directive
- Phlebotomists employed at LH who have the knowledge, skill and judgment to draw blood samples by venipuncture for laboratory tests as selected by the PBMC from the Orders Table under this directive

Patient Description/Population

All adult outpatients 18 years of age or older who have been scheduled for a moderate or high blood loss surgery.

Order and/or Procedure

The order and/or procedures are not in sequential order. Any one of or combination may be performed by the PBMC. Refer to the Order Table Form. The PBMC member will also complete the following:

- Review the patient's health history including contraindications to oral iron, intravenous iron, and Epoetin Alfa and causes of iron deficiency anaemia (e.g. bleeding, previous investigations such as stool for occult blood, gastroscopy, or colonoscopy)
- Review the patient's existing blood work in the patients electronic health record (EMR) related to blood conservation interventions
- Notify the Most Responsible Practitioner (MRP) upon implementation of the medical directive

Indications to the implementation of the Directive

Any adult outpatient 18 years of age and older with indications for surgical preoperative blood conservation. See Order Table for specific indications. Refer to the Maximal Surgical Blood Ordering Schedule (for surgeries at LHO/LHB/LHPP) and Pre-Operative Requirements before Elective Surgery (for surgeries at LHAP) to determine if the procedure is associated with high blood loss.

- Hemoglobin below target of 130 g/L for high blood loss surgery (e.g. joint revision, bilateral joint replacements),
- Hemoglobin below target of 125 g/L for moderate blood loss surgery (e.g. primary single joint replacement),
- Hemoglobin below target of 110 g/L for all other surgeries where blood loss is expected (e.g. hysterectomy, bowel resection, nephrectomy, laparoscopic surgeries).

Note: Renal and oncology patients: Maximum target in renal and oncology patients to less than 120 g/L with use of Eprex. Consult nephrologist/oncologist involved in the patient's care to determine specific hemoglobin target

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

Contraindications to the implementation of the Directive

The directive must not be implemented in any of the following circumstances:

- The patient refuses to consent to the procedure
- Patient's advanced care plan does not support initiating or continuing with Medical Directive procedures.
- Existence of procedure specific contraindications as noted in the Order Table Form.
- Oncology patients with active malignancies or under treatment are excluded from the use of Eprex under this medical directive

Note: If the patient or substitute decision maker (SDM) refuses treatment, contact the PBMC who will notify the Most Responsible Practitioner (MRP) immediately to determine plan of care.

Consent

The PBMC implementing the medical directive must obtain consent from the patient or SDM for any interventions pertaining to this medical directive.

Documentation Requirements

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

- The name of this medical directive
- The procedure(s) implemented
- The name of the implementer

- The date and time
- Legible signature of implementer including credentials, if not an electronic signature
- Co-implementers will document in the patient's health record and as per standard documentation practices

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

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

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.

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

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

J Freedman. (2020) Patient Blood management: A toolkit guide for hopsitals, blood conservation algorithm.

Lim, W. et al. (2019). Canadian expert consensus: management of hypersensitivity reactions to intravenous iron in adults. Vox Sanguinis 114, 363-373.

Peterborough Regional Health Center. (2019). Directive – Blood conservation program – Authority to initiate order for lab work.

Sunnybrook Health Sciences. (2019). Medical directive for patient referred to the preoperative blood conservation clinic.

The Ottawa Hospital. (2019). Medical directive – Ordering of blood conservation strategies by blood conservation/perioperative blood management nurse specialist.

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

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

Order Table Form

Order	Indications	Contraindications	Notes (Optional)
Laboratory Tests: 1) CBC, reticulocyte count, ferritin, TIBC, transferrin saturation, B12, and creatinine	• Initial pre-operative period to determine if oral or intravenous iron supplements required prior to surgery	• Bloodwork is available within the EMR (i.e. within 1-3 months)	Check the patients EMR (e.g. Connecting Ontario) for recent bloodwork within 1 to 3 months time.
2) CBC and irons studies	• Every 2-3 months up to day of surgery to evaluate response to oral iron		
3) CBC with or without reticulocyte	• Prior to each dose of Epoetin Alfa to assess response to Epoetin Alfa **AND/OR** • During treatment of IV iron when dosing is over 2 week time period or greater • Reticulocytes indicated if no incremental rise of hemoglobin during treatment with Epoetin Alfa	• Patient treated with IV iron in short duration i.e. two weeks time	

Order	Indications	Contraindications	Notes (Optional)
4) CBC preoperatively	• Pre-operatively on day of surgery		
Hold all iron the morning of surgery Ferrous fumarate 300 mg by mouth daily until day before surgery **OR** Optifer or Heme Iron 11 mg 1-3 tabs by mouth daily until day before surgery **OR** Polysaccharide-Iron Complex - FeraMAX® 150 mg by mouth daily until day before surgery	• Patient scheduled for a high blood loss surgery (e.g. revisions and bilateral joint replacement, gastrointestinal surgeries, regardless of hemoglobin level) • Patient hemoglobin less than 125 g/L as determined by initial blood work • Patient preference • Vegan diet • History of gastric bypass • Ulcerative colitis • Crohn's disease	• History of iron overload or hemochromatosis • Patient has allergy to oral iron • Patient refuses oral iron • If the patient is Vegan. Heme iron is derived from animal sources • Oncology patients with large near-obstructing tumours causing increased risk of bowel obstruction • Intolerance: the patient is experiencing side effects which precludes them from taking the supplement	Do not take at same time as other medications – 2 hours before or after other medications Instruct patient to take with juice or Vitamin C
Vitamin B12 1000 mcg by mouth daily until surgery	• Patient's B12 level is less than 200 pmol/L	• Allergy to vitamin B12	Do not take at same time as other medications

Order	Indications	Contraindications	Notes (Optional)
IV Iron Sucrose: **If weight is equal to 50 Kg or greater:** IV iron sucrose 300 mg (dilute in 250 mL 0.9% sodium chloride) IV over 2 hours, every 4-7 days pre-operatively, to a maximum of 3 doses total **OR** **If weight is less than 50 Kg:** IV iron sucrose 200 mg (dilute in 100 mL 0.9% sodium chloride) IV over 1 hour, every 4-7 days pre-operatively, to a maximum of 3 doses total	• Intolerance to oral iron • Patient has been on oral iron for one month with no effect • 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%) • To support red blood cell formation and reduce iron deficiency when patient is being treated with Epoetin Alfa	• **DO NOT** give if documented allergy to Iron Sucrose or any of its components • Active infection – if on antibiotics **DO NOT** initiate IV iron until treatment is complete • History of iron overload or hemochromatosis	Based on time to surgery, CBC, and ferritin and/or transferrin saturation Side effects: rare serious allergic reactions (1:200,000 doses), hypotension, gastrointestinal symptoms, myalgias and headache
Epoetin Alfa: **If weight is equal to 50 Kg or greater** 40,000 units SUBCUT every 5-7 days pre-operatively, as per the Hemoglobin results below **OR** **If weight is less than 50 Kg**	• Hemoglobin is below target of 130 g/L for high blood loss surgery • Hemoglobin is below target of 125 g/L for moderate blood loss surgery (e.g. primary single joint replacement) • Hemoglobin is below target of 120 g/L for renal or oncology patients (consult nephrology and oncology as appropriate. For oncology	• 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*	Risks of Eprex include very low chance of blood clots, increase in blood pressure, allergic reaction, burning at injection site, and flu-like symptoms caution in patients: • with a history of seizures • gout flare-up

Order	Indications	Contraindications	Notes (Optional)
30,000 units SUBCUT every 5-7 days pre-operatively, as per the Hemoglobin results below: • **Hemoglobin less than 109 g/L** every 5-7 days for maximum of 4 doses • **Hemoglobin 110-119 g/L** every 5-7 days for maximum of 3 doses • **Hemoglobin 120-129 g/L** every 5-7 days for maximum of 2 doses, depending on Hb target for that service. 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. If there is no incremental rise in hemoglobin, add reticulocyte count onto bloodwork and review for normal or elevated reticulocytes and only continue with dose if noted.	patients, Epoetin Alpha must be ordered by surgeon) • Hemoglobin less than 110 g/L for gynecological/ colorectal, laparoscopic surgery	• History of venous thromboembolic disease (DVT/PE) in last 5 years* • Active malignancy of breast or head and neck or lung • Patients with known or unknown hemoglobinopathy* • Patients with Stage 4 or 5 Chronic Kidney Disease or Peritoneal or Hemodialysis therapy • Patient is unable to take post-operative thromboembolic prophylaxis *If history of CVA, DVT, MI consider referral to hematologist for risk assessment for Epoetin Alpha • If patient is followed by a hematologist for Hemagloginopathy or blood cell disorder, consult hematology prior to Epoetin Alpha • If Epoetin Alpha is going to be utilized, MRP needs to order this directly	• For patients with a history of seizures, Consult neurologist prior to Epoetin Alpha treatment • Consult nephrologist if patient is followed for chronic kidney disease • Document blood pressure and hemoglobin results prior to administration of Eprex.