One-stop Centre for Intravenous Iron Administration to Iron-deficiency Anaemic Patients Planned for Major Surgery

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Background

- Large percentage of preoperative patients suffer from iron-deficiency anaemia¹.
- Correction of iron-deficiency anaemia has been shown to decrease the need for blood transfusions, morbidity and mortality².
- Iron supplementation preoperatively is not common in our region

Goals

- Develop a pathway to manage patients with iron-deficiency anaemia who are planned for major surgery
- Identify this group of patients among all preoperative patients being routinely screened by anaesthetists at Pre-Anaesthesia Assessment Clinic (PAAC)
- PAAC will then serve as a one-stop centre to minimise frequency of blood sampling, clinic visits
- Administer IV iron or prescribe oral iron at the same sitting

Methods

- Multi-disciplinary consultations with the Department of Anaesthesia and Surgical Intensive Care, staff of PAAC, haematologists, surgeons, pharmacists and laboratory technicians in CGH
- Formulate pathway for administration of IV iron

Results

- Over 6 months, 14 patients were treated with IV iron and 4 were treated with oral iron tablets
- In the group treated with IV iron:
 - Mean Hb level at 1st PAAC visit: 9.6g/dL (8.4 to 10.8g/dL)
 - No patients developed side effects during administration of IV iron
 - Mean Hb level after IV iron: 10.1 g/dL (8.4 to 11.9 g/dL)
 - Change in Hb level: + 0.7g/dL (-0.9 to +2.4 g/dL)
 - 6 patients received blood transfusions perioperatively
 - 1 patient developed severe hypophosphatemia (0.35-0.5 mmol/L) secondary to phosphaturia due to IV iron

Conclusion

- Detection & treatment of iron-deficiency anaemia could be safely and effectively instituted at a one-stop centre
- IV iron administration was able to raise the Hb levels of our patients prior to surgery
- Phosphate levels are now checked in patients who had received IV iron
- Further studies will be required to determine the side effects and extent of decrease in blood transfusion requirement, morbidity, mortality with iron supplementation in this high-risk group of patients

References

- L.T. Goodnough et al. Detection, evaluation, and management of preoperative anaemia in the elective orthopaedic surgical patient: NATA guidelines. Br J Anaesth. 2011 Jan;106(1):13-22
- Muñoz M et al. 'Fit to fly': overcoming barriers to preoperative haemoglobin optimization in surgical patients. Br J Anaesth. 2015 Jul;115(1):15-24

List 1: High-risk surgery

General rule:

- Any procedure with anticipated blood loss of > 1000ml

Specific procedures:

- Vascular: any aortic procedures
- General Surgery: any colorectal, hepatic, gastric, oesophageal surgery
- Urology: nephrectomy or prostatectomy
- Orthopaedic: any major joint replacement (knee, hip, shoulder), spine surgery
- OMS/ENT/plastic: major head and neck surgery and/or any flap surgery

List 2: Contraindications for IV Ferric Carboxymaltose

- History of asthma
- Allergic eczema or other atopic allergy
- Iron overload or disturbances in utilisation of iron (eg: haemochromatosis)
- Active infection (sepsis, acute and chronic infection)
- Decompensated liver disease (cirrhosis and hepatitis with abnormal liver function)
- Rheumatoid arthritis with evidence of active inflammation

Table 1: Required dosing

Hb (g/dL)	Weight (35-70kg)	Weight (>70kg)
<10	1500mg	2000mg
≥ 10	1000mg	1500mg

Table 2: Dosing regimen

Max dose of IV iron: 20mg/kg, up to max of 1000mg per week
If more than 1 dose required, each dose should be 1 week apart

Patient A: 40kg, Hb 9g/dL: will require 1500mg of IV iron
Max dose per week: 800mg
Prescribe IV iron 800mg for 1st session and another 700mg for 2nd session 1 week later

Patient B: 80kg, Hb 11 g/dL; will require 1500mg of IV iron
Prescribe IV iron 1000mg for 1st session and another 500mg for 2nd session

Patient C: 60kg, Hb 10.5 g/dL; will require 1000mg of IV iron
Prescribe IV iron 1000mg for 1 session