PreOperative Anaemia Management (POAM)

Introduction:

Pre-operative anaemia is present in up to 30% of patients undergoing non cardiac surgery\(^1,2\). The presence of pre-operative anaemia is the strongest predictor of peri-operative blood transfusion and is an independent risk factor for post-operative morbidity and mortality. Even mild anaemia increases the risk of poor outcomes after surgery. Anaemia also results in an increased length of hospital stay and has an adverse effect on both functional recovery and post op quality of life.

Anaemia is defined by the WHO as Hb <130g/dl in males and <120g/dl in females. It is easy to detect and should be treated prior to surgery. The Trust MBOS (maximum blood ordering schedule) determines those patients who require a group and save (G&S) pre operatively which should ideally be done at least four weeks before surgery. These patients are considered at great risk of perioperative blood loss. When taking their G&S the patient’s blood should be screened using the point of care testing kit (hemocue®) to detect anaemia. If they are anaemic, haematinics and T-sats will be added to the blood request form and oral iron treatment started immediately.

The results of the haematinics will determine the cause of anaemia and its treatment. Before starting any treatment patients will be given information about the above risks of anaemia before surgery and the benefits of its treatment.

The decision to postpone surgery should be made on an individual patient basis taking in to account their comorbidities and risk of blood loss. An Hb >120 in females and >130g/L in males should not be used as a threshold for proceeding to surgery but a target for preoperative optimisation. IV iron stores remain present for 6-8 weeks after administration so the benefits for erythropoiesis will continue into the postop period.

Iron deficiency anaemia:
- Defined as anaemia with a ferritin <30 mcg/L.
- New or unexpected iron deficiency requires investigation through the patient’s General Practitioner.
- Patients with iron deficiency anaemia should be managed with iron therapy.
- Oral iron therapy can take four weeks to replenish iron stores, so should be started immediately. If oral iron is not tolerated, IV iron should be prescribed.
- If surgery is within 4 weeks and cannot be delayed IV iron should be prescribed.

Anaemia of Chronic disease (ACD):
- Patients with chronic inflammatory conditions often have a functional iron deficiency.
- If ferritin is between 30-100 mcg/L and Transferrin sats (Tsats) are <20% in the presence of anaemia functional iron deficiency is likely.
- Due to the inflammatory process, patients with functional iron deficiency are unable to absorb and transport oral iron effectively and should be managed with intra-venous iron therapy.

Author: Dr Henry Murdoch
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**Vitamin B12 and folate deficiency:**
- Patients with B12 and/or folate deficiency should be referred to their GP for prescription of appropriate replacement therapy. Ferritin will be >100mcg/l.

**Other causes of anaemia:**
- Consider renal referral in patients who have a ferritin >100mcg/l in presence of anaemia and eGFR<30
- Consider haematology referral in patients who have a ferritin >100mcg/l in presence of anaemia and normal B12/folate.

**Pathway for optimisation of pre-operative anaemia:**

**Iron replacement therapy**

**Oral iron (Ferrous sulphate)**

Ferrous sulphate is an oral preparation of iron used to replace deficient iron stores. It is taken as a 200mg tablet three times a day. It can take four weeks to restore Haemoglobin to normal levels. Some patients find it difficult to tolerate due to adverse effects such as nausea, vomiting, constipation or diarrhoea. Patients who are found to be anaemic on screening will be started on oral iron immediately to allow as much time as possible for treatment. This therapy may change once the exact cause is determined from the FBC and haematinics.
Ferinject® (Ferric Carboxymaltose)

Ferinject® is one of five intra-venous iron preparations licenced in the UK. It does not require a test dose and has a short infusion time of 15 minutes for doses up to 1000 mg.

1. Contra-indications
- Iron overload.
- Previous allergic reaction to any intra-venous iron preparation.
- Anaemia not due to iron deficiency.
- Intra-venous iron given within the last 7 days.

2. Cautions
- Hepatic or renal impairment.
- Current bacterial infection.
- Any hypertensive disorder – can induce a hypertensive response.
- Risk of anaphylaxis increased in patients with a pre-existing allergic condition.

3. Dose
Dose is calculated using patient weight and current haemoglobin using the following table

<table>
<thead>
<tr>
<th>Haemoglobin</th>
<th>Weight &lt;35 Kg</th>
<th>Weight 35 to 69.9 Kg</th>
<th>Weight ≥70 Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;100 g/L</td>
<td>500 mg</td>
<td>1,500 mg</td>
<td>2,000 mg</td>
</tr>
<tr>
<td>≥100 g/L</td>
<td>500 mg</td>
<td>1,000 mg</td>
<td>1,500 mg</td>
</tr>
</tbody>
</table>

4. Administration
Ferinject® is administered on the Medical day unit at GRH and Day Surgery Unit at CGH. It must be prescribed on a GHNHSFT short stay drug chart by a doctor.
- Maximum single injection is 1000mg. Doses over 1000mg must be prescribed as two separate injections, given at least 7 days apart.
- When prescribing two doses, prescribe 1000mg for the first dose and the remainder for the second dose.
- Must be administered in an area with resuscitation equipment and drugs to manage anaphylaxis.
- Doses between 500mg and 1000mg must be diluted in 250ml 0.9% Saline and administered IV over at least 15 minutes.
- Baseline observations need to be recorded.
- Observations are required every 15 minutes from the commencement of the infusion and for 30 minutes after the infusion has finished.
- The infusion must be stopped immediately if there any signs or symptoms of an allergic reaction or if there is any leakage of the infusion into the surrounding tissues.
- Patients may be discharged 30 minutes after completion of the infusion, if no signs of adverse reaction are present.

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5. Organising an IV iron infusion
- Book patient to attend on one of the predetermined sessions on the medical day unit (MDU) at GRH or day surgery unit (DSU) at CGH.
- Confirm the appointment with the patient. Ask them to contact MDU if alternative date required.
- Prescribe Ferinject® on drug chart and send to MDU. (Ideally with patient records)
- Arrange a repeat Haemoglobin with the patient’s GP 2 weeks after infusion.

Refs: