Preoperative Anaemia Management (POAM) Guidelines

SETTING Gloucestershire Hospitals Preoperative Assessment Clinic

FOR STAFF All preoperative assessment staff, medical, nursing, & AHPs

Clinical guideline & supporting information for management of preoperative anaemia

Background:

Pre-operative anaemia is present in approximately 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. According to the NICE Quality Statement (QS138), iron should be offered before and after surgery to people with iron deficiency anaemia who are having surgery.

Anaemia is defined by the WHO as Hb <130g/dl in males and <120g/dl in females, however, as there is no difference in perioperative blood loss between genders we should screen for an Hb <130g/dl in both men and women. Anaemia is easy to detect and should be treated prior to surgery.

Patients having major or major+ surgery as defined by NICE CG18 2019 are considered at greater risk of perioperative blood loss. There may be specific cases deemed high risk of bleeding by the clinical teams or patients who refuse blood products who may also require screening for anaemia.

Anaemia Screening:

Screen all patients having major or major+ surgery, deemed significant risk of bleeding or decline blood transfusions unless they have had a haemoglobin within the past three months
Screen for anaemia using the point of care testing kit (hemocue®) to allow immediate oral iron treatment.

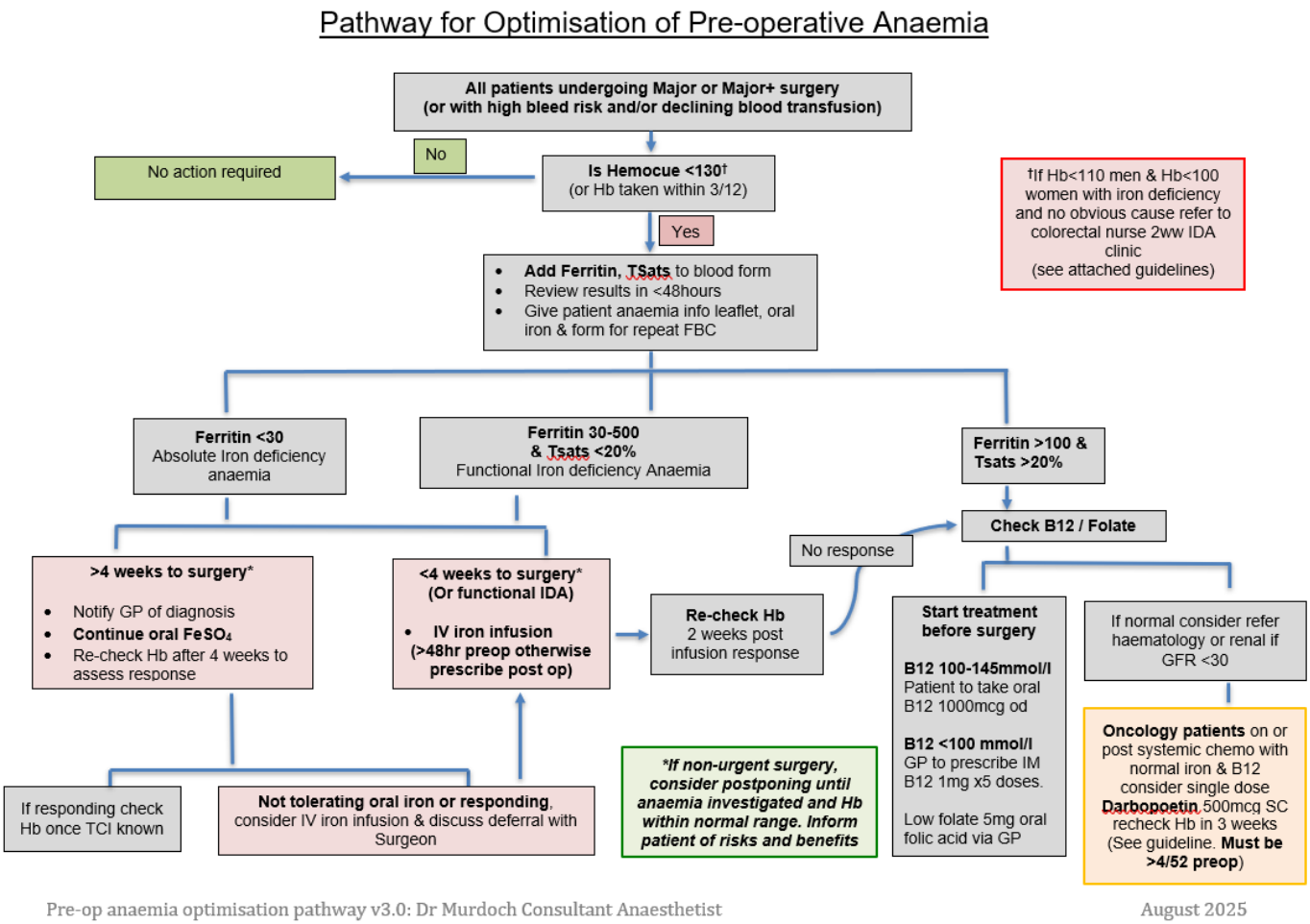
If patient is anaemic (Hb <130g/dl)

- ferritin and T-sats should be added to the blood request form
- Oral iron treatment started immediately as TTO, or patient advised to purchase
- Give patient info leaflet and notify GP of any treatment.

The test results 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 >130g/L should not be used as a threshold for proceeding to surgery but a target for preoperative optimisation.** IV iron stores remain present for at least 6-8 weeks after administration so the benefits to Hb increase and erythropoiesis will continue into the postop period. This should improve functional status post op, hopefully improving recovery and ability to tolerate any ongoing treatment (e.g. chemotherapy).

Pathway for optimisation of pre-operative anaemia:



Iron deficiency anaemia:

- Defined as anaemia (Hb <130g/l) with a ferritin <30 mcg/L.
- **Hb<110 in men and Hb<100 in women with an iron deficient picture and no obvious cause require direct referral to colorectal IDA 2ww clinic: ghn-tr.twoweekwaits@nhs.net (POAC to notify the patient's GP)**

- Patients with iron deficiency anaemia should be managed with iron therapy.
- Oral iron therapy can take a minimum of 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.
- If surgery is less than 2 days ideally avoid IV iron (risk of post infusion flu affecting surgery) and consider prescription of IV iron for the ward post op.

Functional Iron deficiency (previously Anaemia of Chronic disease (ACD):

- Patients with chronic inflammatory conditions often have a functional iron deficiency.
- If ferritin is between 30-500 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. A trial of oral could be considered however if >4 weeks to surgery.
- Prescribe as below using Trust IV iron chart.

Vitamin B12 & folate deficiency (organising treatment):

- Patients with B12 and/or folate deficiency should have treatment started before surgery.
- For vitamin B12 levels **100-145mmol/l** advise patient to take oral supplements 1000mcg daily. They can be bought without prescription from a pharmacy.
- For vitamin B12 levels **<100mmol/l**, 1mg IM x5 doses will be required. Please **refer to their GP** for prescription. Ferritin will be >100mcg/l.
- Folate replacement **requires GP prescription** for 5mg oral folic acid.

Other possible causes of anaemia:

Renal:

- Consider **renal referral** in patients who have a ferritin >100mcg/l in presence of anaemia and eGFR<15 or diabetes and eGFR <30.

Haematology:

- Consider **haematology referral** in patients who have a ferritin >100mcg/l in presence of anaemia and normal Tsats, B12 and folate.

Oncology patients on systemic chemotherapy:

- Consider chemotherapy-induced anaemia and use of Erythropoiesis-Stimulating Agents (ESAs or EPO).
- For patients on systemic anticancer therapy (SACT) where myelosuppression is thought to be a cause of their anaemia, Darbepoetin is licensed for use by NICE in Technology Appraisal 323 (7).

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 **single tablet (200mg) on alternate days**. 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 should 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. Alternative oral tablets e.g., ferrous fumarate can be used if ferrous sulphate not tolerated.

Intra-venous (IV) iron

Ferrinject® (Ferric Carboxymaltose) 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.

Monofer® (Ferric derrisomaltose) is an intra-venous iron preparation licenced in UK for maximum single dose of up to 20mg/kg. This is given over 30mins and is preferable as allows patients to have a full dose in one hospital visit.

1. Contra-indications

- Conditions associated with iron overload e.g. Haemochromatosis, thalassaemia with history of regular blood transfusions.
- Previous confirmed allergic reaction to a specific intra-venous iron preparation
- Anaemia not due to iron deficiency

- **2. Cautions**
- Hepatic or renal impairment
- Current bacterial infection
- Risk of anaphylaxis increased in patients with a pre-existing allergic condition

3. Dosing

- Ferrinject® and Monofer® dose is calculated using patient weight and current haemoglobin using the trust iron infusion prescription chart.

4. Administration of IV iron

- IV iron is administered on the Medical day unit at GRH. It must be prescribed on the IV iron prescription chart.
- Ferrinject has a maximum single injection dose of 1000mg. Doses over 1000mg must be prescribed as two separate injections, given at least 7 days apart.
- Monofer® can be given up to 20mg/kg in a single dose
- When prescribing two doses, prescribe 1000mg for the first dose and the remainder for the second dose.
- IV iron must be diluted in 250ml 0.9% Saline and administered IV over 30minute
- Must be administered in an area with resuscitation equipment and drugs to manage anaphylaxis.
- 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.

5. Organising an IV iron infusion

- POAC nursing team to book patient to attend on one of the predetermined sessions on the medical day unit (MDU) at CGH.
- Confirm the appointment with the patient. Ask them to contact MDU if alternative date required.
- Prescribe IV iron on drug chart and send to MDU. (Ideally with patient records)
- Arrange a repeat Haemoglobin with the patient's GP 2 weeks after infusion.

6. Organising ESA treatment

- Patients **must have Ferritin and Transferrin saturation levels checked prior to commencing Darbepoetin**. Iron stores must be optimised first to ensure an adequate response to Darbepoetin.

- Darbepoetin (Aranesp) can be prescribed on EPR as a single dose of 500mcg subcutaneously. This can be collected from pharmacy for the POAC team to give onsite. This should be a single dose, with HB recheck at 3 weeks and if ineffective discussion with haematologist is required.

Indications for ESA treatment:

- Patient on systemic anti-cancer treatment (chemotherapy) with chemo induced myelosuppression anaemia
- Ferritin >100ug/l, transferrin saturations >20%, normal B12 and folate
- **Surgery >4 weeks**

Contraindications to ESA treatment:

- **Surgery within 4 weeks**
- Hypersensitivity to darbepoetin (or its contents: sodium phosphate monobasic, Sodium phosphate dibasic, Sodium chloride or polysorbate 80)
- Poorly controlled hypertension
- Patient not receiving Systemic Anti-Cancer Treatment
- High VTE risk

Monitoring of Iron Studies during ongoing treatment:

Ferritin and Transferrin saturations should not usually be re-evaluated more often than every 3 months, as this will affect overall testing capacity and is unlikely to yield further clinical information. It may be considered if inadequate clinical response to Iron or ESA treatment is achieved and needs clear documentation as to need for the test on the request form. If adequate Haemoglobin response is achieved, Iron studies do not need to be routinely reassessed.

References:

1. Musallam KM, Tamim HM, Richards T et al (2011) Preoperative anaemia and postoperative outcomes in non-cardiac surgery: a retrospective cohort study. Lancet 378: 1396–407
2. Baron DM, Hochrieser H, Posch M et al. (2014) Preoperative anaemia is associated with poor clinical outcome in non-cardiac surgery patients. Br J. Anaesth 113(3):416-23

Related documents

1. Patient information leaflet

2. GP notification letter

Update due: review after three years

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