Diagnosis and management of peri-operative anaemia in surgical patients

**CRP**: C-reactive protein; **TSAT**: Transferrin saturation

Adapted from Munoz M et al. 1

**surgical patients**

**peri-operative anaemia**

**Diagnosis and management of**

**markers of inflammation (i.e. CRP) and renal function (i.e. serum creatinine)**

**Proceed to surgery**

**Ferritin <30 µg/l?**

**Iron deficiency**

**Classify anaemia**

**Anaemia of chronic**

**deficiency**

**longer anaemic**

**Start treatment**

**1. iron deficiency anaemia, iron overload or disturbances in utilisation of iron, Hypersensitivity to any of the ingredients, Decompensated**

**Category:**

**Legal**

**This medicinal product is subject to additional monitoring, and healthcare professionals are asked to report any suspected adverse reaction**

**Note:** Before prescribing please read the full Summary of Product Characteristics. Monofer® is a dark brown, non-transparent solution for infusion containing iron isomaltoside 1000 in a dextrose 10% (w/v) solution.

**Preparation:** Monofer® contains iron isomaltoside 1000 (i.e. a dry, brown, amorphous, colourless powder) as the active substance. The iron isomaltoside 1000 is a haemoglobin precursor. Monofer® is a sterile solution containing 50 mg iron per ml. Each vial contains 500 mg iron isomaltoside 1000.

**Storage:** Monofer® should be stored at 2°C-8°C. Do not freeze. A single vial (5 ml) of Monofer® contains 250 mg iron. No very common (>10%) or common (1% to 10%) undesirable effects listed. Uncommon (0.1% to 1%) undesirable effects include: injection site reactions. Furthermore, fever, inflammation near the injection site, pruritus, rash, cramps, anaphylactoid reactions, feeling hot, soreness, hypotensive episodes, pruritus, rash, cramps, anaphylactoid reactions, feeling hot, soreness, pruritus, rash, cramps, anaphylactoid reactions, feeling hot, soreness, pruritus, rash, cramps, anaphylactoid reactions, feeling hot, soreness, pruritus, rash, cramps, anaphylactoid reactions, feeling hot, soreness, pruritus, rash, cramps, anaphylactoid reactions, feeling hot, soreness, pruritus, rash, cramps, anaphylactoid reactions, feeling hot, soreness, pruritus, rash, cramps, anaphylactoid reactions, feeling hot, soreness, pruritus, rash, cramps, anaphylactoid reactions, feeling hot, soreness, pruritus, rash, cramps, anaphylactoid reactions, feeling hot, soreness, pruritus, rash, cramps, anaphylactoid reactions, feeling hot, soreness, pruritus, rash, cramps, anaphylactoid reactions, feeling hot, soreness, pruritus, rash, cramps, anaphylactoid reactions, feeling 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Diagnosis of iron deficiency in patients listed for surgery

- Pre-operative anaemia is recognised as being associated with increased postoperative morbidity, mortality and transfusion need.
- Uncorrected pre-operative anaemia is therefore a risk factor for poor surgical outcomes.
- Treatment of iron deficiency anaemia may reduce blood transfusion requirements.
- Guidance from the international consensus is that physicians should consider pre-operative anaemia and iron deficiency as an indication for peri-operative care with iron supplementation.

Pre-operative correction of iron deficiency and iron deficiency anaemia

- Treatment of iron deficiency and iron deficiency anaemia should start as early as possible in the pre-operative period.
- Intravenous iron is considered efficacious and well-tolerated and should be used as a front-line therapy in patients who do not respond to oral iron or are not able to tolerate it.
- Intravenous iron is recommended if surgery is planned for <6 weeks after the diagnosis of iron deficiency.
- Administration of IV iron 1 day before or even on the day of surgery can improve post-operative haemoglobin recovery, even in non-anaemic patients with iron deficiency.

Management algorithm for patients with iron deficiency anaemia

- Interval before surgery ≥6 weeks?
  - NO Consider IV iron
  - YES Patient tolerant of oral iron?
    - NO Oral iron with nutritional advice is recommended 40–60 mg daily OR 80–100 mg alternate days*
    - YES Measure Hb level 24 weeks before surgery
      - NO Hb increased and patient tolerant of oral iron?
        - NO Consider IV iron
        - YES Continue oral iron
      - YES Hb increased and patient tolerant of oral iron?
        - NO Consider IV iron
        - YES Continue oral iron

Management algorithm for patients with iron deficiency without anaemia

- Interval before surgery ≥4 weeks?
  - NO Consider IV iron
  - YES Patient tolerant of oral iron?
    - NO Consider IV iron
    - YES Treat with oral iron

Recommendation from NICE

Services and systems should be put in place to offer iron supplementation before and after surgery to people with iron deficiency anaemia.

Serum ferritin level <30 µg/L is the most sensitive (92%) and specific (98%) cut-off level for the identification of true iron deficiency.

The presence of anaemia should be investigated in all surgical procedures where there is an expected moderate-to-high blood loss (>500 ml).

When treating anaemia pre-operatively, the threshold haemoglobin concentration to trigger the need for treatment should be <100 g/L in both sexes to minimise the risk of transfusion-associated unfavourable outcomes.

*DOse depends on elemental iron concentration of available iron formulation.