Iron deficiency anaemia in Maternity - Guideline for the management of (GL783)

Approval

<table>
<thead>
<tr>
<th>Approval Group</th>
<th>Job Title, Chair of Committee</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternity &amp; Children's Services Clinical Governance Committee</td>
<td>Chair, Maternity Clinical Governance Committee</td>
<td>3rd January 2020</td>
</tr>
</tbody>
</table>

Change History

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Author, job title</th>
<th>Reason</th>
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</thead>
<tbody>
<tr>
<td>5.0</td>
<td>Dec 2019</td>
<td>Anusuya Dhanpal (Consultant Obstetrician)</td>
<td>Combine &amp; update existing RBHFT guidelines on treatment for anaemia in pregnancy</td>
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Now replaces the following separate guidance:

- GL783 V4.1 Anaemia in pregnancy & postnatal (Ferrinject)
- GL784 V9.0 Anaemia in pregnancy & postnatal (Venofer)
Overview: Iron deficiency remains a significant problem for pregnant women in the UK. The objective of these guidelines is to provide healthcare professionals with recommendations for the prevention, diagnosis and treatment of iron deficiency in pregnancy and in the postpartum period.

Introduction
Early detection and appropriate management of iron deficiency anaemia may prevent otherwise young and healthy patients from receiving an unnecessary blood transfusion. Patients with Thalassaemia who are diagnosed with iron deficiency anaemia should be reviewed by a haematologist for appropriate management and treatment. Patients with Thalassemia or sickle cell disease should NEVER routinely receive iron therapy either oral or intravenous.

In the absence of any other diagnosis of anaemia, iron deficiency in pregnancy is defined as:

- Haemoglobin < 110 g/l in 1st trimester
- Haemoglobin < 105 g/l in 2nd and 3rd trimester
- Serum Ferritin < 15µg/l (Most reliable test in pregnancy, consider oral iron supplementation if ferritin <30 µg/l)
- MCH < 25 pg and
- MCV < 80fl
- Transferrin saturation <15%

Recommendation:
An individual approach is preferable, based on results of blood count screening tests as well as identification of women at increased risk. Routine Iron Supplementation is not recommended in pregnancy.

Check Ferritin level for women at booking at risk of IDA
- Known anaemic women where estimation of iron stores are needed (Hb<110g/l)
- Known Haemoglobinopathy (Non-anaemic women with high risk of iron depletion)
- Previous anaemia
- Multiparty P3 and above
- Consecutive pregnancy <1year following delivery
- Vegetarians
- Teenage pregnancies
- Recent history of bleeding
Non-anaemic women where estimation of iron stores is necessary

- High risk of bleeding (Placenta Praevia, Placenta Accreta)
- Jehovah’s witness

Recommendation:

- Ensure FBC and Ferritin done at booking appointment in the above group of women and results are checked with in 7-10 days and oral iron therapy is started, if Haemoglobin<110/l and/or Ferritin < 30 µg.
- Clearly document in clinical notes the baseline ferritin level, HB and start date and dose of oral iron commenced.
- Recheck Haemoglobin level at 16 weeks in women who are on oral iron therapy if there is no improvement in haemoglobin levels consider compliance issue and offer alternative regimen. If there is no compliance issue check red cell folate & Vitamin B12 level and refer patient to secondary care.
- Recheck Haemoglobin level at 28 weeks gestation and commence oral iron therapy for women with HB< 105 gm/l. If anaemia is diagnosed prior to 28 weeks and anaemia is worsening check compliance and consider alternate regimen to improve compliance.
- Repeat Hb and ferritin at 34 weeks in women diagnosed with Iron deficiency anaemia on ONLY. Consider IV iron therapy over oral iron in women with Hb <80 & no increment in haemoglobin with oral iron therapy of if women > 34 weeks gestation.

Oral Iron Therapy:

Recent studies showed that fractional absorption of iron in iron-depleted young pregnant woman is maximised by taking elemental iron doses of 40 – 80mg once per day or alternate days. (Pavord et al 2019). This decreases the gastrointestinal side effects and can increase compliance.

All women should be given dietary information both at consultation and in written form to maximise iron intake and absorption. It is important that oral iron should be taken at-least one hour before meals with orange juice or with a vitamin C tablet (ascorbic acid 50mg) to improve absorption, preferably in the morning. Oral iron should not be taken after food or tea/coffee as this will decrease absorption. Following adequate treatment, the haemoglobin should rise by 0.1-0.2g/dl per day).
Maternity Guidelines – Management of iron deficiency anaemia in Maternity (GL783)  January 2020

<table>
<thead>
<tr>
<th>Iron salt</th>
<th>Dose per tablet</th>
<th>Elemental Iron per tablet</th>
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</thead>
<tbody>
<tr>
<td>Ferrous Fumarate</td>
<td>210 mg twice daily</td>
<td>65</td>
</tr>
<tr>
<td>Ferrous Gluconate</td>
<td>300 mg BD twice daily</td>
<td>35</td>
</tr>
<tr>
<td>Ferrous Sulphate</td>
<td>200 mg BD twice daily</td>
<td>60</td>
</tr>
<tr>
<td>Ferrous Feredetate (Sytron)</td>
<td>190mg / 5ml elixir twice daily</td>
<td>27.5 mg / 5ml</td>
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**Note:** Consider reducing to once daily dose regimen or alternate day regimen once daily regimen if patient has side effects to improve compliance. Liquid oral iron is another option if patient wants to avoid tablet form or side effects.

<table>
<thead>
<tr>
<th>Combined Oral Iron and Folate preparations</th>
<th>Iron salt and dose per tablet</th>
<th>Elemental iron content per tablet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregaday</td>
<td>Fumarate 305 mg</td>
<td>100 mg</td>
</tr>
<tr>
<td>Galfer</td>
<td>Sulphate 300 mg</td>
<td>47 mg</td>
</tr>
<tr>
<td>Fefol A</td>
<td>Fumarate 305 mg</td>
<td>100 mg</td>
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Treatment with oral iron should continue for 3 months after a normal level has been reached to replenish iron stores. This should be passed on to Community midwives and GPs to continue prescriptions postnatal period.

**Intravenous Iron therapy- Indications for use:**
Monofer should be used for both antenatal and postnatal women where the convenience weight adjusted single dosing regimen can be advantageous. Intravenous Monofer is indicated in the treatment of iron deficiency anaemia where oral iron treatment has failed or is unlikely to be effective. For instance where oral iron is not tolerated due to gastrointestinal side effects, for patients where there is poor compliance or where a reliable rapid increase in haemoglobin is required. Intravenous iron is a more suitable management strategy for patients with moderate anaemia (Hb 80-100g/L) due to iron deficiency than blood transfusion as it is safer, more cost effective and of greater benefit to the patient than transfusion. If asymptomatic Hb >70 – <80g/L, IV iron infusion should be considered over blood transfusion.
Monofer Administration

Monofer is presented in a 100mg/ml solution for injection or infusion. It comes in 1, 5 and 10 ml vials.

Calculation of cumulative iron dose

The cumulative iron dose is calculated according to weight and haemoglobin level. This dose must not be exceeded.

| Dose of Monofer® = 20mg/kg. Calculate dose if weight < 50kg |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| < 50kg                          | 50 – 59kg       | 60 – 69kg       | 70 – 79kg       | 80 – 89kg       | 90 – 99kg       | >100kg          |
| 20mg/kg                         | 1g              | 1.2g            | 1.4g            | 1.6g            | 1.8g            | 2g              |

Administration of Monofer

- Dilute the required dose in 250ml 0.9% sodium chloride.
- Administer doses ≤ 1000mg over at least 15 mins, doses > 1000mg over at least 30 mins.

Contraindications

- Hypersensitivity to the active substance
- Known serious hypersensitivity to other parenteral iron products
- Non-iron deficiency anaemia (e.g. haemolytic anaemia)
- Iron overload or disturbances in utilisation of iron (e.g. haemochromatosis, haemosiderosis) Decompensated liver cirrhosis and hepatitis
- First trimester of pregnancy

Side Effects

- Due to limited clinical data on Monofer the mentioned undesirable effects are primarily based on safety data for other parenteral iron solutions.
- Monofer should only be administered in an area where staff are trained and equipped to evaluate and manage anaphylactic reactions. Although allergy is rare patients should be monitored for signs of allergic reaction during administration and at least 30 minutes after infusion.
Equipment required:
- Equipment for cannulation
- 250ml 0.9% sodium chloride
- Giving set and pump
- Portable monitoring: SpO2, NIBP
- Anaphylaxis equipment

Procedure for administration
- Confirm patient details
- Confirm patient weight and haemoglobin
- Baseline observations: Temperature, BP, Pulse, Respiratory rate, Oxygen saturations
- Prepare infusion of Monofer
- Connect and run infusion over required rate
- Observe patient for signs of adverse effects
- Observe cannula site for signs of extravasation. Stop immediately if this occurs
- Post infusion observations: Temperature, BP, Pulse, Respiratory rate, Oxygen saturations
- Observe for at least 30 minutes post infusion

Patients must be informed that oral iron should be discontinued 24 hours before infusion of intravenous iron and not to take oral iron for at least 5 days after the last infusion of intravenous iron.

Follow up
- Recheck FBC in 14-21 days post IV monofer infusion in antenatal patients.
- FBC can be rechecked at 6 weeks postnatal visit at GP surgery. Oral Iron therapy should be continued 5 days after infusion until 6 weeks postnatal FBC is done at GP surgery and continued if need be by GP.
Recommendations for treatment with iron or blood usage

- If Hb < 70g/l, transfuse. Aim to increase Hb to 70g/l only (even 1 unit is OK).
- If post natal Hb ≥ 70 g/l and patient is not at significant risk of further haemorrhage, consider Monofer if symptomatic or oral Iron therapy if asymptomatic.
- If post transfusion Hb ≥ 70 g/l, consider Monofer if symptomatic or oral iron if asymptomatic.

References:

4. South West Regional Transfusion Committee. Regional template/guideline for the management of anaemia in pregnancy and postnataally. April 2014
11. Iron isomaltoside 1000 (Monofer®) Summary of Product Characteristics – (http://www.medicines.org.uk/emc/medicine/23669/SPC/Monofer+100mg+ml+solutio n+for+injection+infusion/)
12. A model treatment protocol for the administration of total dose infusion of MonoFer® (July 2016, Pharmacosmos)
EMA092a - Flowchart for management of antenatal iron deficiency anaemia

FBC at Booking

Hb > 110g/l

Hb ≤ 110g/l

Ferritin at booking if at risk of IDA, high risk of bleeding or JW

Ferritin ≤ 30g/l

Ferritin > 30g/l

Start oral iron (Ferrous Fumarate or Sulphate)
One tablet daily

Repeat FBC at 16 weeks

Hb > 110g/l
Continue oral iron daily

Hb ≤ 110g/l & non-compliant
Reduce to alternate days or change preparation

Hb ≤ 110g/l & compliant
Check Folate & B12

FBC at 28 weeks

Hb > 105g/l

Hb ≤ 105g/l

Start oral iron (Ferrous Fumarate or Sulphate)
One tablet daily

If had oral iron before 28 weeks, check compliance and consider alternative dosing

FBC & Ferritin at 34 weeks

Hb > 80g/l
Continue oral iron daily

Hb ≤ 80g/l
Consider IV iron (Monofer)
EMA092b - Flowchart for management of postnatal iron deficiency anaemia

**FBC Post natal**

- **Hb < 70g/l**
  - Transfuse 1 unit of red cells

- **Hb ≥70g/l & symptomatic**
  - Give IV iron, Monofer 20mg/kg
  - 5 days after IV iron, start oral iron, One tablet daily

- **Hb ≥70g/l & asymptomatic**
  - Start oral iron, One tablet daily