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Anaemia - Iron Deficiency in Pregnancy

Routine Blood Testing

All pregnant women should be tested for markers of iron deficiency at the following times (in addition to standard blood testing):

- Booking – full blood count and ferritin
- 28 weeks – full blood count and ferritin
- 32-36 weeks – full blood count

Contraindications for Prophylactic Iron

Does the patient have any of the following contraindications for prophylactic iron use?:

- Ferritin levels >300 µg/L
- Haemoglobin level >160g/L
- Allergy to oral iron or components
- Haemaglobinopathies e.g. sickle cell or thalassemia, where iron deficiency not confirmed (carriers/traits can be treated as eligible for Iron)
- Haemolytic anaemia
- Active inflammatory bowel disease
- Known stomach ulcer or gastritis
- Iron metabolism disorders e.g. haemachromatosis
- Receiving regular blood transfusions

Yes →

Antenatal Clinic

Consider referral to antenatal clinic for discussion on suitability for prophylactic iron therapy.

NOT suitable for prophylactic iron

Suitable for prophylactic iron

No

Prophylactic Iron Therapy

All women, unless contraindicated (see above), are advised to take prophylactic iron therapy from the point of **booking** their pregnancy:

- Ferrous Sulfate 200mg one tablet daily

A supply of Ferrous Sulfate 200mg tablets is to be issued to women at their **midwife appointments**.

This medication supply is governed by registered midwives being allowed to supply all general sales list (GSL) and pharmacy (P) medicines in accordance to their scope of practice and subject to local policies (NMC).

Document prescription in Badgernet Antenatal management plan and medications sections, the same way as healthy start vitamins and low dose aspirin (LDA) are currently documented. Document compliance in antenatal assessment at every appointment.

The following information should be given to the patient at time of iron therapy provision:

- An information leaflet should be provided to women alongside the provision of prophylactic iron therapy.
- Advise women that iron should be taken on an empty stomach, 1 hour before meals, with a source of vitamin C (ascorbic acid) such as fresh orange juice to maximise absorption.
- Other medications or antacids should not be taken at the same time.
- Levothyroxine should not be taken within a 2-hour interval.
- Do not drink tea or coffee at the same time.

High Risk Factors for Anaemia

Does the patient have any high risk factors for anaemia?:

- Previous anaemia
- Multiparity > 3
- Multiple pregnancy
- Interpregnancy interval of < 1 year
- Women who have poor dietary habits
- Vegan or vegetarian diet
- Age < 19 years
- Recent history of clinically significant bleeding
- Ferritin < 50 µg/L
- High risk of bleeding in pregnancy or at birth e.g. placenta praevia
- Women declining blood products
- Women for whom finding compatible blood is challenging (i.e. positive antibody screen)

Yes →

Record

Document high risk factor(s) for anaemia in the antenatal management plan.

No →

Blood Results

See page 2 for the management of routine blood testing results

Realistic Medicine – Shared decision making | **B**enefits of treatment | **R**isks of treatment | **A**lternative treatments | **N**o treatment

Version – 3	**Title –** Anaemia - Iron Deficiency in Pregnancy	**Department –** Obstetrics	**FINAL**
Creator – Debbie McWilliam and Jocelyn Luke-Reid	**Lead –** Debbie McWilliam	**Last Review –** 03 May 2023	**Next Review –** 03 May 2025

Queries Around Blood Results

For blood results that are abnormal and require referral to Obstetrics/Haematology, this should happen as per antenatal clinic guideline and not via the on-call team.

Ferritin can rise as an acute phase response which is why abnormal results so should be repeated after 4 weeks as per Haematology recommendations

Ferinject® can significantly raise Ferritin levels, these women may still require oral Iron tablets.

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- 32-36 weeks – full blood count

Hb > 160 g/L

Haemoglobin > 160 g/L

- Stop oral iron in all patients

Ferritin ≤ 300 µg/L → **Routine Blood Testing**

Continue routine blood testing

Ferritin > 300 µg/L → **Recheck Ferritin**

Recheck ferritin in 4 weeks.

If ferritin > 300 µg/L on repeat, check liver function tests and discuss with obstetrician ± haematologist.

→ **Routine Blood Testing**

Continue routine blood testing

Hb 110-160 g/L

Haemoglobin 110-160 g/L

- If Ferritin > 150 µg/L, stop oral iron
- If Ferritin ≤ 150 µg/L, continue oral iron one tablet once daily

Ferritin > 300 µg/L → **Recheck Ferritin** (see above)

Ferritin ≤ 300 µg/L → **Routine Blood Testing**

Continue routine blood testing

Hb < 110 g/L

Haemoglobin < 110 g/L

- If Ferritin >300 µg/L, discuss with obstetrician ± haematologist
- If Ferritin 150-300 µg/L, discuss with obstetrician
- If Ferritin ≤ 150 µg/L, continue oral iron at one tablet once daily

Ferritin > 150 µg/L → **Check Haematinics**

If not recently performed, check vitamin B12 and folate blood tests – action accordingly.

Ferritin > 300 µg/L → **Recheck Ferritin** (see above)

Ferritin 150-300 µg/L → **Repeat Bloods**

Repeat full blood count in 8 weeks

→ **Routine Blood Testing**

Continue routine blood testing

Ferritin ≤ 150 µg/L → **Recheck Bloods**

Recheck full blood count and ferritin in 4 weeks – action accordingly.

Consider education and compliance.

Consider IV iron therapy – see page 3

Realistic Medicine – Shared decision making | **B**enefits of treatment | **R**isks of treatment | **A**lternative treatments | **N**o treatment

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Anaemia - Iron Deficiency in Pregnancy

IV Iron

If poor or no response to oral iron, IV Iron should be considered (dependent on Hb levels and gestation of pregnancy). Main reasons for poor response to oral iron are non-compliance and poor tolerance due to side effects and occasionally malabsorption. Alternative oral preparations can be tried if gestation and clinical situations allows for this.

IV iron can be used in the postnatal period in women who have low iron stores or have had postpartum haemorrhage >1500mls or where rapid increase in Hb is desirable (for example with Hb <80g/L). Single dose IV iron infusion should not require delay in discharge.

Indications for IV Iron
- Iron deficiency anaemia antenatally that does not respond to oral iron
- Postnatal women with a Hb of <80 g/L who do not have symptoms to indicate a blood transfusion
- Women with a postpartum haemorrhage of ≥1500mls

Contraindications
- Non-iron deficiency anaemia or iron overload
- Hypersensitivity to any of the ingredients
- Liver dysfunction
- Renal dysfunction
- 1st trimester of pregnancy
- Known hypersensitivity to other parental iron products

Precautions for use (MHRA/CHM advice)
- Serious hypersensitivity reactions with intravenous iron
- Serious hypersensitivity reactions, including life-threatening and fatal anaphylactic reactions, have been reported in patients receiving intravenous iron. These reactions can occur even when a previous administration has been tolerated. Test doses are required and caution is needed with every dose of intravenous iron.
- Intravenous iron products should only be administered when appropriately trained staff and resuscitation facilities are immediately available; patients should be closely monitored for signs of hypersensitivity during and for at least 30 minutes after every administration. In the event of a hypersensitivity reaction, treatment should be stopped immediately and appropriate management initiated.
- The risk of hypersensitivity is increased in patients with known allergies, immune or inflammatory conditions, or those with a history of severe asthma, eczema, or other atopic allergy; in these patients, intravenous iron should only be used if the benefits outweigh the risks.
- Intravenous iron should be avoided in the first trimester of pregnancy and used in the second or third trimesters only if the benefit outweighs the potential risks for both mother and fetus.
- Fetal bradycardia may occur following administration of parenteral irons. It is usually transient and a consequence of a hypersensitivity reaction in the mother. The unborn baby should be carefully monitored during intravenous administration of parenteral irons to pregnant women.

Side effects
- Common side effects include – headache, dizziness, nausea, injection site reaction, hypertension, flushing, hypophosphataemia
- Uncommon side effects include – hypersensitivity, paraesthesia, dysgeusia, hypotension, vomiting, abdominal pain, rash, dyspepsia, flatulence, diarrhoea, constipation, skin reactions, pyrexia, fatigue, chest pain, rigors, malaise, peripheral oedema, myalgia, back pain, arthralgia

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At Antenatal Clinic

- Check Ferritin, Folate and Vitamin B12
- Review haemoglobinopathy screening results where relevant
- Microcytic (↓MCV) and hypochromic (↓MCHC) red cells are typical of iron deficiency
- Book appointment in The Day Assessment Unit (DAU) and prescribe ferric carboxymaltose (Ferinject®)
- If dose of Ferinject® to be given is over 1000mg then women should be booked back in the following week for the remainder of her dose and then be followed up by her CMW 2-3 weeks afterwards.

At Day Assessment Unit AMH/DGH

- IV access (pink cannula)
- Check baseline observations
- Administer ferric carboxymaltose (Ferinject®) as detailed below
- Observe for side effects and adverse reactions. If an adverse reaction occurs stop infusion, recheck observations and inform medical staff immediately.
- Oral iron preparations should not be administered for at least 5 days after the last injection of ferric carboxymaltose (Ferinject®)
- Ferinject® should only be administered by staff trained to evaluate and manage anaphylactic reactions, in an environment where full resuscitation facilities are available.
- The woman should be observed for adverse effects for at least 30 minutes following Ferinject® administration.

Dosage of Ferric Carboxymaltose (Ferinject®)

The dose of Ferinject® administered to a woman is dependant on her haemoglobin level AND her booking weight.

The maximum weekly dose to be administered is 1000mg. If the table below states the dose to be given is higher than 1000mg; the woman should return the following week for the remainder of her dose.

Haemoglobin (g/dL)	Booking weight below 35kg	Booking weight 35 to 69.9kg	Booking weight 70kg and over
< 100	500mg	1500mg	2000mg
100 to 140	500mg	1000mg	1500mg

Use the patient's booking weight to calculate dosage; for postnatal women their booking weight should still be used to calculate dose.

Breastfeeding information for postnatal women receiving IV iron - Clinical studies showed that transfer of iron from Ferinject to human milk was negligible (≤1%). Based on limited data on breast-feeding women it is unlikely that Ferinject represents a risk to the breast-fed child.

Directions for Administration

- Calculate the total amount of ferric carboxymaltose (Ferinject®) to be administered according to the dosing table above. Check the prescription is correct for the woman.
- Ferinject is available in two preparations at AMH/DGH. 1000mg/20ml vial size and 500mg/10ml vial size. The solution must be diluted prior to infusion.
- Dilute the volume to be infused in 250ml Sodium Chloride 0.9%.
- Infuse over a minimum of 15 minutes.
- Post repletion, regular assessments should be completed to ensure that iron levels are corrected and maintained.

Re-assessment should be performed by the clinician based on the individual patient's condition. The Hb level should ideally be re-assessed 4 weeks post final Ferinject® administration to allow adequate time for erythropoiesis and iron utilisation but could be done earlier if clinically indicated.

Ferinject® is a black triangle drug and as such any adverse events must be reported via the yellow card scheme to the MHRA.