Management of Anaemia in Pregnancy Guideline

DEFINITION

Haemoglobin: <110 g/L in 1st trimester
<105 g/L in 2nd and 3rd trimester
<100 g/L in postpartum period

- A microcytic hypochromic (low MCV/low MCH/Low MCHC) picture suggests iron deficiency.

- A macrocytic (High MCV) picture suggests either folate, B12 deficiency or both (do haematinics). Normal MCV Range: 80.0 - 100.0 (fl)
  - Do not commence folic acid or B12 treatment until haematinics are confirmatory when the MCV is high in an anaemic woman
  - There are other causes of a raised MCV

- A normocytic (normal MCV) may suggest a mixed deficiency (do haematinics)

Most common cause of anaemia in pregnancy is iron deficiency.
Local audit of women referred for iron transfusion also demonstrated a high incidence of folate deficiency.

At risk groups should be identified at booking e.g. vegetarians, multiparity, previous anaemia and history of menorrhagia or bleeding.

Anaemia can be responsible for an increased susceptibility to infection, disturbance of postpartum emotion and effect neonatal iron stores. It is linked to pre-term labour and low birth weight and possibly to abruption and increased PPH.

Dietary advice should be offered to all pregnant women. The main sources of dietary iron are red meats, fish and poultry as well as green leafy foods such as spinach and kale.

Management of suspected iron deficiency anaemia

Oral iron is ideally to be taken on an empty stomach, about one hour before meals. If GI upset can be taken with meals

We recommend commencing Folic acid 5 mg orally once daily with oral iron (unless there is reason to suspect B12 deficiency) Based on local audit

Absorption is improved when taken with a source of vitamin C (e.g. orange juice or ascorbic acid). Avoid taking with milk, tea, coffee or antacids.

Oral iron preparations

First line:

- Ferrous Fumerate 210 mg once daily for GP prescription (NEW 2023)
- Ferrous Sulphate 200 mg once daily for hospital prescription (New 2023)

If experiencing side effects, reduce dose to once on alternate days. Recent evidence supports once daily or alternate day tablets as better absorbed and with better compliance.
Side effects: GI upset, nausea, constipation or diarrhoea. Black stools

Second line:
Ferrous Gluconate 300 mg od or Paediatric iron i.e. Sytron 5-10 ml once daily (2023)

Who should not take Iron?

The following conditions are contraindicated or used with caution with this drug. Check with consultant if there are any of the following:

Conditions:

Iron Metabolism Disorder causing Increased Iron Storage. Heamochromatosis
Increased Bodily Iron from High Red Blood Cell Destruction
Haemolytic Anemia
Ulcer from Stomach Acid, Burning Stomach symptoms
Ulcerated Colon, Diverticular Disease/Ulcerative colitis
Conditions requiring Several Blood Transfusions

Allergies/Interactions:

Iron Complex: Avoid if know allergy/Iron Analogues: Avoid if know allergy
Calcium – interaction: reduced absorption/Zinc Oxide interaction: reduced absorption
Calcium Threonate- Calcium supplement: interaction
Magnesium Oxide: reduced absorption/Magnesium interaction: reduced absorption
Levothyroxine – reduced absorption/Methyldopa- reduced antihypertensive effect

Any unusual FBC reports involving MCV/MCH and MCHC should be discussed with medical staff as is out with the scope of this guideline

Anaemia at booking should always be investigated. Unless there is a known medical issue (malabsorption syndrome, chronic illness, haemoglobinopathy, renal/liver disease. This list is not exhaustive)

Ferritin: Use the same references range in pregnant and non-pregnant women:
Ferritin14-186 ng/mL. Offer oral iron when it's < 30ng/ml (NEW 2023)

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NHS Lanarkshire

At booking check FBC

Hb >110

MCV normal

No further action

Hb <110
MCV <80
Once haemoglobinopathy excluded

Commence oral iron therapy and folic acid

After 2 weeks check tolerance and compliance

Dose can be reduced to once or twice daily if required or consider 2nd line oral iron (ferrous gluconate 300mg BD or sytron 5-10ml BD)

At 16 weeks or 4 weeks after compliance **recheck FBC** +/- haematinics (ferritin, folate + B12) (additional gold top)

See Page 5: Reflex Haematinics

At 28 weeks check FBC and G+S

Hb >105

No further action

Hb <105

Commence oral iron therapy **and folic acid 5mg**

30 weeks – check tolerance and compliance

32 weeks – check tolerance and compliance. Repeat FBC +/- haematinics (gold top).

See Page 5: Reflex Haematinics

Refer to consultant if required

Responding i.e. rise in Hb by at least 10g/L

Continue with oral iron and folic acid until delivery and at least 6 weeks postpartum.

Hb <95 at any point

Refer to a consultant

Commence oral iron therapy and Folic Acid 5mg

In 2 weeks check tolerance and compliance

In 4 weeks repeat FBC +/- haematinics (gold top)

See Page 5:

Reflex haematinics

When contacting woman to check compliance. This must be documented in Badger including any change to management

Persistent anaemia with abnormal haematinics

- Low folate – check compliance. Consider 5 mg two or three times daily if compliant
- Low B12 – ensure normal folate then parenteral B12
- Low ferritin – consider referral for parenteral iron transfusion
    - This must be a consultant decision after careful review
    - See Ferinject Maternity Protocol on at end of this guideline
    - Can be arranged at Maternity DBU
    - This will be supervised/prepared by medical staff

Persistent anaemia with normal haematinics

- Consider anaemia of chronic disease
- Consider iron studies (transferrin + serum iron+ transferrin saturation)
- Refer to consultant Haematologist or MOT clinic

Process for Reflex (Reflex means done automatically only if needed) Haematinics

See below and Page 5

Reflex Haematinics Process

This allows haematinics to be done automatically, only if required, following supplementation when repeating FBC. Requires an additional gold top.
Done 4 weeks after compliance with oral supplements (iron, folate or B12)

At Repeat FBC: when completing the **Green** request form

- In addition to Purple top take a Gold top sample
- Clinical details box should state "**Anaemia in pregnancy + / - reflex haematinics**"
- Use the PID label below and complete required fields
- The lab has asked that the name of person requesting and their contact number be included in request. Please complete these fields.

NOTE:
The lab IT system will automatically decline repeat haematinics if requested within 30 days; even when previously declined for this reason. The IT system just recognises the date of last request, not outcome of last request. Using the label and form as below will allow haematinics to be done after 4 weeks oral therapy

To allow reflex haematinics: Attach this PID label* to request form

PID Label template is at the end of this guideline

Please PID as Maternity Haematinics clinic (**MATHAE**)

Requestor:

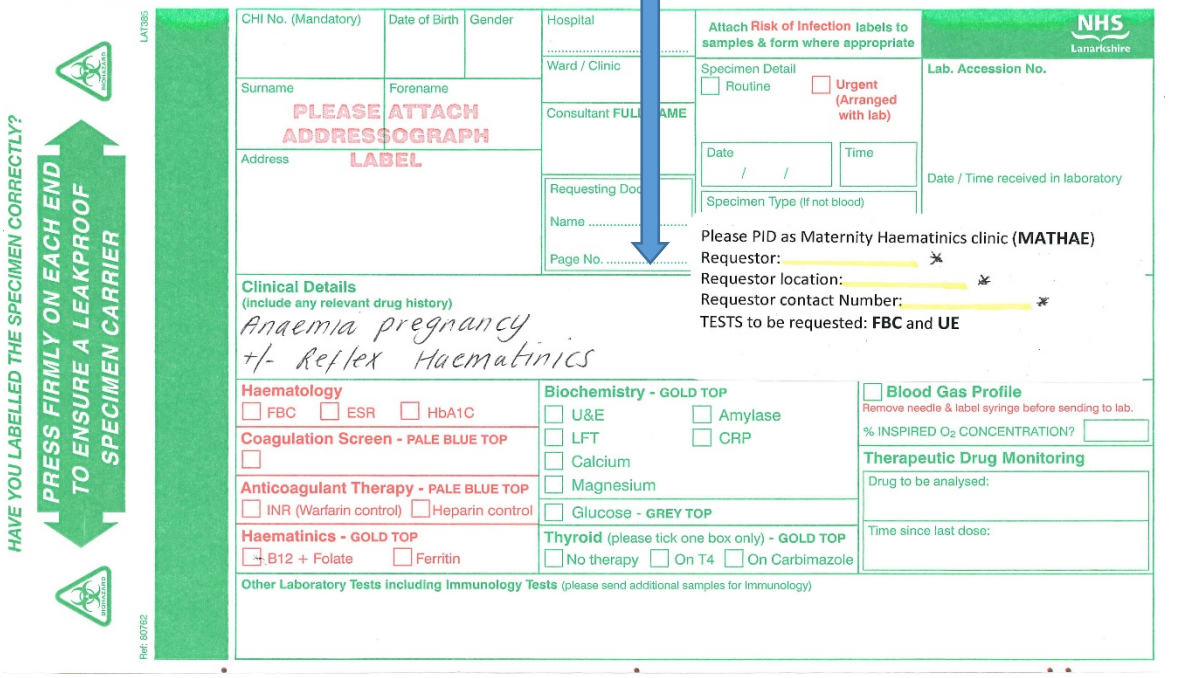
Requestor location:

Requestor contact Number:

TESTS to be requested: **FBC** and **UE**

Example

Affix label here *Complete these fields



*PID Label template available at end of this Guideline

Intravenous iron (Ferinject)

Management is decided and documented by consultant after careful review

- Should be considered in confirmed iron deficiency in the presence of absolute non-compliance or no response with oral iron and folic acid
- Known malabsorptive syndrome
- Advanced gestation 34 to 38 weeks with high chance of transfusion
- Women declining blood products with mild anemia due to iron deficiency
- Should only be considered from 2nd trimester onwards in most instances
- There is a small risk of anaphylactic reaction. Patient should be informed of potential side effects and trained staff together with facilities to deal with anaphylaxis should be available during administration.
- Contraindicated in history of anaphylaxis, first trimester, active acute or chronic infection and chronic liver disease
- Currently, IV iron used in pregnancy in NHSL is Ferinject given in a **single dose**
    - Maternity protocol is not intended for multiple iron transfusions
    - **See Maternity Protocol at end of this guideline Page 8**
- Intravenous iron treatment can be arranged via the Maternity DBU
    - This must be prescribed, supervised and documented by medical staff with consultant oversight/agreement
    - All cases should be noted in IV iron diary in DBU for clinical audit

Folate deficiency

Reference range same in pregnancy: *Folate 3.9-268 ng/ml.* This is common in the local population and likely to be due to dietary insufficiency. Low levels should be treated with folic acid 5 mg/day. If remains low despite compliance, consider 2 or 3 times daily tablets (5 mg)

B12 deficiency

Reference ranges for Vit B12 (cobalamin) vary in pregnancy: Units pg/mL

Non-pregnant Adult	First trimester	Second trimester	Third trimester
197-771	118-438	130-656	99-526

True B12 deficiency is rare in pregnancy although low B12 level is commonly seen with little clinical significance. However, B12 replacement i.e. one single dose of IM Hydroxocobalamin 1 mg can be considered for B12 level <lower limit defined by trimester. Consider where patient is started on iron or folic acid where B12 level may fall further and precipitate subacute degeneration of the spinal cord. The latter can cause irreversible neurological deficit. This is a rare event.

Full B12 therapy: Hydroxocobalamin 1 mg IM 3 times a week for 2 weeks (BNF)

Postnatal

Usually due to blood loss

Prescribe iron once daily and folic acid 5 mg once daily for 3 months

There is scope for post-natal iron transfusion. This is an area for future training and development in the postnatal setting

References:

Abassi-Ghanavati M, Greer LG, Cunningham FG. Pregnancy and laboratory studies: a reference table for clinicians. Obstet Gynecol. 2009. Dec; **114**(6):1326-31.PMID:19935037

UK guidelines on the management of iron deficiency in pregnancy, British Journal of Haematology, 2020, 188, 819-830, Sue Pavord et al on behalf of BSH committee October 2019
https://doi.org/10.1111/bjh.16221

Govindappagari, S. & Burwick, R.M. (2019) Treatment of iron deficiency anemia in pregnancy with intravenous versus oral iron: systematic review and meta-analysis. *American Journal of Perinatology*, **36**, 366– 376.

Roy, N.B.A. & Pavord, S. (2018). The management of anaemia and haematinic deficiencies in pregnancy and post-partum. *Transfusion Medicine*, **28**, 107– 116.

Smith, G.A., Fisher, S.A., Doree, C., Di Angelantonio, E. & Roberts, D.J. (2014) Oral or parenteral iron supplementation to reduce deferral, iron deficiency and/or anaemia in blood donors. *Cochrane Database Systematic Reviews*, **7**, CD009532.

British National Formulary

Changes to Oral Iron Dosing :Medicines Guidance Team 2022. Approved by ADTC December 2022

Previous Guideline: Dr A Hung March 2015

Originators: Dr S Maharaj & Obstetric Blood Transfusion Group April 2021
Date of Review: February 2023
Ratified by: Clinical Effectiveness Maternity Sub Group
Review Date: February 2026

See next pages for Ferinject Maternity Protocol & Label template

Ferinject® 500mg/10ml vial (Ferric Carboxymaltose)

Avoid use in the first trimester

INDICATION[1,2] Treatment of iron deficiency when oral preparations are ineffective or cannot be used, or there is a need to deliver iron rapidly.

DOSE	DILUENT	ROUTE	TIME	RATE
1000mg (20ml)	80ml of Sodium Chloride 0.9%	IV infusion	15 minutes	400ml/hour

Dose should not exceed 20mg/kg - confirm dose with consultant if patient weighs < 50kg.

The total volume to infuse as made up above is 100ml over 15 minutes via Baxter Pump.
The venflon must be flushed to ensure no tissuing as Ferinject® is an irritant and stains tissue

MONITORING[1]
Ferinject® must only be administered under the supervision of staff that are trained to evaluate and treat anaphylactic reactions. Monitor patients for hypersensitivity reactions during each administration and for at least 30 minutes after.

The haemoglobin level should be re-assessed no earlier than 4 weeks post final Ferinject® administration to allow adequate time for erythropoiesis and iron utilisation.

CONTRAINDICATIONS / PRECAUTIONS[1-4]
Risk of hypersensitivity reactions is enhanced in patients with: known allergies; asthma; eczema; immune or inflammatory conditions (e.g. systemic lupus erythematosus, rheumatoid arthritis).

Hypersensitivity reactions can occur even when a previous administration has been tolerated.

DRUG INTERACTIONS[1]
IV iron can reduce the absorption of oral iron. Wait for at least 5 days after infusion of Ferinject® before starting oral iron therapy.

STORAGE / STABILITY[1]
Store at room temperature and protect from light. Use immediately after dilution.
Dilute with sodium chloride 0.9% only. No other diluents should be used, as there is the potential for precipitation.

SIDE EFFECTS[1,2]:
Common side effects include: nausea, headache, dizziness, flushing, hypertension, injection site reactions, and transient hypophosphataemia.
For further information see current BNF.

ADDITIONAL INFORMATION
Local audit has demonstrated a high concurrence of folate deficiency. Folic acid 5 mg should be commenced with oral iron therapy and continued after any intravenous iron therapy.
See NHSL Guideline Anaemia in Pregnancy on FirstPort.

REFERENCES

1. http://www.medicines.org.uk/emc/medicine/24167 Ferinject (Vifor Pharma UK) – Last updated 24/06/2020
2. https://bnf.nice.org.uk/drug/ferric-carboxymaltose.html BNF online - Accessed 04/03/2020
3. Injectable Medicines Guide via http://medusa.wales.nhs.uk Ferinject – Last updated 07/01/2016
4. https://www.gov.uk/drug-safety-update/intravenous-iron-and-serious-hypersensitivity-reactions-strengthened-recommendations MHRA alert - Accessed 04/03/2020

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Supersedes	**OBSFER02**	Updated by	Hannah Fulton (Clinical Pharmacist) / Dr Maharaj (Consultant Obs &Gyn)
Date Updated	July 2020		
Date of Next Review	July 2023		

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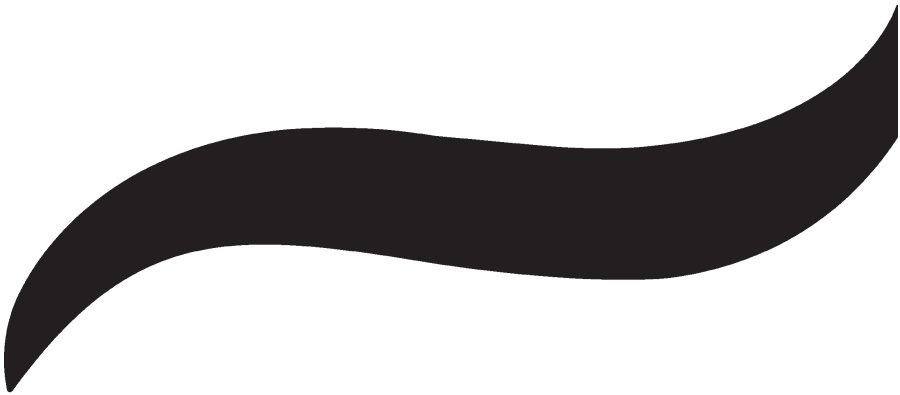
Ferric Carboxymaltose (Ferinject) Intravenous Iron transfusion

Information for patients

Maternity



This is a type of iron preparation given through a drip (into a vein, also described as an infusion). Ferric Carboxymaltose has been chosen due to its safety and in most cases you will only need one dose.

Some of the reasons for needing Ferric Carboxymaltose are:

- blood tests show you are anaemic (low blood count) and this has not responded to oral iron tablets, or the iron tablets you've taken have made you feel unwell
- you have significant anaemia after the birth of your baby, causing you to feel unwell
- you decided not to have a blood transfusion, for example if you are a Jehovah's Witness

Your doctor may suggest Ferric Carboxymaltose and then discuss this with you.

Using ferric carboxymaltose instead of blood

Ferric Carboxymaltose is not a blood product. Although a blood transfusion is safe, there are some risks, including a tiny risk of infection. Ferric Carboxymaltose does not have the infection risks of blood transfusion.

Safety of ferric carboxymaltose

Ferric Carboxymaltose is considered safe to use after the first trimester (three months) of pregnancy and after you've had your baby. Rarely (in under 1% of cases) it can cause allergic reactions. You will therefore be monitored closely before, during and after the infusion.

A rare but significant complication of Ferric Carboxymaltose is permanent skin staining or discoloration, which can occur if some of the drug leaks outside the vein during the infusion. To reduce the risk, a flush of water or saline (salt solution) is given into your vein before the Ferric Carboxymaltose. Please let the midwife know if you experience any pain or burning in the arm during the infusion.

Very little Ferric Carboxymaltose crosses into breast milk so you can safely breastfeed.

Side effects

Mild side effects may occur in 1 to 10% of patients, including headache, dizziness, rash, nausea and vomiting, abdominal pain, muscle cramps, diarrhoea, constipation, abnormal liver function, flushing, low or high blood pressure and injection site reactions.

Receiving ferric carboxymaltose

Ferric Carboxymaltose can be given at the obstetric day unit. Sometimes it is given during an in-patient admission

When you arrive the midwife will take your pulse, blood pressure and temperature. Next the midwife or one of the doctors will put a drip in your arm and start the Ferric Carboxymaltose infusion. This usually takes about 15 minutes via the drip.

Afterwards the midwife will check your pulse, blood pressure and temperature again. Usually you can go home 30 minutes after the Ferric Carboxymaltose has finished, unless you feel unwell.

Your blood haemoglobin level will be checked before you give birth if you are still pregnant. If you have already given birth, you may need to take oral iron tablets.

Oral iron tablets

You must not take oral iron tablets for 5 days after having Ferric Carboxymaltose. You should only restart taking the iron tablets after 5 days.

Suitability of ferric carboxymaltose

You should not have Ferric Carboxymaltose if you:

- ❖ have anaemia caused by deficiencies other than iron deficiency (for example B12 deficiency)
- ❖ have ever been told by a doctor that you have "iron overload"
- ❖ have ever had an allergic reaction to iron given to you through a drip
- ❖ have ever had a problem with your liver, such as liver cirrhosis or hepatitis

Further information

If you have any questions after reading this leaflet please let your midwife or doctor know. They will be happy to discuss them with you.

Adapted from Southhampton NHS Foundation Trust factsheet

Confidentiality and the use of patient information

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NHS Lanarkshire General Enquiry Line: 0300 30 30 243

NHS inform - The national health information service for Scotland.
www.nhsinform.co.uk
Tel No: 0800 22 44 88

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Care Opinion
What's your story?

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