Management of Iron Deficiency Anaemia in Pregnancy & Postpartum Guideline

Guideline information

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Summary of document:
Iron deficiency remains a significant risk factor for adverse maternal and neonatal outcomes. The objective of these guidelines is to provide healthcare professionals with recommendations for the diagnosis and treatment of iron deficiency in pregnancy and in the postpartum period.

Scope:
This guideline is applicable to all clinicians who provide care to pregnant women and people who are diagnosed with anaemia either during the antepartum or postpartum period.

The guidance below uses the term 'woman' (pronouns she or her) to describe individuals whose sex assigned at birth was female, whether they identify as female, male or non-binary. It is important to acknowledge it is not only people who identify as women for whom it is necessary to access women's health and reproductive services. Therefore, this should include people who do not identify themselves as women but who are pregnant or have recently given birth. Obstetric and Midwifery services and delivery of care must therefore be appropriate, inclusive and sensitive to the needs of those individuals whose gender identity does not align with the sex that they were assigned at birth

To be read in conjunction with:
NMC Practising as a Midwife in the UK

https://www.nmc.org.uk/globalassets/sitedocuments/nmc-publications/practising-as-a-midwife-in-the-uk.pdf

Patient information:

Owning group: MMOG – 20 January 2026
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Reviews and updates:
Version 1

Keywords

Glossary of terms

Hb	Haemoglobin
Extravasation:	Inadvertent leakage of intravenous (IV) fluid or medication into the surrounding extravascular tissue from a vascular access device such as a peripheral venous cannula or central line surrounding tissue
FBC	Full Blood Count
MCV	Mean Cell Volume
IDA	Iron deficiency anaemia

Key points: The objective of these guidelines is to provide healthcare professionals with recommendations for the diagnosis and treatment of iron deficiency in pregnancy and in the postpartum period.

Contents

Scope
This guideline is applicable to all clinicians who provide care to pregnant women who are diagnosed with anaemia either during the antepartum or postpartum period.

Aim
The aim of this guideline is to provide healthcare professionals with recommendations for the prevention, diagnosis and treatment of iron deficiency in pregnancy and in the postpartum period.

Objectives
The aim of this document will be achieved by the following objectives:

- Provide support for clinical decision making for healthcare professionals looking after pregnant women who experience anaemia
- Provide evidence-based care and treatment for the management of anaemia

Introduction
During pregnancy, plasma volume expands significantly from the first trimester, plateauing by the third. This expansion exceeds the increase in red blood cell mass and haemoglobin production, resulting in haemodilution and a physiological decline in haemoglobin (Hb) concentration. Consequently, lower diagnostic thresholds for anaemia are applied during pregnancy.

In Iron deficiency anaemia (IDA) there is shortage of iron stores. Iron depletion reduces iron availability for red cell production (erythropoiesis), resulting in decreased haemoglobin (Hb), and decreased oxygen delivery to tissues. IDA remains a significant problem for pregnant women in the UK. Anaemia can be responsible for an increased susceptibility to infection, disturbance of postpartum emotion (e.g. post-natal depression) and can affect neonatal iron stores. It is linked to pre-term labour and low birth weight and possibly to abruption and increased risk of postpartum haemorrhage (PPH).

Diagnosing anaemia
Diagnosing anaemia in pregnancy and in the postpartum period is made when:

- First trimester: Hb < 110 g/L
- Second and third trimesters: Hb < 105 g/L
- Postnatally: Hb < 100g/L
- Ferritin (any stage): < 30 micrograms/L

Causes of anaemia
- **Iron deficiency** is the most common cause of anaemia in pregnancy, accounting for approximately 90% of cases.

- Other, less common **causes of anaemia** in pregnancy include:
  Vitamin B12 and folate deficiencies, haemoglobinopathies (such as thalassaemia), chronic inflammatory conditions (e.g. Crohn's), haemolysis, acute or chronic blood loss, and a history of bariatric surgery.

Iron deficiency
Iron deficiency anaemia presents with:

- Low Haemoglobin (Hb),
- Reduced Mean Cell Volume (MCV) (microcytic anaemia)
- Reduced Mean Cell Haemoglobin (MCH) (hypochromic anaemia)

Ferritin
Serum ferritin is the most useful and easily available parameter for assessing iron deficiency

- A level below 30micrograms/L at any stage in pregnancy requires treatment.

Ferritin level is not routinely screened in pregnancy; however, it should be checked for those identified to be at risk of iron-deficiency anaemia.

These include:

- Women with normal Hb but a low MCV (if ferritin< 30 micrograms/L treat with oral iron)
- Women with known haemoglobinopathy e.g. thalassaemia, sickle cell.
- Women who are having haemoglobinopathy screening
- Women who have undergone bariatric weight loss surgery.
- Women who decline blood or blood products due to cultural/ beliefs or religion e.g. Jehovah's witness (JW)community, or other personal reasons should also be screened.

Other causes of Anaemia
Anaemias that present with a low haemoglobin AND normal or high ferritin (>30 micrograms/l) need careful review by a consultant to exclude other causes of anaemia when iron therapy may not be the appropriate treatment.

Consider other causes of anaemia e.g. folate or Vitamin B12 deficiency and check levels.

Other conditions that cause anaemia can be associated with iron overload and therefore iron replacement is relatively contraindicated. i.e.

- Thalassemia trait
- Sickle cell disease (HbSS or HbSC)
- Haemolytic anaemias (e.g. Hereditary spherocytosis)

(Patients are likely to know they have these conditions.) Always consider the Hb result in conjunction with the serum ferritin result to confirm iron deficiency and exclude iron overload.

Discussion with a haematologist should take place before giving iron to women with these conditions.

Clinical features of anaemia in pregnancy

Iron deficiency anaemia in pregnancy can be asymptomatic and may only be diagnosed on routine screening. Since iron is an essential element in all cells, symptoms of iron deficiency can occur before a fall in haemoglobin.

Clinical signs and symptoms of anaemia in pregnancy include:

- Dyspnoea
- Fatigue
- Headache
- Cognitive dysfunction, poor concentration
- Depression
- Restless leg syndrome.
- Dizziness or light-headedness.
- Irritability.
- Palpitations.

If women present with these symptoms, their full blood count should be checked. If Hb is within normal range but women remain symptomatic of anaemia, then consider checking ferritin.

Antenatal Screening for Anaemia.

Women recognised at being at increased/ high risk of anaemia include

- Vegetarians,
- Multiple pregnancy
- Multiparity (3 or more)
- Previous anaemia
- History of menorrhagia
- Bleeding
- Hyperemesis Gravidarum
- Pregnant having had a baby within last 12 months
- Age less than 20 when become pregnant

Full blood count (FBC) should be assessed at booking and at 28 weeks on all pregnant women.

Results:

- When results are not within normal range the woman will be phoned with a plan of care.
- The results will be documented in patient notes when seen by the community midwife at 16 and 31 weeks

Treatment of Anaemia.

Dietary Advice

All women should be advised regarding diet in pregnancy including detail of iron rich foods sources and factors that might inhibit or promote iron absorption.

The main dietary sources of iron are:

- red meat such as lamb, beef or pork
- fish and poultry

Women should aim to include at least one portion of these every day. (No more than two portions of oily fish per week.)

Non-meat sources of iron include:

- fortified breakfast cereals (with extra iron added)
- pulses (beans)

- eggs
- bread (wholemeal)
- green leafy vegetables (broccoli, cabbage, spinach)
- dried fruit (apricots, figs)
- tofu
- nuts and seeds

Women should aim to eat at least four portions of these foods each day, especially if vegetarian.

Oral Iron

Dietary changes alone are insufficient to correct established iron deficiency and iron supplements are necessary.

Ferrous iron salts are the preparation of choice e.g. ferrous sulfate, ferrous fumarate and ferrous gluconate.

The preferred first line treatment within HDdUHB obstetrics is **Ferrous sulfate 200mg once daily.** For iron deficiency anaemia the oral dose of iron should be 40-80mg of elemental iron daily.

The table below details the dose and elemental iron content of the iron preparations available.

Preparation	**Dose per tablet**	**Elemental Iron**	**Dose for treatment and prophylaxis**
Ferrous sulfate Tablets	200mg	65mg	200mg ONCE daily
Ferrous Fumarate Tablets	210mg	69mg	210mg ONCE daily
Ferrous Fumarate syrup (e.g. Galfer)	140mg/5mL	45mg/5mL	5-10mL ONCE daily
Sodium Feredetate trihydrate oral solution (e.g. Sytron)	207.5mg /5mL	27.5mg / 5mL	10-15mL ONCE daily

If not tolerated, the dose may be reduced to once daily on alternate days.

Administration of oral iron

Advise women that:

- ✓ One tablet should be taken ONCE a day on an empty stomach (1 hour before food). Preferably taken with orange juice but can also be taken with a glass of water.
- ✓ Other medications, multivitamins and antacids should not be taken at the same time.
- ✓ Potential adverse effects include constipation, diarrhoea, stomach pain, nausea. If these side-effects are problematic or do not ease, women should be advised to contact their midwife for more support. The potential to reduce dose to alternate day dosing should be considered.
- ✓ Iron therapy should be continued for at least 3 months, to ensure iron stores are fully replenished.
- ✓ Store iron tablets out of the sight and reach of children at all times to reduce the risk of poisoning.

Supplying Oral Iron under Midwife exemption Act

Oral iron (as Ferrous sulfate 200mg tablets) can be supplied direct to pregnant women from midwives, using the Midwifery Formulary NMC/Practicing as a Midwife in the UK.

Women suitable for treatment during pregnancy are those with a diagnosis of anaemia according to the expected thresholds.

- **First trimester**: Hb < 110 g/L
- **Second and third trimesters**: Hb < 105 g/L
- **Ferritin (any stage):** < 30 micrograms/L

Exclusions from oral treatment

Women will be excluded from oral treatment will be when:

- Consent not given for treatment.
- Hypersensitivity to any of the ingredients of the preparation (see SPC www.medicines.org.uk)

Any woman excluded for treatment should be referred to the obstetrician at the antenatal clinic.

Pregnaemia Packs

Each local antenatal clinic will stock a supply of '**Pregnaemia Packs'** (See Appendix 1 and 2 for SOP for the process to supply a Pregnaemia pack).

Each '**Pregnaemia pack'** contains

- 3 months' supply of Ferrous sulfate 200mg (84 tablets). Labelled as 'Take ONE tablet ONCE a day'
- Patient Information Leaflet
- GP repeat letter
- Blood request form *(To repeat FBC following 28 days of treatment)*
- Pre-printed sticker *(to be inserted into the maternity notes)*

Please stress the importance of compliance in taking tablets and advise contacting their midwife if experiencing adverse effects.

Monitoring for response to oral iron therapy for effectiveness

- Treatment for iron deficiency anaemia should be started promptly. Response will depend on the initial degree of iron deficiency, patient requirements e.g. multiple pregnancy, and compliance.
- If pregnancy <32 weeks gestation a repeat Hb is required 3-4 weeks after commencing treatment.
- If >32 week' gestation repeat Hb 2 weeks after commencing treatment to assess response. If poor or no response referral to consultant clinic for review.
- Once the Hb is in the normal range, replacement should continue for three months to replenish iron stores.

When to refer for review in consultant antenatal clinic

- If Hb < 85 g/l in isolation at any time at any gestation
- Hb less than 110 g/l at booking or < 105 g/l at 28/40 and has had poor response to oral iron therapy after 4 weeks or any concerns e.g. adverse effects to oral iron.

Prompt review by the obstetric team for individualised management is essential when:

- Hb <70g/l
- Significant symptoms of anaemia
- Advanced gestation >34/40
- Poor or No response to treatment after 2-4 weeks of correctly taken oral iron to exclude other causes of anaemia.

Place of Birth Assessment

Midwifery Led intrapartum Care (MLC)

- When Hb is >105g/l plan for birth suitable for MLC.
- If Hb is between 85 -105g/l and **asymptomatic** request consultant review for an individualised assessment and intrapartum care planning.

Obstetric Led Care Intrapartum (OLC)

- If Hb is 85g-105g/l and **symptomatic** request review for plan of care and advise to birth on labour ward (OLC).
- Hb is <85g/l requires OLC

If planned for caesarean birth

- Repeat FBC at 36 weeks, in ANC or community, if woman having planned caesarean birth and already known to be anaemic Hb<105g/l

Intravenous Iron

Blood transfusion should be avoided in women with Hb >70g/l who are stable, consider parenteral iron as an alternative. Intravenous iron is intended for the treatment of significant iron deficiency anaemia – low haemoglobin and low ferritin. The decision to prescribe should be made by a senior clinician and decision to implement IV iron therapy should be directed under the care of a consultant obstetrician.

Patients require a **recent Hb and ferritin level** before the decision for parenteral iron is made.

It is contraindicated in the first trimester and should be considered from the second trimester onwards for use in women with confirmed iron deficiency anaemia who meet any of the criteria/indications:

- Inadequate response to oral iron, such as little or no rise in haemoglobin after 2-4 weeks of treatment.
- Intolerance to oral iron, including significant gastrointestinal side effects.
- Malabsorption of oral iron, due to underlying conditions or previous gastrointestinal surgery.
- Urgent clinical need for rapid iron repletion, e.g. in late pregnancy or when anaemia is severe.
- If Hb < 80g/l and iron deficient
- Also consider in women presenting after 28 weeks' gestation with Hb < 105g/l and confirmed iron deficiency.
- The dose of intravenous iron should be calculated based on booking weight.
- Ferinject® Infusion is the intravenous iron formulation of choice within HDdUHB obstetrics.
- Women need to be fully counselled of indications for and risks of infusion and written consented obtained.
- A patient information leaflet should be given and explained

See Appendix 3 for Hywel Dda "*Adult IV administration guide for ferric carboxymaltose (Ferinject®) infusion for the treatment of iron deficiency anaemia in pregnancy and the postpartum period*".(includes dosage)

See Appendix 4 for consent form for Ferinject® Infusion.

Note: It is recommended that, where possible, that women do not take oral iron therapy for 3 days prior to the iron infusion of iron and should be re/started after at least 5 days after the last injection of Ferinject®.

After the iron infusion there is rapid uptake by the reticuloendothelial system and little risk of release of free iron. An erythropoietic response is seen in a few days, with an increased reticulocyte count. Ferritin levels return to the normal range **by** 3 weeks as iron is incorporated into new erythrocytes.

Follow up after Ferinject® infusion:

- If gestation > 34 weeks at time of iron infusion repeat FBC and ferritin after 2 weeks.
- If gestation <32 weeks at time of infusion, then repeat FBC and ferritin after 3 weeks
- If further iron repletion is required, the iron need should be recalculated.

Contraindications and Cautions

- Non-iron deficiency anaemia (e.g. haemolytic anaemia).
- Drug hypersensitivity to the active substance, to Ferinject® or any of its excipients such as Sodium hydroxide and Hydrochloric acid.
- Known serious hypersensitivity to other parenteral iron products.
- Immune or inflammatory conditions such as systemic lupus erythematosus, rheumatoid arthritis where there is an increased risk of hypersensitivity reactions to parenteral iron complexes.
- Iron overload or disturbances in utilisation of iron (e.g. haemochromatosis, haemosiderosis, decompensated liver cirrhosis, hepatitis and in particular Porphyria Cutanea Tarda).
- Parenteral iron must be used with caution in case of acute or chronic infection, asthma, eczema or atopic allergies

Monitoring during infusion

- Ferinject® can cause hypersensitivity reactions including anaphylactoid reactions, which may be fatal. The risk is enhanced for patients with known allergies including drug allergies, history of severe asthma, eczema or other atopic allergy and patients with immune or inflammatory conditions (e.g. systemic lupus erythematosus, rheumatoid arthritis).

Note: In these patients, intravenous iron should only be used if the benefits outweigh the risks

- Monitor patient for signs of hypersensitivity during and for at least 30 minutes following each injection. Caution is needed with every dose that is given, even if previous administrations have been well tolerated.
- Ensure fetal monitoring during intravenous iron infusion. If gestation is ≥26 weeks then use electronic fetal heart monitoring. For gestation <26 weeks then auscultate Fetal heart prior to commencing infusion and repeat during and at the end of infusion.

- Monitor patient for signs of hypersensitivity during and for at least 30 minutes following each injection. Caution is needed with every dose that is given, even if previous administrations have been well tolerated.
- If hypersensitivity reactions or signs of intolerance occur during administration, the treatment must be stopped immediately and seek medical review.
- Facilities for cardio-pulmonary resuscitation and equipment for handling acute anaphylactic reactions must be available. (See appendix 5).
- Paravenous leakage of Ferinject® (extravasation).

Potential side effects of intravenous iron

System Organ Class	Common (≥1/100 to <1/10)	Uncommon (≥1/1,000 to <1/100)	Rare (≥1/10,000 to <1/1,000)	Frequency not known(1)
Immune system disorders		Hypersensitivity	Anaphylactic reactions	
Metabolism and nutritional disorders	Hypophosphata-emia			
Nervous system disorders	Headache, dizziness	Dysgeusia, paraesthesia		Loss of consciousness(1)
Psychiatric disorders			Anxiety(2)	
Cardiac disorders		Tachycardia		Kounis syndrome(1)
Vascular disorders	Flushing, hypertension	Hypotension	Presyncope(2), syncope(2), phlebitis	
Respiratory, thoracic and mediastinal disorders		Dyspnoea	Bronchospasm(2)	
Gastrointestinal disorders	Nausea	Abdominal pain, vomiting, constipation, diarrhoea, dyspepsia	Flatulence	
Skin and subcutaneous tissue disorders		Rash(3), pruritus, urticaria, erythema	Angioedema(2), distant skin discolouration(2), pallor(2)	Face oedema(1)
Musculoskeletal and connective tissue disorders		Arthralgia, myalgia, pain in extremity, back pain, muscle spasms		Hypophosphataemic osteomalacia(1)
General disorders and	Injection/infusion site reactions(4)	Pyrexia, fatigue, chills, chest pain,	Influenza like illness (whose	

administration site conditions		oedema peripheral, malaise	onset may vary from a few hours to several days) (2)	
Investigations		Alanine aminotransferase increased, aspartate aminotransferase increased, gamma-glutamyltransferase increased, blood alkaline phosphatase increased, blood lactate dehydrogenase increased		

1 ADRs exclusively reported in the post-marketing setting; estimated as rare.

2 ADRs reported in the post-marketing setting which are also observed in the clinical setting.

3 Includes the following preferred terms: rash (individual ADR determined to be uncommon) and rash erythematous, -generalised, -macular, -maculo-papular, -pruritic (all individual ADRs determined to be rare).

4 Includes, but is not limited to, the following preferred terms: injection/infusion site -pain, -haematoma, -discolouration, -extravasation, -irritation, -reaction, (all individual ADRs determined to be uncommon) and -paraesthesia (individual ADR determined to be rare).

Rare side effects

Anaphylactic and Anaphylactoid.
The risk is enhanced for patients with known allergies including drug allergies, history of severe asthma, eczema or other atopic allergy and patients with immune or inflammatory conditions (e.g. systemic lupus erythematosus, rheumatoid arthritis).
Note: In these patients, intravenous iron should only be used if the benefits outweigh the risks.
Facilities for Cardiopulmonary resuscitation must be available
See Appendix 5 for anaphylaxis algorithm.

Fishbane reactions are uncommon, mild, non-anaphylactic infusion reactions associated with intravenous iron administration, typically occurring during or after a test dose. They are self-limiting and characterised by flushing in the face, acute chest or back pain and a sensation of tightness, sometimes with dyspnoea (**It does not** have accompanying hypotension, wheezing, stridor or periorbital oedema.)

- This may mimic the early symptoms of an anaphylactoid/ anaphylactic reaction.
- The infusion should be stopped, and the patient's vital signs should be assessed.
- These symptoms disappear shortly after the iron administration is stopped. (usually within 5 minutes)
- They typically **do not reoccur** if the administration is restarted at a lower infusion rate

Extravasation, also known as Paravenous leakage of Ferinject®, where, as the iron infusion is brown in colour, any leakage can cause brown pigmentation of the skin. Although this may fade with time it

can be permanent. The woman must be told to alert staff immediately if there is any pain or swelling at the injection site and the infusion should be discontinued immediately (see appendix 6 for minimising risk of extravasation injury).

Care in Labour

Women advised to give birth on a labour ward.

- On admission, IV access should be obtained and bloods taken for FBC and Group and Save (G&S).
- Active management of the third stage of labour is advised to minimise blood loss.
- Recommend use of cell saver if having a caesarean birth.

Postnatal Care

Check FBC on day 1:

- All women with PPH of more than 500mls
- Any woman with symptoms/signs suggestive of anaemia
- Uncorrected anaemia in the antenatal period.
- Known iron deficiency anaemia.
- For all women who have had a LSCS

Note: Ferritin is an acute phase protein so levels may be raised following delivery which makes it less reliable than in the antenatal period. It is therefore not checked routinely.

Results and actions postnatally:

- If woman has **Hb <80g/l OR Symptomatic of anaemia** (Individualised decision) offer IV Iron infusion.
  After IV iron infusion offer treatment with Ferrous sulfate 200mg tablets (ONE tablet ONCE a day) for at least 3 months.
  Advise women to attend GP surgery for FBC and ferritin at 4-6 weeks postpartum.

- Postnatal women with a Hb 80-100g/l and asymptomatic and haemodynamically stable should be offered treatment with Ferrous sulfate 200mg tablets (ONE tablet ONCE a day) for at least 3 months.
  Advise women to attend GP surgery for FBC at 6 weeks postpartum.

- Hb 100-120g/L and asymptomatic and haemodynamically stable. Offer Ferrous sulfate 200mg tablets (ONE tablet ONCE a day) depending on tolerance and preferences) oral iron for 3 months.
  Advise the woman to have a repeat FBC at 6 weeks postpartum.

Information for the woman and GP on discharge

- Inform primary care: Ensure discharge letter to the GP on DALS includes clear instructions for follow up blood tests to monitor response at 4-6 weeks postpartum.

- If a blood test is required at 4-6 weeks, ensure the woman is provided with a completed blood test form that clearly states the reason for Full blood count (FBC). Advise the woman that she will need to contact surgery directly to arrange the appointment.

References

Currie, J. et al. “Management of women who decline blood and blood products in pregnancy”, The Obstetrician and Gynaecologist (2010) 12:13-20

UK guidelines on the management of iron deficiency in pregnancy (2019) https://onlinelibrary.wiley.com/doi/full/10.1111/bjh.16221

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RCOG green Top Guideline 47 Blood Transfusion in Obstetrics https://rcog.org.uk/media/sdqcorsf/gtg-47.pdf

UK guidelines on the management of iron deficiency in pregnancy. British Committee for Standards in Haematology 2011
https://b-s-h.org.uk/media/2891/uk_guidelines_iron_deficiency_in_pregnancy.pdf

Appendix 1. Process for supply of pregnaemia pack.

Process for supplying a 'Pregnaemia Pack'

1. Clinic is notified via phone, email or face to face in clinic that patient is anaemic and requires a 'Pregnaemia pack.'

   Glangwili General Hospital* : Generic.Account14dd21@wales.nhs.uk

   Withybush General Hospital: Antenatal.Withybush@wales.nhs.uk

   Bronglais General Hospital: Bronglais.AntenatalClinic@wales.nhs.uk

   Email should include
   a. Patient details – Name / NHS number
   b. Hb /Ferritin result and date of test
   c. Contact number for patient

**For Llanelli patients, packs can be sent via transport from GGH for collection in PPH.*

2. Antenatal Clinic midwife to check results on 'Welsh Clinical Portal or WelshPas'. Diagnosis of anaemia is given if:
   Hb < 110g/L in first trimester
   Hb < 105g/L in second and third trimester
   Ferritin < 30micrograms/L (at any stage)

3. Antenatal clinic midwife to obtain a 'Pregnaemia pack'. Each Pack will contain
   - Ferrous sulfate 200mg Take ONE tablet ONCE a day – 3 x 28 (3 month supply)
     - Check drug name, dose, directions and expiry date.
     - Patient's name and date of dispensing will need to be added.
   - Management of Anaemia - Patient information leaflet. Welsh version must be offered.
   - Repeat FBC blood test request form, dated for in 28 days
   - GP information letter
   - Pre-printed sticker (To be interested into the patient's notes)

4. Antenatal clinic midwife to add anaemia diagnosis to keynote on WelshPas (unless already completed)

5. Antenatal clinic midwife to complete the woman's details in the 'Table 1: Record of supply of Ferrous sulfate under the 'Midwifery Exemption act.'

6. If woman is not present at clinic, antenatal clinic midwife to contact patient to notify to collect 'Pregnaemia Pack' from antenatal clinic.

7. Patient attends her nearest antenatal clinic and collects her 'Pregnaemia Pack'. If unable to attend, community midwife can arrange collection and delivery or posting. *(In these circumstances, community midwife will be responsible for completing steps 8-9)*

8. Pregnant woman attends reception in the clinic and requests her treatment. Antenatal Clinic Midwife to identify woman's details from the completed table.

9. Antenatal Clinic Midwife to provide medication counselling to patient.
    - Inform of medicine being supplied and rationale for treatment.
    - Advised to take on an empty stomach, with a glass of orange juice or water.
    - Explain that iron therapy should be continued for at least 3 months, to ensure iron stores are fully replenished.
    - Inform of potential adverse effects and how to report these, if needed.
    - Store iron tablets out of the sight and reach of children at all times to reduce the risk of poisoning.
    - Refer to the HDUHB 'Management of anaemia' patient information leaflet for further information.
    - Inform of the need to have a repeat blood test (Full blood count) within 28 days of starting oral iron treatment. (timing of repeat blood test may alter depending on gestation)

10. Antenatal clinic midwife to document in the woman's 'All Wales Maternity Records' (sticker below can be used).

<table>
<tr><td colspan="3">Patient has attended antenatal clinic and has received a 'Pregnaemia pack'</td></tr>
<tr><td colspan="3">Ferrous sulfate 200mg - Take ONE tablet ONCE a day - 3 x 28 oral tablets (3 months' supply)
Supplied under the 'Midwifery Exemptions Act' by (Printed name and signature of midwife)</td></tr>
<tr><td colspan="3">Date of and time of supply:</td></tr>
<tr><td>Indication for supply</td><td>Hb _____ g/L (_____ date)</td><td>Ferritin _____ mcg/L (_____ date)</td></tr>
<tr><td colspan="3">Follow up FBC requested on _____ (within 28 days of starting oral treatment)</td></tr>
<tr><td colspan="3">Counselling provided:
• Medicine being supplied and rationale for treatment.
• Iron therapy should be continued for at least 3 months to ensure iron stores are fully replenished
• Potential adverse effects and how to report these to the clinical team.
• Store iron tablets out of the sight and reach of children at all times to reduce the risk of poisoning.
• Refer to 'Patient Information Leaflet' for further information.</td></tr>
</table>

Appendix 2 Record of supplying oral iron under midwifery exemption act.

Table 1: Record of supply of Ferrous sulfate under the 'Midwifery Exemption act.'

Patient Name	Hospital Number	Hb or Ferritin level and date of test	Supplying midwife	Date prepared by midwife	Date collected by patient	Counselling provided
Jo Blogs	*E123455*	*Hb – 92 (25/2/25)*	*A Midwife*	*26/2/25*	*26/2/25*	

Appendix 3. Guidance for administration of Ferinject®

Adult IV administration guide for ferric carboxymaltose (Ferinject®) infusion for the treatment of iron deficiency anaemia in pregnancy and the post-partum period

INDICATION

During pregnancy and the post-partum period, anaemia is defined as

- Hb <110g/l in the first trimester
- Hb <105g/l in the second and third trimesters
- Hb <100g/l in the post-partum period.

Parenteral iron should be considered from the second trimester onwards and during the third trimester in patients with confirmed iron deficiency who;

- Inadequate response to oral iron, such as little or no rise in haemoglobin after 4 weeks of treatment.
- Intolerance to oral iron, including significant gastrointestinal side effects.
- Malabsorption of oral iron, due to underlying conditions or previous gastrointestinal surgery.
- Urgent clinical need for rapid iron repletion, for example in late pregnancy or when anaemia is severe

Patients require a recent Hb and ferritin level before the decision for parenteral iron is made.
The decision to prescribe should be made by a senior clinician.

PRESCRIBING

Please refer to the Summary of Product Characteristics www.medicines.org.uk for the full prescribing information

One mL of Ferinject® contains 50 mg of iron as ferric carboxymaltose.
Ferinject® dose is determined by the patient's:

- Body weight
- Hb
- Maximum tolerated dose.

Hb	**Patient body weight**		
g/L	**below 35 kg**	**35 kg to <70 kg**	**70 kg and above**
<100	30mg/kg*	1,500 mg*	2,000 mg*
100 to <140	15mg/kg	1,000 mg	1,500 mg*
≥140	15mg/kg	500 mg	500 mg

*Two split doses will be required (>1000mg of iron, 20mg/kg)

Maximum Tolerated Dose:

The maximum single dose should not exceed

- 20 mg iron/kg body weight
- 1000mg of iron (20mL)

- For doses greater than 1000mg of iron, give initial dose of 1000mg (up to maximum of 20mg/kg) and give the remainder after at least one week
- For doses greater than 20mg/kg (in patients below 35kg) give initial dose rounded down to nearest 500mg and give the remainder after at least one week

EXAMPLE DRUG CHART

DATE & START TIME	INFUSION FLUID		ROUTE	MEDICINE ADDED		INFUSION RATE OR DURATION	PRESCRIBER'S SIGNATURE	PHARM
	TYPE/STRENGTH	VOLUME		APPROVED NAME	DOSE			
1/1/24	Sodium Chloride 0.9%	250mL	IV	Ferinject®	1000mg	15minutes	*A Doctor* Beep No. 123	

ADMINISTRATION

Ferinject® is to be administered via **IV infusion only.**

Ferinject® must be diluted.

Ferinject® must only be diluted in sodium chloride 0.9% as shown below

Volume of Ferinject® required			**Equivalent iron dose**			**Maximum amount of sodium chloride 0.9%**	**Minimum administration time**
2	to	4 mL	100	to	200 mg	50 mL	-
>4	to	10 mL	>200	to	500 mg	100 mL	6 minutes
>10	to	20 mL	>500	to	1,000 mg	250 mL	15 minutes

MONITORING

- Ferinject® can cause hypersensitivity reactions including anaphylactoid reactions, which may be fatal. The risk is enhanced for patients with known allergies including drug allergies, history of severe asthma, eczema or other atopic allergy and patients with immune or inflammatory conditions (e.g. systemic lupus erythematosus, rheumatoid arthritis).
- Foetal 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.
- Monitor patient for signs of hypersensitivity during and for at least 30 minutes following each injection. Caution is needed with every dose that is given, even if previous administrations have been well tolerated.
- If hypersensitivity reactions or signs of intolerance occur during administration, the treatment must be stopped immediately.
- Facilities for cardio-pulmonary resuscitation and equipment for handling acute anaphylactic reactions must be available. Administer only in areas where staff trained to evaluate and manage anaphylaxis reactions are immediately available.
- Common side effects are nausea, headache, dizziness, hypertension, hypophosphataemia and injection site reactions.
- Hb level should be re-assessed no earlier than 2-3 weeks(gestation dependent) post final Ferinject® administration to allow adequate time for erythropoiesis and iron utilisation. In the event the patient requires further iron repletion, the iron need should be recalculated.
- Report all side effects to enable Pharmacy to report event via the Yellow Card Reporting system.

REFERENCES

1. Summary of Product Characteristics – Ferinject® https://www.medicines.org.uk/emc/ [Accessed July 2025] [date of revision of the text 24 January 2025]
2. Ferinject®. Injectable Medicines Guide. https://www.medusaimg.nhs.uk/.[Accessed July 2025} Reviewed and updated October 2023
3. Parvord et al. UK Guidelines on the management of iron deficiency in pregnancy. 2019 British Society for Haematology and John Wiley & Sons Ltd British Journal of Haematology, 2020, 188, 819–83

Appendix 4. Consent form for ferric Carboxymaltose.

CONSENT FORM FOR FERINJECT® (FERRIC CARBOXYMALTOSE) IRON INFUSION IN PREGNANCY

Patient Name: _____

Hospital Number: _____

Date of Birth: _____

Consultant/Clinician: _____

Date of Consent: _____

1. Purpose of Treatment

You have been diagnosed with iron deficiency anaemia during pregnancy. It is important to treat iron deficiency anaemia during your pregnancy to avoid increased risks to you and your baby:

For you, anaemia can lead to increased risk of:

- Bleeding in pregnancy and also after baby's birth
- Needing a blood transfusion after giving birth
- Susceptibility to infection
- Postnatal depression

For your baby, it is linked to risk of:

- Lower birth weight
- Premature birth
- Iron deficiency (low iron stores)

This treatment involves the administration of Ferinject®, an intravenous iron preparation, to replenish your iron stores and improve your haemoglobin levels.

2. Indication for Use

Ferinject® is recommended in pregnancy when:

- Oral iron has not been effective (e.g. no or inadequate rise in Hb after 2-4 weeks).
- Oral iron is not tolerated.
- Oral iron is unable to be absorbed.
- There is a clinical need for rapid iron repletion.

4. Potential Risks and Side Effects

Ferinject® is usually well tolerated, but like all medicines, it can cause side effects. These are usually mild, but some can be more serious.

Common Side Effects These may affect more than 1 in 100 people.

- Feeling sick (nausea)
- Headache or dizziness
- Raised blood pressure
- Low phosphate levels in the blood (usually without symptoms)
- Reactions at the injection site, such as:
- Pain, swelling, or irritation e.g. Around injection site.

Rarely, leakage under the skin which may cause long-lasting brown staining

Rare but Serious Risks. These are uncommon but important to be aware of:

- Allergic reactions, including severe reactions (anaphylaxis), which are rare but can be life-threatening. These usually happen shortly after the infusion starts.
- A temporary slowing of the baby's heart rate (foetal bradycardia), which may occur if the mother has a reaction to the medicine.

You will be closely monitored during and after the infusion to manage any side effects quickly and safely.

5. Monitoring

- You will be monitored during and for 30 minutes after the infusion.

- Emergency equipment and trained staff will be available during administration

6. Acknowledgement and Consent

Please read and tick each statement:

☐ I confirm I have read and understood the information above.
☐ I have had the opportunity to ask questions, and they have been answered to my satisfaction.
☐ I understand the potential risks and benefits of Ferinject® treatment.
☐ I understand that I will be monitored during and after the infusion.
☐ I consent to receiving Ferinject® iron infusion as part of my treatment for iron deficiency anaemia.

Patient Signature: _____

Date: _____

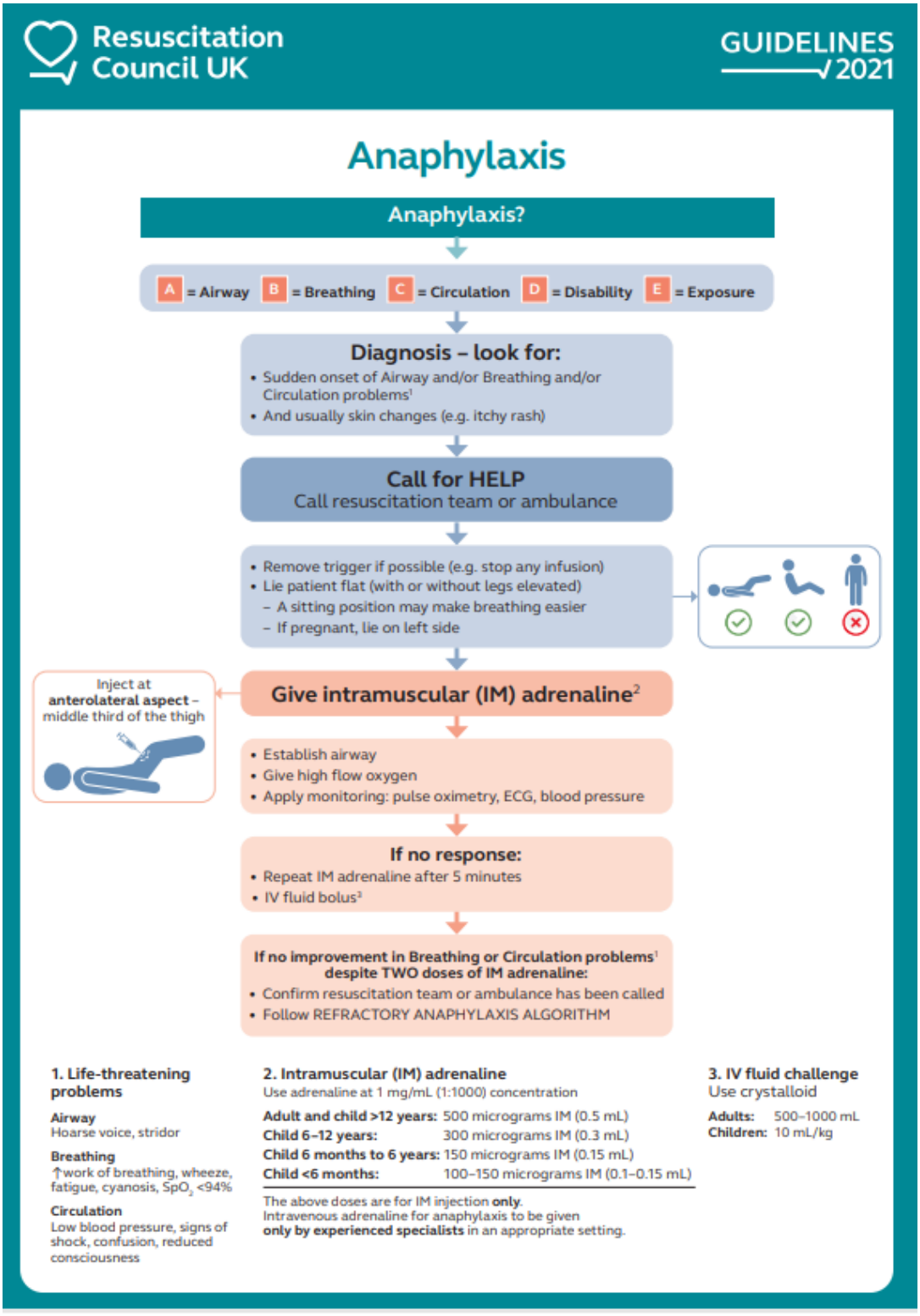
Clinician Signature: _____

Date: _____

If infusion is declined, respect the woman's personal choice and continue to advise:

- To continue, or retry, oral iron therapy
- Dietary modifications (less effective in moderate to severe anaemia)
- If <32 weeks' gestation at time of consultation repeat FBC and ferritin in 4 weeks.
- If >34 weeks' gestation at time of consultation repeat FBC and ferritin in 2 weeks

Appendix 5. Anaphylaxis Algorithm



Resuscitation Council UK
GUIDELINES 2021
Refractory anaphylaxis
No improvement in respiratory or cardiovascular symptoms despite 2 appropriate doses of intramuscular adrenaline
Establish dedicated peripheral IV or IO access
Give rapid IV fluid bolus
e.g. 0.9% sodium chloride
&
Seek expert[1] help early
Critical care support is essential
Start adrenaline infusion
Adrenaline is essential for treating all aspects of anaphylaxis
Give IM* adrenaline every 5 minutes until adrenaline infusion has been started
*IV boluses of adrenaline are not recommended, but may be appropriate in some specialist settings (e.g. peri-operative) while an infusion is set up
Give high flow oxygen
Titrate to SpO2 94–98%
Monitor HR, BP, pulse oximetry and ECG for cardiac arrhythmia
Take blood sample for mast cell tryptase
Follow local protocol
OR
Peripheral low-dose IV adrenaline infusion:
• 1 mg (1 mL of 1 mg/mL [1:1000]) adrenaline in 100 mL of 0.9% sodium chloride
• Prime and connect with an infusion pump via a dedicated line
DO NOT 'piggy back' on to another infusion line
DO NOT infuse on the same side as a BP cuff as this will interfere with the infusion and risk extravasation
• In both adults and children, start at 0.5–1.0 mL/kg/hour, and titrate according to clinical response
• Continuous monitoring and observation is mandatory
• ↑↑ BP is likely to indicate adrenaline overdose
Continue adrenaline infusion and treat ABC symptoms
Titrate according to clinical response
A = Airway
Partial upper airway obstruction/stridor:
Nebulised adrenaline (5mL of 1mg/mL)
Total upper airway obstruction:
Expert help needed, follow difficult airway algorithm
B = Breathing
Oxygenation is more important than intubation
If apnoeic:
• Bag mask ventilation
• Consider tracheal intubation
Severe/persistent bronchospasm:
• Nebulised salbutamol and ipratropium with oxygen
• Consider IV bolus and/or infusion of salbutamol or aminophylline
• Inhalational anaesthesia
C = Circulation
Give further fluid boluses and titrate to response:
Child 10 mL/kg per bolus
Adult 500–1000 mL per bolus
• Use glucose-free crystalloid (e.g. Hartmann's Solution, Plasma-Lyte®) Large volumes may be required (e.g. 3–5 L in adults)
Place arterial cannula for continuous BP monitoring
Establish central venous access
IF REFRACTORY TO ADRENALINE INFUSION
Consider adding a second vasopressor in addition to adrenaline infusion:
• Noradrenaline, vasopressin or metaraminol
• In patients on beta-blockers, consider glucagon
Consider extracorporeal life support
Cardiac arrest – follow ALS ALGORITHM
• Start chest compressions early
• Use IV or IO adrenaline bolus (cardiac arrest protocol)
• Aggressive fluid resuscitation
• Consider prolonged resuscitation/extracorporeal CPR
[1]Intravenous adrenaline for anaphylaxis to be given only by experienced specialists in an appropriate setting.

Appendix 6. Principles for minimising risk and effect of extravasion.

Principles for minimising the risk of extravasation (intravenous iron stains):

- Ensure an appropriate indication for parenteral iron
- Inform the patient of the risk of skin staining at the initial consultation
- Ensure the correct injection site and administration technique is used
- Monitor closely for signs and symptoms of extravasation

Infusion technique to minimise the risk of iron staining:

- If possible, try to avoid intravenous iron administration via cannulation at sites of flexion (e.g. antecubital fossa, wrist) or on the back of the hand
- The distal veins of the forearm are the preferred site
- Secure the cannula, flush to ensure patency of access before starting infusion.
- Do not cover the injection site with a bandage
- Minimise the number of cannulation attempts
- Ensure the patency of the vein before administration. If patency is uncertain, do not administer intravenous iron
- Ensure woman has been told to call for staff if any pain or discomfort

Clinical features of iron extravasation:

- Symptoms during infusion
  Pain, swelling, feeling of pressure, prickling on the injection site and immediately observable staining. Note: some patients report no pain or other symptoms during the infusion and the discolouration appears hours or days later
- Extent of skin discolouration:
  Can be localised to around the injection site or extend along the length of the arm. May be patchy or consistent discolouration
- Colour changes:
  most common – light to dark brown. Less common – black, bluish, purple, grey
- Symptoms in the longer term
  Generally, discolouration is asymptomatic, but some patients complain of aching, changed sensitivity in the affected area or tenderness on palpation
- Outcome
  In many cases, iron staining is permanent. Some patients report fading of the stain over time or successful treatment with laser therapy

Acute management of iron extravasation

- If the patient complains of pain, swelling, soreness at the injection site or there is any obvious swelling or discolouration, stop the infusion immediately and assess the site.
- Request review by doctor
- Aspirate any residual drug from the cannula (as soon possible)
- Remove the cannula
- Elevate arm and apply a cold/cool pack if there is swelling or soreness. However, this does not always appear to prevent the spread of the stain).
- Resite the cannula if indicated and complete transfusion if woman consents.
- If at all possible, take photographs of any staining for record.
- Document events clearly
- Datix
- Inform Pharmacy via Datix to ensure incident is reported by Yellow Card.