

## MATERNITY GUIDELINES

---

### Anaemia in pregnancy

#### Navigation

Guidance document – in the contents page the Press Ctrl on your keyboard and click on a heading to navigate to that section in this document.

1.	Introduction.....	1
2.	Initial diagnosis of anaemia in pregnancy.....	1
3.	Iron deficiency anaemia.....	2
4.	Refractory anaemia.....	3
5.	Iron deficiency.....	3
6.	Intrapartum management.....	3
7.	Parenteral iron.....	3
8.	Non-iron deficiency anaemia.....	4
9.	Record keeping.....	4

#### 1. Introduction

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 linked to placental abruption and an increased risk of a PPH.

#### 2. Initial diagnosis of anaemia in pregnancy

Anaemia is defined by:

First trimester	Haemoglobin (Hb) <110g/L
Second and third trimester	Hb <105g/L
Postpartum	Hb <100g/L

A microcytic hypochromic (low MCV, low MCH) picture suggests iron deficiency. A low serum ferritin level may give additional information but treatment with iron and folate (see below) can be used as a first line and ferritin reserved for selected cases (see table 1). If the ferritin level is normal, consider the possibility of a haemoglobinopathy (e.g. thalassaemia trait).

Assessment of serum vitamin B12 and folate levels will assist in the identification of possible causes of macrocytic (high MCV) anaemia and if this is combined with iron and folate deficiency consider possibility of coeliac disease (check tissue transglutaminase).

### **3. Iron deficiency anaemia**

#### **Treatment:**

The main sources of dietary iron are red meats, fish and poultry.

The initial management of iron deficiency anaemia in pregnancy (which is by far the most common cause of anaemia) is by iron and folic acid.

A dose of 100-200 mg elemental iron daily is needed to treat iron deficiency anaemia. Folic acid requirements are increased in pregnancy because of the rapidly dividing cells in the fetus and elevated urinary losses. As the neural tube closes by day 28 of pregnancy, a supplementation of folic acid will not prevent neural tube defects. However, it will contribute to other aspects of maternal and fetal health.

See appendix 1

In pregnancy iron absorption is reduced. It can be improved by recommending the iron is taken with a source of vitamin C at the same time and on an empty stomach. Avoiding tea and coffee with meals can aid absorption from the diet.

For nausea and epigastric discomfort try preparations with lower iron content, avoid slow release and enteric coated preparations. Patients could take iron with or after food if experiencing side effects however this significantly reduces iron absorption.

Once Hb is in the normal range supplementation should continue for 3 months and at least 6 weeks postpartum to replenish iron stores.

#### 4. Refractory anaemia

Refractory anaemia, which has been unresponsive to the appropriate trial (i.e. two weeks of oral iron), should be re-evaluated with serum ferritin, vitamin B12 and folate levels together with a repeat full blood count to show failure in oral therapy. (Ferritin reflects iron stores and a level less than 30µg/l indicates iron depletion.) This would initially erase the issues of patient compliance who should be encouraged to take this medication. Following this you should treat the patient with intravenous iron therapy. The decision for intravenous iron therapy should only be made by a senior member of obstetric staff.

#### 5. Iron deficiency

Non-anaemic iron deficient women can be offered 65mg elemental iron (200mg ferrous sulphate OD) with a repeat Hb and serum ferritin test after 8 weeks.

Consider testing ferritin levels in the following groups:

<p>Non-anaemic women with high risk of iron depletion</p> <ul style="list-style-type: none"> <li>• Previous anaemia</li> <li>• Parity <math>\geq 3</math></li> <li>• Consecutive pregnancy &lt;1 year following delivery</li> <li>• Vegetarians</li> <li>• Teenage pregnancies</li> <li>• Recent history of significant bleeding</li> </ul>
<p>Non-anaemic women where estimation of iron stores is necessary</p> <ul style="list-style-type: none"> <li>• High risk of bleeding</li> <li>• Jehovah's witnesses</li> </ul>






#### 6. Intrapartum management

Anaemic women may require additional precautions for delivery, including delivery in hospital, available IV access, blood G&S, active management of the third stage of labour and plans for excess bleeding. If the patient has a Hb<105g/L they should be advised to deliver in hospital. **Please refer to a consultant obstetrician if planning a homebirth with an Hb<105g/L.**

#### 7. Parenteral iron

Other causes that could be contributing to the anaemia should be excluded, such as folate deficiency or anaemia of chronic disease.

This is indicated if there is absolute non-compliance with oral iron, intolerance to oral iron or proven malabsorption. It is appropriate if there are significant symptoms and/or severe anaemia (Hb<70g/L) or late gestations (>34 weeks) or if there is failure to respond to oral

iron with an increase in Hb over 2 weeks. In certain cases it is appropriate to give if rapid replacement is required, such as a patient at risk of haemorrhage approaching their due date. Serum ferritin should always be confirmed prior to use except where it is being used in the immediate postpartum period following a massive postpartum haemorrhage.

Referral to DAW/ANC and see appendix 2

### **8. Non-iron deficiency anaemia**

A blood film showing oval macrocytes and hypersegmented neutrophils in the presence of an elevated MCV may alert the clinician to the presence of underlying vitamin B12 or folate deficiency.

Vitamin B12 and folate assays should be assessed concurrently due to the close relationship in metabolism. Low vitamin B12 levels are frequently physiological; if levels are less than 150mcg/l then replacement can be arranged through the GP. A vitamin B12 level above 150mcg/l can be managed by giving two doses of vitamin B12 and checking for anti-intrinsic factor antibodies. Checking an active B12 level prior to administration can potentially distinguish between those true deficiency cases and physiological total vitamin B12 reductions. Levels above 175mcg/l with normal Hb for gestation and no raised MCV or symptoms can be managed by checking the active vitamin B12 level, and giving oral vitamin B12 (50-150 micrograms daily in 1-3 divided doses) pending the active level result. If there are concerns about a personal or family history of Pernicious anaemia, checking anti-intrinsic factor antibodies is advised.

If there is both low vitamin B12 and low folate, the vitamin B12 must be replaced first before starting any folate supplementation; otherwise the woman is at risk of sub-acute combined degeneration of the spinal cord.

Anaemia not due to haematinic deficiency (for example, haemoglobinopathies and bone marrow failure syndromes) should be managed by blood transfusion where appropriate in close conjunction with a haematologist (Please see Hospital Transfusion policy). Testing haematinics is still appropriate to guide management.

### **9. Record keeping**

It is expected that every episode of care be recorded clearly, in chronological order and as contemporaneously as possible by all healthcare professionals as per Hospital Trust Policy. This is in keeping with standards set by professional colleges, i.e. NMC and RCOG.

All entries must have the date and time together with signature and printed name.

## Appendix 1

### Oral iron replacement

Preparation	Dose	Elemental iron	No of tablets per day
Ferrous sulphate (dried)	200mg OD	65mg/tablet	1 + folic acid 400mcg
Ferrous Gluconate	300mg OD	35mg/tablet	1 + folic acid 400mcg
Ferrous fumarate	200mg OD	65mg/tablet	1 + folic acid 400mcg

Please note the dosage recommendations which are lower than traditionally prescribed. New evidence suggests that once daily regimes are better tolerated with better compliance and work better for most pregnant women.

## Appendix 2

### Parenteral Iron Therapy

#### Protocol for the use of Ferinject

Ferinject (Iron III carboxymaltose) has 50mg/ml of elemental iron. It is administered by slow IV injection (over 15 minutes) or infusion with no need for a test dose. It should be avoided in the first trimester. Less than 1% passes into breast milk which is unlikely to be significant. There has never been anaphylaxis with this preparation but it does carry a small risk of anaphylactoid reaction. It is suitable for administration in DAW and does not require any monitoring except a set of observations prior to administration and access to resuscitation equipment. Patients should be asked to wait in the immediate vicinity for 30 minutes after administration.

The women should be provided with a patient information sheet and informed of potential side effects and checked to see if there are any contraindications for its use. Hypophosphatemia has been described with Ferinject and may contribute to the tiredness within the 24 hours after infusion. Oral iron should be avoided for 5 days after the administration of Ferinject. A follow up FBC should be performed at 2-3 weeks (adapt to clinical scenario if necessary) and the GP notified of the treatment and need for continuation of iron.

Contraindications for the use of parenteral iron, Ferinject.

#### First Trimester:

- Known hypersensitivity to Ferinject or any of its excipients.
- Anaemia not attributed to iron deficiency.
- Evidence of iron overload or disturbances in utilisation of iron.

#### Warnings and precautions:

- Risk/benefits need to be considered if liver dysfunction, acute/chronic infection, atopic conditions.
- Avoid paravenous leakage as can lead to irritation and discolouration – stop immediately if occurs.
- May induce an anaphylactoid reaction, signs of allergic reaction or intolerance – stop immediately if occurs.

The dose of Ferinject is calculated on the pre-pregnancy/booking weight aiming for a target Hb of 110g/l.

Table 2

Ferinject dose

Hb (g/L)	Weight 35kg to <70kg	Weight ≥ 70kg
<100	1500mg	2000mg
≥100	1000mg	1500mg

A single dose should not exceed 1000mg of iron (20ml) per week.

Undiluted solution up to 1000mg iron (up to a maximum of 15mg/kg).

A small venflon (blue/pink) is adequate; a butterfly is suitable for a small bolus.

Table 3

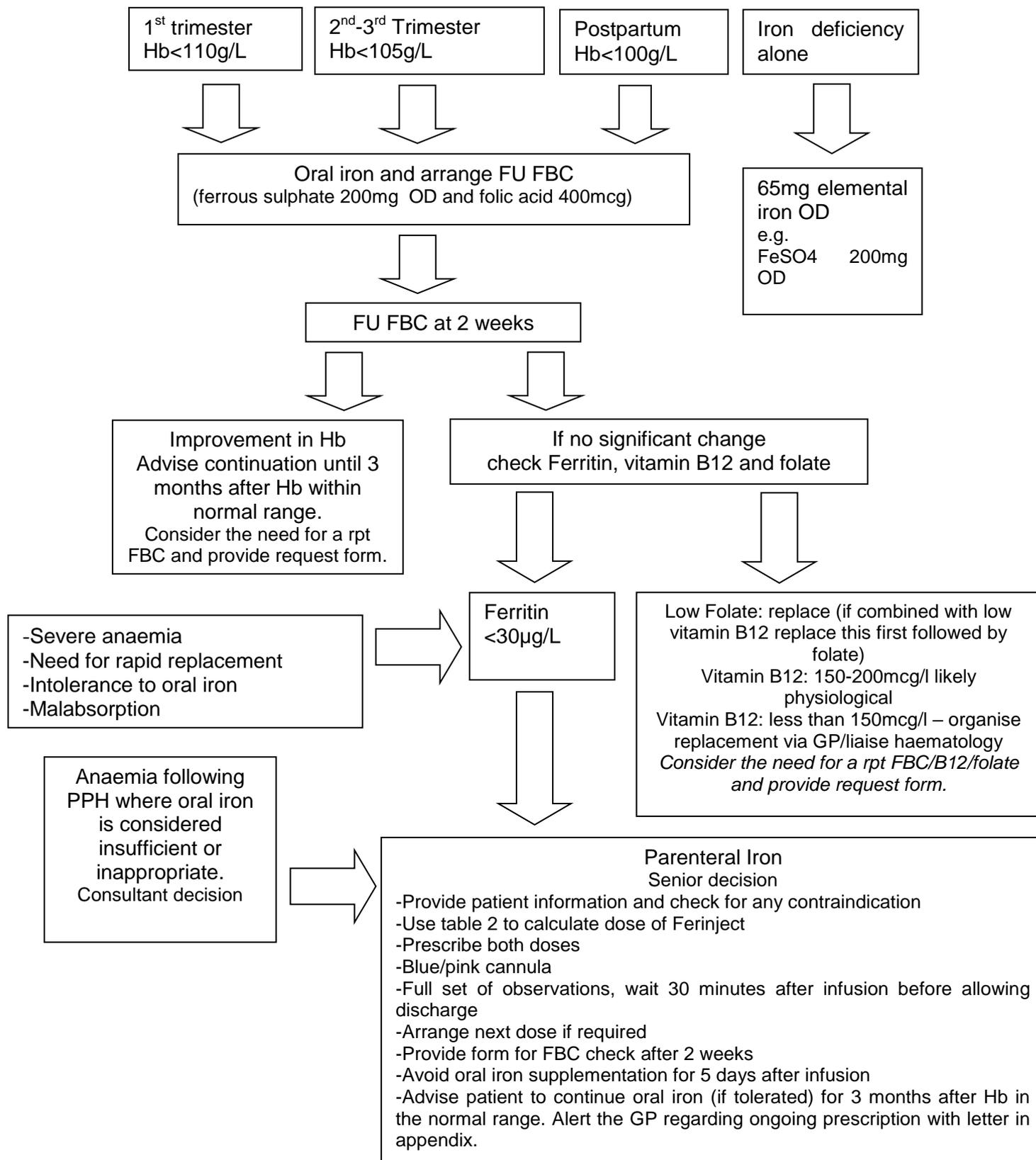
Dilution plan for Ferinject for IV infusion

Ferinject	Iron	Maximum amount of sterile 0.9% sodium chloride	Minimum administration time
2-4ml	100-200mg	50ml	-
≥4-10ml	≥200-500mg	100ml	6 min
≥10-20ml	≥500-1000mg	250ml	15 min

### Appendix 3

#### Simplified flow chart for the treatment of anaemia

Please note – the following should be used in conjunction with the full guideline and each case individualised



## Patient Information Leaflet

### Anaemia in pregnancy

What is anaemia?

Anaemia is when the level of haemoglobin in your blood is lower than normal. Haemoglobin carries oxygen from your lungs to cells around your body. If your haemoglobin count is low then your body does not work as well as it should. Iron is one of the minerals that your body needs to produce haemoglobin.

A healthy diet is generally enough for most people to avoid anaemia. The main sources of iron in your diet are red meats, poultry, fish, beans, lentils, eggs and dark leafy vegetables.

Anaemia can cause tiredness, breathlessness, fainting, headaches and your heart to beat faster.

Mild anaemia is common during pregnancy and your haemoglobin level will be routinely checked at your first pregnancy appointment and at around 28 weeks. Pregnant women may not get enough iron to keep pace with their increasing blood supply and that of their growing baby. Many women need more iron when they are breast feeding and some babies need extra iron too.

It is important to treat anaemia in pregnancy for many reasons. There is always a risk of bleeding when you have a baby and if you are already anaemic this can increase the risks for you and make it more likely that you will need a blood transfusion. Anaemia has also been linked to depression and making it more difficult to fight infection. Babies can be anaemic too and there is a possibly increased risk of prematurity and small babies.

Some people are more at risk of being anaemic and may be tested more frequently or advised to take iron supplements. These people include vegetarians, teenagers, women expecting twins, women who previously had very heavy periods and women who had a baby less than a year ago or have had many children. Some women are not at an increased risk of anaemia but are at a higher risk of bleeding, these women may also be advised to take supplements during pregnancy.

Iron replacement

If you have anaemia because of blood loss or lack of iron, you may be offered iron tablets to restore your haemoglobin level instead of a blood transfusion. It will take longer for you to feel completely well but you avoid the minimal risks associated with blood transfusion.

For the tablets to work well, it is advisable to have a source of vitamin C (such as a small glass of fresh orange juice) at the same time. The tablets are best taken on an empty stomach. Tea and coffee reduces iron absorption from your diet and so should be avoided at mealtimes.

You may get some side effects with the tablets such as an upset stomach or constipation. You may find that your stools become dark. If the side effects are bothering you, try taking them with food. There are other preparations that may suit you if these measures do not work.

You may be advised to take folic acid, in addition to taking iron, to raise your haemoglobin level.

Once your level of haemoglobin is normal, you will need to continue taking supplements for at least a further 3 months (if you are pregnant) or 6 weeks (if you have had the baby) to build up your iron stores.

#### Iron infusion

If you are unable to take iron tablets or your anaemia doesn't respond to iron tablets, you may be offered an iron infusion. Occasionally you will be offered an infusion if you are approaching your due date as this treatment works more quickly than giving you tablets.

The iron is given through a drip in your arm. This can be given after the first 3 months of pregnancy. It is safe for you and your baby, and side effects are rare. The most common side effects include headaches, nausea, injection site reactions and elevated blood pressure.

The infusion takes around 15 minutes to be given. You will be observed for 30 minutes after the infusion is complete as there is a very small risk that you can have an allergic reaction.

Many people need to return for a second dose, this will be discussed with you and depends on how anaemic you are. You should avoid taking oral iron supplements for 5 days after the infusion.

You will need to have a blood test after 2-3 weeks to make sure that your anaemia has responded to the treatment. You will also need to continue taking oral iron once 5 days have passed.

### Monitoring and Audit

#### Auditable standards:

Please refer to audit tool, location: 'Maternity on cl2-file11', Guidelines

#### Reports to:

Clinical Effectiveness Committee – responsible for action plan and implementation of recommendations from audit

**Frequency of audit:** Annual

**Responsible person:** SHO/Registrar/Consultant

### Cross references

*Guidelines and Standard Operating Procedures can now be found on the network share (drive) 'G:\DocumentLibrary'.*

Intravenous Drug Administration Policy

Policy for the Safe and Secure Handling of Medicines

Guideline Development within Maternity Services

Maternity Hand Held Notes, Hospital Records and Record keeping

Hospital Transfusion Policy

### References

National Collaborating Centre for Women's and Children's Health Commissioned by the national Institute of Clinical Excellence (2003) **Screening for haematological conditions** Chapter 8 pp. 67 – 71 in Antenatal care: routine care for the healthy pregnant woman. RCOG Press: London.

British National Formulary Sect 9.1.1.1

UK guidelines on the management of iron deficiency in pregnancy, British Journal of Haematology, 2012, 156, 588-600

<https://b-s-h.org.uk/guidelines/guidelines/management-of-iron-deficiency-in-pregnancy/>

<https://www.rcog.org.uk/globalassets/documents/guidelines/gtg-47.pdf>

<b>Author</b>	Guideline Committee		
<b>Work Address</b>	Maternity Unit, Derriford Hospital, Plymouth, Devon, PL6 8DH		
<b>Version</b>	7.1		
<b>Changes</b>	Timely update, frequency of iron		
<b>Date Ratified</b>	July 2019 Minor update Sep 2020	<b>Valid Until Date</b>	July 2024