



**Aneurin Bevan University Health Board**

# **Management of Iron Deficiency Anaemia in Pregnancy**

*N.B. Staff should be discouraged from printing this document. This is to avoid the risk of out of date printed versions of the document. The Intranet should be referred to for the current version of the document.*

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## **Introduction**

This document is a clinical guideline designed to support safe and effective practice

## **Scope of guideline**

This policy applies to all members of staff including midwives, Obstetric medical staff and nursing staff on the early pregnancy assessment unit and gynaecology ward.

This guideline is cross referenced to Standard for Healthcare Services 7

## **Aims**

To provide support for clinical decision making

## **Objectives**

The objective of this document is to ensure consistent high quality care

## **Roles and Responsibilities**

The Gynaecology and maternity staff are responsible for the execution of this guideline.

## **Training**

Staff is expected to access appropriate training where provided. Training needs will be identified through appraisal and clinical supervision. Training compliance is recorded within the directorate.

## APPENDIX 1 MANAGEMENT OF ANAEMIA IN PREGNANCY

### 1. BACKGROUND

- Anaemia is defined as Hb value less than 2 standard deviations below the mean value for a healthy matched population.

The definition of anaemia in pregnancy is Hb levels of:

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

(British Committee for Standards in Haematology 2011)

- Anaemia is the commonest medical disorder in pregnancy. Pregnancy causes 2-3 fold increase requirement of Iron and 10-20 fold increase in requirement in folate.
- Iron deficiency causes maternal morbidity by increased susceptibility to infections, poor work capacity and performance and disturbances of postpartum cognition and emotions.

### 2. CLINICAL FEATURES

- Anaemia in pregnancy is often asymptomatic and may be diagnosed on routine screening.
- Women may present with tiredness, dizziness, fainting irritability, poor concentration and lethargy and in these circumstances haemoglobin should be tested.
- Storage iron is depleted before a fall in Hb and as iron is an essential element in all cells, symptoms of iron deficiency may occur even without anaemia: These include fatigue, irritability, poor concentration and hair loss.
- Signs of anaemia **can** occur in the absence of a low Hb. In this instance it would be diagnosed by a full blood count with a reduced MCV (Mean Cell Volume) and MCHC (Mean Corpuscular Haemoglobin Concentration).

### 3. SCREENING

- Full blood count should be assessed at booking and at 28 weeks.

- Intrapartum blood loss of more than 500 mls, haemoglobin level should be checked within 48 hours.

#### 4. **DIAGNOSIS**

- Iron deficiency anaemia presents with low Hb, reduced MCV and MCHC.
- Serum ferritin should be routinely checked first with patients with haemoglobinopathy.
- Serum ferritin is the most useful and easily available parameter for assessing iron deficiency. Levels below 15 µ/l are diagnostic of established iron deficiency. A level below 30 µ/l in pregnancy should prompt treatment.
- Women with a normal Hb but a low MCV should have their ferritin checked and if ferritin is <30µ/l, oral iron should be commenced.

#### 5. **TREATMENT (SEE FLOW CHART)**

- A trial of oral iron should be considered as the first line for anaemia, providing haemoglobinopathy has been excluded. An increase in Hb must be demonstrated at 2 weeks, otherwise further tests are required.

#### 6. **DIETARY ADVICE**

- All women should be counselled regarding diet in pregnancy including detail of iron rich foods sources and factors that might inhibit or promote iron absorption.
- Foods rich in iron such as red meat, fish, poultry.

#### **Factors Influencing the Absorption of Iron**

| Factors that <b>inhibit</b> iron absorption | Factors that <b>enhance</b> iron absorption |
|---|---|
| Foods rich in calcium                       | Haem iron                                   |
| Tannins in tea                              | Ferrous iron                                |
| Phytates in cereals                         | Ascorbic Acid                               |

#### 7. **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.
- The oral dose for iron deficiency anaemia should be 100-200mg of elemental iron daily.
- **Our first line treatment is Ferrous Sulphate 200mg bd.**

#### **Dose and elemental iron content per tablet**

| <b>Preparation</b> | <b>Dose per tablet</b> | <b>Elemental iron</b> | <b>No of tablets per day</b> |
|--------------------|------------------------|-----------------------|------------------------------|
| Ferrous Fumerate   | 210mg                  | 68mg                  | 3                            |
| Ferrous Gluconate  | 300mg                  | 35mg                  | 6                            |
| Ferrous Sulphate   | 200mg                  | 65mg                  | 3                            |
| Pregaday           |                        | 100mg                 | 2                            |

- Women should be counselled how to take oral iron supplements correctly. This should be on an empty stomach, 1 hour before meals, with a source of vitamin C such as orange juice to maximise absorption. Other medications or antacids should not be taken at the same time.
- **200mg of elemental iron / day (N.B. if 200mg ferrous sulphate used, need 3 tablets/day) if taken correctly will give a rise in Hb of 20g/l every 3 weeks. Liquid preparations if cannot tolerate tablets.**
- If the ferritin is  $<30\mu$  - at least 200mg ferrous sulphate should be offered once daily.
- For women who suffer with nausea and epigastric discomfort, preparations with a lower iron content should be tried. Slow release and enteric coated forms should be avoided.

## **8. FOLLOW UP**

- Repeat Hb is required 2 weeks after commencing treatment for established anaemia, to assess response to treatment and ensure compliance and correct administration.
- Once the Hb is in the normal range, replacement should continue for three months and at least 6 weeks postpartum to replenish iron stores.
- If response to oral iron replacement is poor, concomitant causes which may be contributing to the anaemia, such as folate deficiency

or anaemia of chronic disease need to be excluded. Consultant referral is required.

- Postnatal women with a Hb <100g/l should be offered Ferrous Sulphate 200mg bd for 3 months and be offered a repeat FBC and ferritin to ensure Hb normalises and iron stores are replete.

## **9. PARENTERAL IRON THERAPY**

- Parenteral iron should be considered from the second trimester onwards and during the third trimester in women with confirmed iron deficiency who fail to respond or are intolerant of oral iron.
- Consider parenteral iron therapy if Haemoglobin level is less than 80g/l.
- The dose of parenteral iron should be calculated on pre-pregnancy weight, aiming for a target Hb of 110g/l.
- See Ferinject guideline.
- Blood transfusion should be avoided in women with Hb >70g/l, consider parenteral iron.

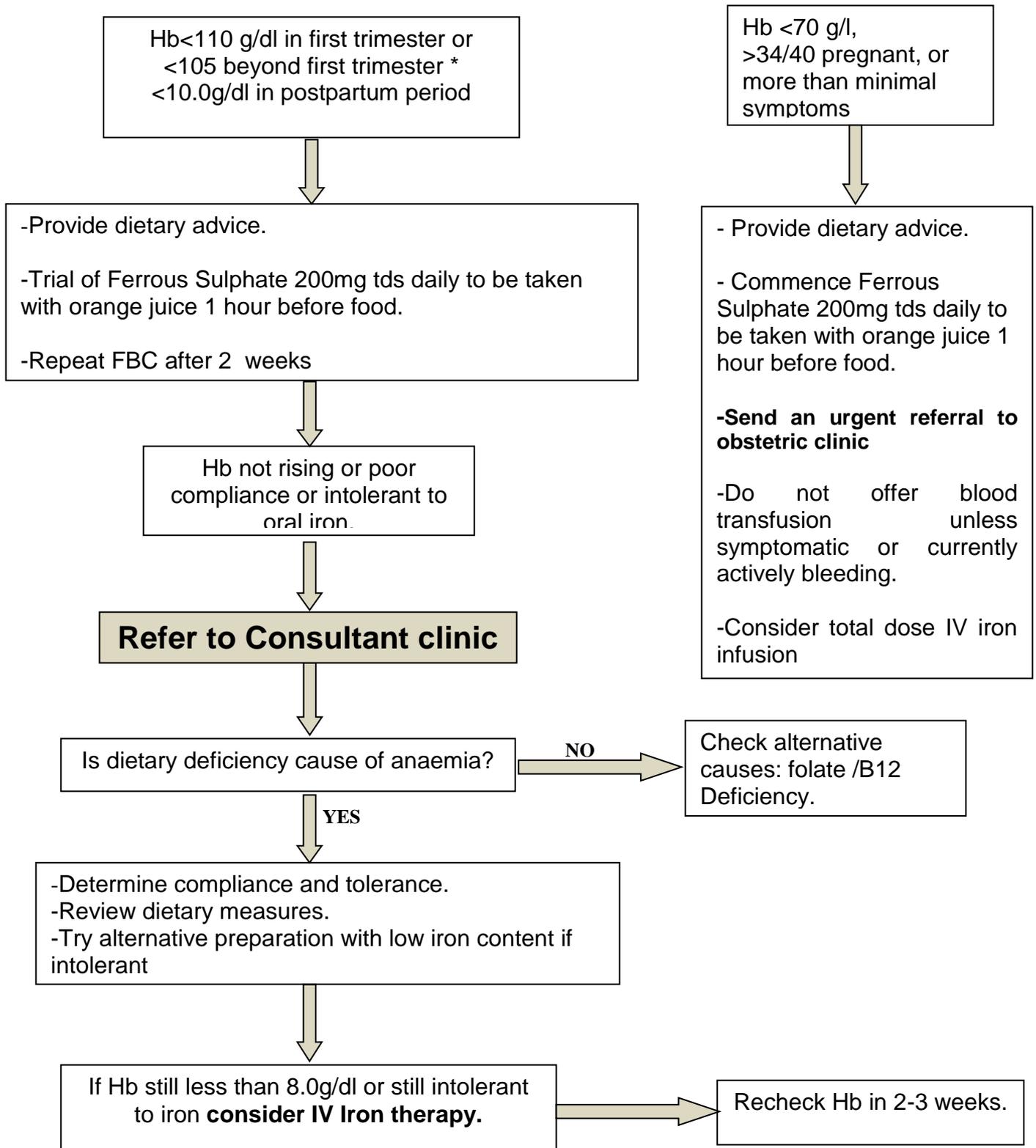
## **10. CARE IN LABOUR**

- Women with a Hb<85g/l are regarded as high risk and should be advised to deliver on the obstetric led unit.
- On admission in labour, IV access should be obtained and bloods taken for FBC and G&S.
- Active management of the third stage of labour is advised.
- Use cell saver if having a caesarean section

## 11. REFERENCES

1. **BCSH Guidelines** on the management of iron deficiency in pregnancy S Pavord et al – in draft form
1. **Ramsey M, James D, Steer P, et al.** Normal values in pregnancy. *2nd ed.* London: *WB Saunders* 2000
2. **Beard JL, Hendricks MK, Perez EM, Murray-Kolb LE, Berg A, Vernon-Feagans L, Irlam J, Isaacs W, Sive A, Tomlinson M.** Maternal iron deficiency anemia affects postpartum emotions and cognition. *Journal of Nutrition* 2005; 135:267-272.
3. **Breyman C.** Iron supplementation during pregnancy. *Fetal and Maternal Medicine Review* 2002; 13:1–29.
4. **Royal College of Obstetricians and Gynaecologists.** Blood Transfusions in Obstetrics. *RCOG Green-top guideline 47* 2007.
5. The Obstetric Haematology Manual, 2010
6. South West RTC Management of Anaemia in Pregnancy, April 2014

## ANAEMIA IN PREGNANCY FLOW CHART (Check Hb at booking and at 28 weeks)





## Ferinject® (ferric carboxymaltose) administration guideline for elective LSCS and perinatal anaemia

### Indications

- Persistent iron deficiency anaemia following failed treatment with oral iron
- Severe perinatal anaemia (Hb  $\leq$  80g/l)
- Antenatal anaemia (Hb  $\leq$  105g/l) prior to elective LSCS

### Contraindications

- Previous reaction to intravenous iron
- 1<sup>st</sup> trimester of pregnancy
- Anaemia of alternative cause – i.e. B12 deficiency, Thalassemia (measure haematinics)
- Cirrhosis or evidence of 'iron overload' i.e. porphyria cutanea tarda, haemochromatosis

Hb  $\leq$  105g/l AND weight < 70kg

- 1000mg Ferinject® diluted in 250ml NaCl 0.9%
- Infuse over **at least** 15 minutes
- **One week later**, dilute 500mg Ferinject® in 100ml NaCl 0.9%
- Infuse over **at least** 6 minutes

- Give patient information leaflet
- Take observations – temperature, pulse, blood pressure, O2 SATs
- Insert intravenous cannula and flush with NaCl 0.9%
- Prescribe Ferinject®
- **Max 1000mg per week** (patients must return to complete their course)

Hb  $\leq$  105g/l AND weight > 70kg

- 1000mg Ferinject® diluted in 250ml NaCl 0.9%
- Infuse over **at least** 15 minutes
- **Repeat** after one week

### After the infusion:

- Monitor Observations every 15 minutes
- Ensure patient is monitored for 30 minutes after infusion for signs of delayed hypersensitivity
- No oral iron should be taken following treatment with IV iron

### Stop infusion immediately if:

- signs of cannula leak (call for assistance)
- signs of hypersensitivity – rash, wheeze, tachycardia, falling BP < 90/40mmHg (call 2222) declaring peri-arrest)

Ferinject® is a Ferric Carboxymaltose infusion, which can be used as second line treatment when oral iron therapy is deemed inappropriate or has failed. This may be due to malabsorption, poor tolerance, unacceptable side effects or where there is a need to correct iron deficiency and ensuing anaemia urgently

### **ON ADMISSION FOR INFUSION**

- Once the decision has been made to administer Ferinject discuss with DAU for date and time of infusion
- Parameters needed are booking weight, height, current Hb and target Hb.
- Perform and record maternal observations pulse, BP & RR and fetal heart with pinnard/sonicaid)

### **Perform and record maternal observations BP pulse and RR and fetal heart with pinnard or sonicaid post infusion**

### **Observe for effects for 30 minutes**

#### **COMPLICATIONS**

- Anaphylaxis
- Hypotension – ensure that BP does not drop significantly. Stop infusion and contact senior staff if significant.
- Risk of skin staining stop infusion

#### **ANAPHYLAXIS: (STOP infusion)**

- Call for senior help (staff to fast bleep anaesthetist & obstetric registrar)
- ABC
- Give IM adrenaline 0.5ml 1:1,000 and repeat if necessary
- Cardiac Arrest dial 2222

#### **If Mild Reaction:**

- STOP infusion. DO NOT restart
- 200mg IV hydrocortisone
- Discuss further management with registrar / Consultant

#### **Avoid Use**

Patients should be advised not to use the oral Iron 24 hours pre infusion and 5 days post infusion.

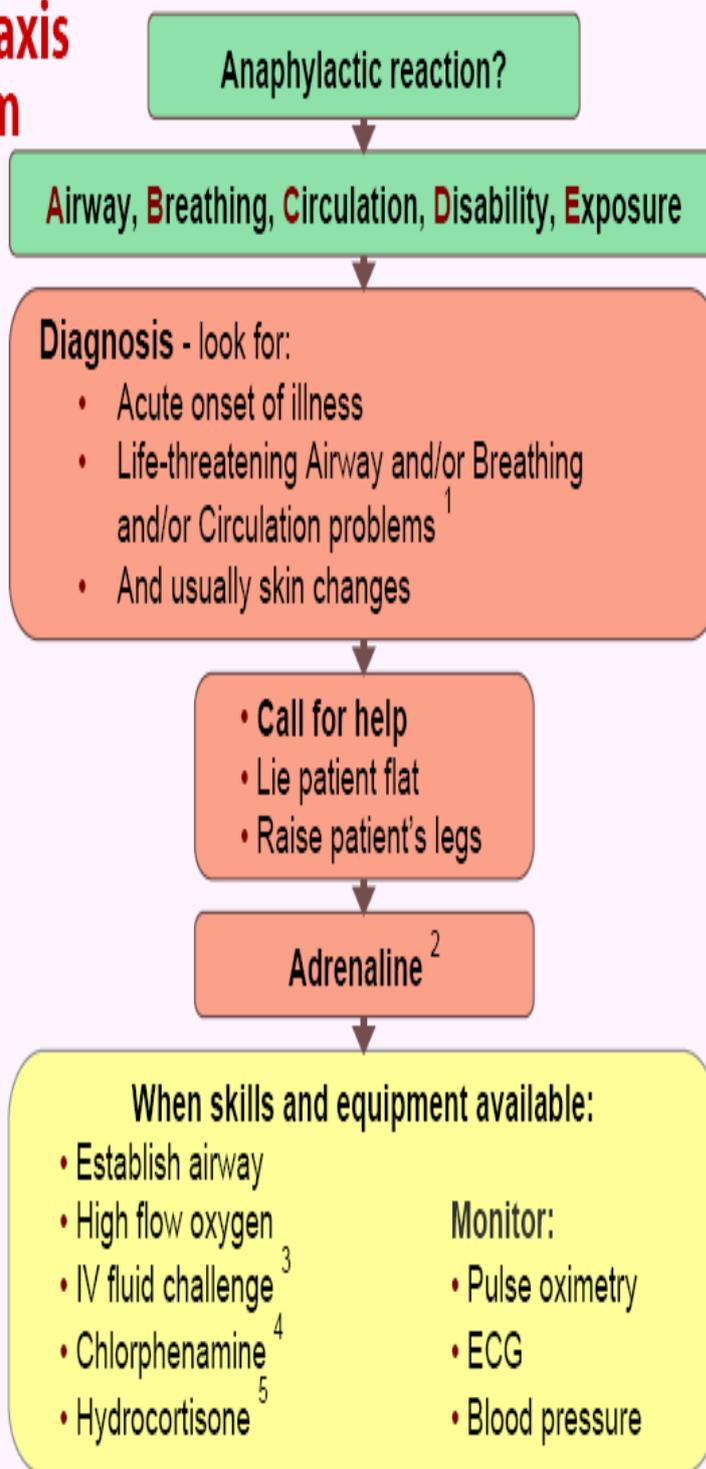
#### **Reference**

[www.emimedicine.com](http://www.emimedicine.com)

[www.resus.org.uk](http://www.resus.org.uk)



## Anaphylaxis algorithm



### 1 Life-threatening problems:

**Airway:** swelling, hoarseness, stridor

**Breathing:** rapid breathing, wheeze, fatigue, cyanosis, SpO<sub>2</sub> < 92%, confusion



## Ferinject - Information for patients

Ferinject is a medicine we use to boost your iron levels. It is given by injection or through a drip into the vein. It boosts your body's own production of red blood cells over time, and therefore does not carry some of the *rare* risks associated with a blood transfusion (such as infection).

Certain situations can cause your haemoglobin levels or 'blood count' to drop.

- Increased iron requirement of pregnancy
- Blood loss associated with delivery of your baby.

A low blood count (anaemia) can have detrimental effects on the health of you and your baby and increase your chances of needing a blood transfusion during or after delivery.

### **We recommend Ferinject if:**

- You are pregnant, blood tests show that you are anaemic (< 105g/l) *and*
  - you have either not responded to oral iron *or*
  - have insufficient time for the oral iron course (your delivery date is soon) *or*
  - you have decided you do *not* want to have a blood transfusion should you bleed during the delivery of your baby e.g. Jehovah's Witness.
- You have a significant anaemia (low blood count) following the delivery of your baby.

### **Safety**

Ferinject is considered safe after the first three months of pregnancy (first trimester), and after you have delivered your baby.

Because only very tiny quantities pass into the breast milk, it is safe to breast feed.

A rare, but permanent complication can be skin staining or discoloration – which happens if some of the drug leaks out of the vein during the infusion. To reduce this risk, the cannula (plastic straw) put into your vein is first flushed with saline (salt solution) to check it is working well.

Tell the person giving the medicine immediately if you experience any burning, discomfort or swelling at the site of the injection / cannula or in the arm itself.

## **Side Effects**

Common (may affect up to 1 in 10 people)

- Headache, dizziness, raised blood pressure, hot flushing, nausea and injection site reactions.
- Transient lowering of blood phosphate levels

Uncommon (may affect up to 1 in 100 people)

- Sensitive skin and numbness, fast heart rate, low blood pressure, difficulty breathing, taste disturbances, vomiting, indigestion, wind, abdominal pains, constipation, hives, redness, rash, aches and pains, fever, fluid accumulation brown discoloration of the skin.

Rare (may affect up to 1 in 1000 people)

- Allergic reactions, shivering, feeling unwell, loss of consciousness

## **Procedure**

We can give Ferinject in DAU/ triage, on the obstetric wards and delivery suite.

Your midwife will first check your observations (blood pressure, pulse, temperature), and a cannula will be inserted into a vein - usually in your arm or the back of your hand.

Your observations will be checked afterwards and if feeling well, you can go home once the cannula has been removed – 30 minutes after the infusion has finished.

We will check your haemoglobin levels again after about 2 weeks. Some people need a further dose if still pregnant.

## **Cautions and contraindications**

### **You should not receive Ferinject if:**

- you have an anaemia caused by other deficiencies (e.g. folate or B12 deficiency)
- you have previously been told you have 'iron overload'
- you have had a previous allergic reaction to iron
- you have liver cirrhosis or hepatitis

### **Do not take oral iron tablets after receiving Ferinject**

## **Questions**

If you have any questions please contact your midwife, who will be able to arrange discussion with the doctors looking after you.