



CLINICAL PRACTICE GUIDELINE

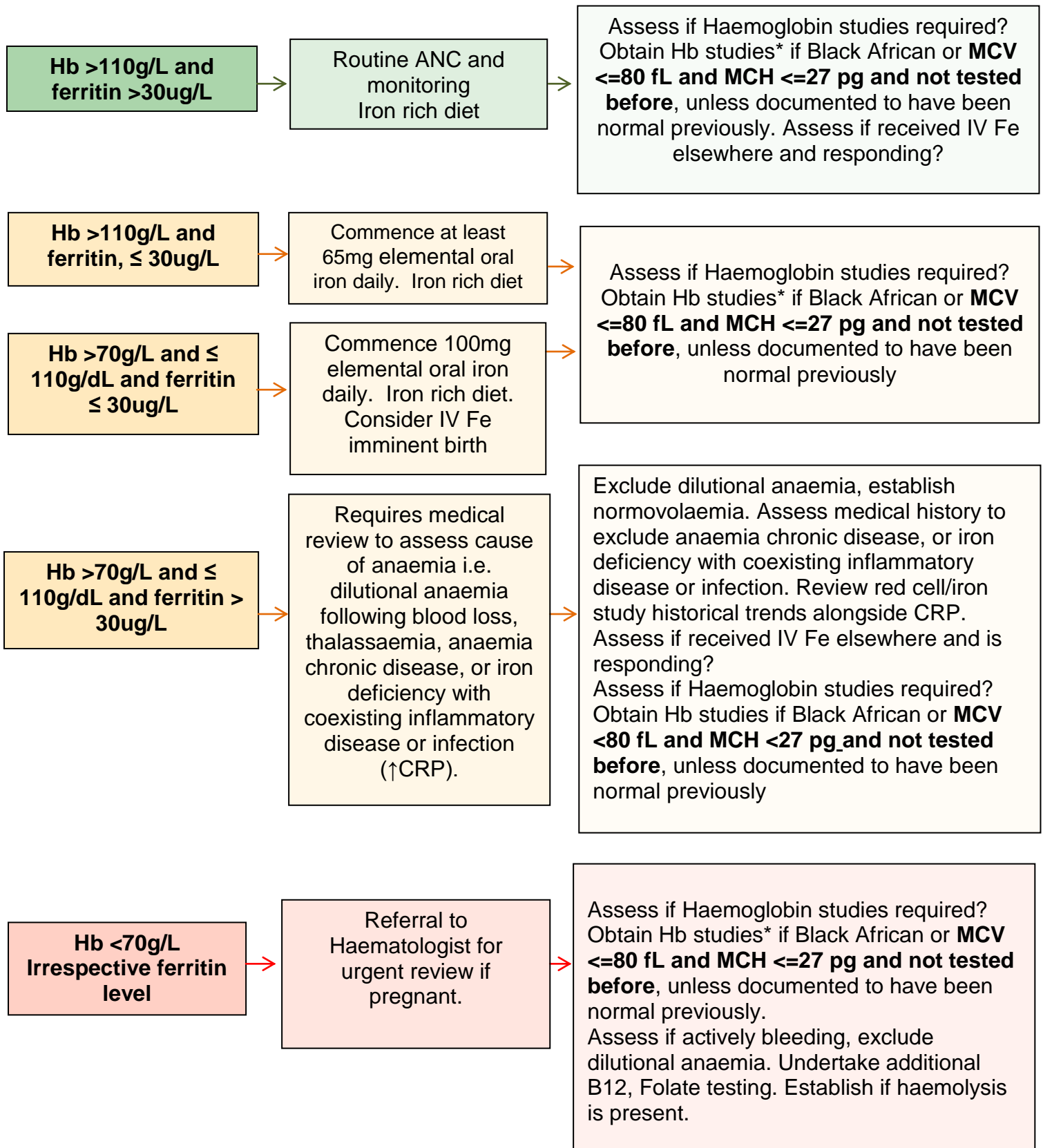
# Anaemia and iron deficiency: Management in pregnancy and postpartum

This document should be read in conjunction with this [Disclaimer](#)

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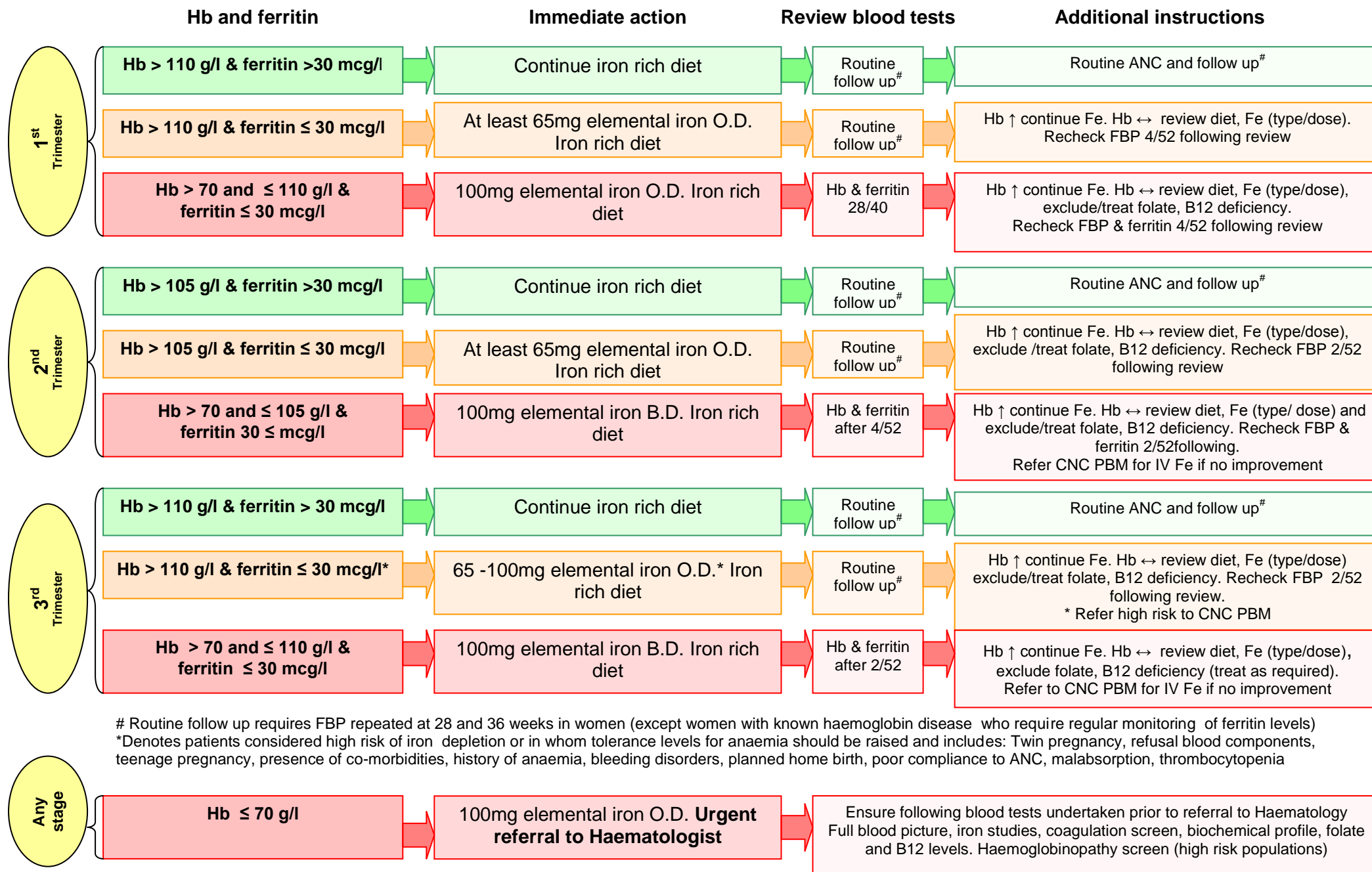
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## Quick Reference Guide: Anaemia management overview



\* Hb studies can be requested as 'add-on' to FBP

# Anaemia treatment algorithm



# Routine follow up requires FBP repeated at 28 and 36 weeks in women (except women with known haemoglobin disease who require regular monitoring of ferritin levels)

\*Denotes patients considered high risk of iron depletion or in whom tolerance levels for anaemia should be raised and includes: Twin pregnancy, refusal blood components, teenage pregnancy, presence of co-morbidities, history of anaemia, bleeding disorders, planned home birth, poor compliance to ANC, malabsorption, thrombocytopenia

# Anaemia in pregnancy and postpartum

## Background information

Anaemia in pregnancy is defined as a haemoglobin (Hb) of less than 110 g/L in the first and last trimester and less than 105 g/L in the second trimester. Women with anaemia and/or iron deficiency may experience fatigue, reduced energy levels and reduced mental performance. Severe anaemia is associated with preterm birth, low birth weight, and a small for gestational age fetus. In the postpartum period both anaemia and iron deficiency have been found to be linked to depression, emotional instability, stress and lower cognitive performance tests.

The most common causes of anaemia in pregnancy are iron deficiency, folate deficiency vitamin B12 deficiency. Haemolytic diseases, bone marrow suppression, chronic blood loss and underlying malignancies are uncommon and require haematology referral.

The gastrointestinal tract increases absorption when the body's iron stores are low, and it reduces the absorption when there are sufficient stores. Requirement for iron ranges from 0.8mg/day in the first trimester to 7.5 mg/day in the third trimester, averaging approximately 4.4 mg daily through pregnancy. In the second and third trimester due to fetal growth, intestinal iron absorption in the gut is not sufficient to meet this increased demand. Thus maintaining iron balance depends on adequacy of maternal iron stores during this period.

Oral iron is the recommended initial treatment for all but the most severely anaemic iron deficient patients. The haemoglobin should increase within 2 weeks, otherwise further tests are required. A high iron diet should be recommended. Intravenous iron should only be used in severe cases of iron deficiency anaemia, if the woman is unresponsive to oral iron treatment, or when rapid repletion of iron is required.

## Key points

1. All women should be offered screening for anaemia:
  - in first trimester (or at booking) (FBP and iron studies if not already done by GP)
  - with the next screening bloods (usually performed between 24-28 weeks) see [Treatment algorithm](#) for tests required
  - and at 36 weeks gestation- see [Treatment algorithm](#)
2. A FBP should be ordered within 2 - 8 weeks following initiation of treatment (dependent upon gestation) to assess response and compliance with oral iron treatments.
3. Iron deficiency in most circumstances is diagnosed by a full blood examination and serum ferritin levels. Do not use serum iron, or serum ferritin alone to

diagnose iron deficiency. NB: Ferritin levels are elevated in active infection or inflammation and in these cases measurement of C-reactive protein (CRP) will support interpretation of ferritin levels.

4. Consider consulting a Haematologist in diagnosing and treating IDA in women with known haemoglobinopathies. Serum ferritin should be checked prior to starting iron with known haemoglobinopathy.
5. Oral iron if taken at the appropriate dose, and for a sufficient time, is an effective first-line treatment for most women in pregnancy.
6. If a women fails to respond to iron therapy, investigate further to assess for malabsorption problems. Consider non-compliance with medications or co-existing disease.
7. Intravenous iron therapy is an effective alternative to oral treatment during the second or third trimester only for treatment of IDA. Intravenous iron is restricted to women failing to respond to oral iron treatment with known IDA or in those whom a rapid repletion of ferritin is required.
8. The type, dosage, and frequency of iron supplements for treatment of IDA should be documented in MR 220 'Pregnancy Health Record'.
9. At each antenatal visit all women taking iron supplements should be monitored for medication compliance and side-effects.

### **Prescribing iron supplements and follow-up**

All women with known haematinic deficiencies (includes B12 or iron deficiency) should be advised:

- the type, frequency, and duration of the treatment or medication
- side-effects of the medication which can exacerbate the symptoms of pregnancy including heartburn, nausea, vomiting and constipation
- management of side-effects
- how and when to take the medications
- of medications or food that may inhibit iron absorption
- dietary information to increase oral iron intake

Provide written instructions to the woman about iron supplementation - KEMH brochure – Iron Supplements- supplied by pharmacy.

At each antenatal visit:

- assess and document the woman for compliance with taking the medication
- assess and document side-effects from the medication. Provide advice for management of any side-effects
- assess compliance to dietary recommendations

## Dietary information

Sources of dietary iron include meat, poultry and fish which are two to three times more absorbable than plant-based iron foods and iron-fortified foods and ascorbic acid enhances absorption. Vegetarians should be encouraged to eat foods high in iron, such as, tofu, beans, lentils, spinach, whole wheat breads, peas, dried apricots, prunes and raisins.

Medications inhibiting absorption or contraindicated include:

- anticonvulsants
- sulphonamides
- medications that raise gastric pH e.g. antacids (avoid where possible)

Foods that may interact or inhibit absorption:

- calcium in dairy products e.g.
- tea and coffee
- chocolate
- spinach and beetroot
- soy products
- phytates (salts found in plants capable of forming insoluble complexes with iron) e.g. bran, cereal.

Non-haem iron requires an acidic pH to be reduced to ferrous for gut absorption. A gap of 2 hours from dietary or medication inhibitors of iron absorption appears to be sufficient to avoid the problem.

## Side-effects of oral medications and management

When oral liquid iron is used it should be diluted with water and a straw used to prevent discolouration of the teeth. However, liquid iron supplements should be checked for the content of elemental iron.

Side-effects of oral iron supplements include nausea, epigastric pain, constipation and black discolouration of the faeces.

Management for side effects include:

- nausea and epigastric discomfort – take iron tablets on an empty stomach 1 hour prior to or 2 hours after a meal, commence tablets on a low dosage and then gradually increase the amount of iron, or take small doses more frequently.
- constipation – see KEMH Clinical Guideline, O&G: [Discomforts in Pregnancy: Common](#)

## Anaemia and haemoglobinopathies

See KEMH Clinical Guideline, O&G: [Haemoglobinopathy Screening in Pregnancy](#)

For anaemia and B12 deficiency- see [B12 Management in Pregnancy guideline](#)

## Anaemia and folate deficiency

Folate is required for DNA synthesis; demand increases in pregnancy. Deficiency can develop rapidly as stores are minimal. The recommended dietary intake in pregnancy is 600µg/day, and most commonly prescribed prenatal vitamins contain 800µg which is more than the recommended dose. Meat is not a good source for folate, however folate can be found in green leafy vegetables, legumes and orange juice.

### Management

Women at risk of folate deficiency (e.g. multiple pregnancy, haemolytic anaemia) should take 5 mg of folic acid throughout the pregnancy.

## Other causes of anaemia

Haematologist referral is recommended for the investigation and treatment of other causes of anaemia.

## References

1. World Health Organisation. Daily iron and folic acid supplementation during pregnancy. World Health Organisation 2017 [http://www.who.int/elena/titles/daily\\_iron\\_pregnancy/en/](http://www.who.int/elena/titles/daily_iron_pregnancy/en/)
2. Munoz M, Pena Rosa J P, Robinson S et al. Patient blood management in obstetrics : management of anaemia and haematinic deficiencies in pregnancy and the postpartum period: NATA consensus statement. **Transfusion Medicine**. 2018; 28 (1): 22 - 39. 3. Breyman C, Bian X, Blanco-Capito LR, et al. Expert recommendations for the diagnosis and treatment of iron-deficiency anemia during pregnancy and the postpartum period in the Asia-Pacific region. **Journal of Perinatal Medicine**. 2010;38:1-8.
3. Pavord S, Myers B, Robinson B, Allard S, Strong J, Oppenheimer C. UK guidelines on the management of iron deficiency in pregnancy. **Br J Haematol**. 2012;156(5):588-600.
4. Pasricha SRS, Flecknoe-Brown SC, Allen KJ, et al. Diagnosis and management of iron deficiency anaemia: a clinical update. **MJA**. 2010;193(9):525-32.

5. Simpson JL, Bailey LB, Pietrzik K, et al. Micronutrients and women of reproductive potential: required dietary intake and consequences of dietary deficiency or excess. Part 1 - Folate, Vitamin B12, Vitamin B6. **The Journal of Maternal-Fetal and Neonatal Medicine**. 2010;23(12):1323-43.
6. The Royal Australian and New Zealand College of Obstetricians and Gynaecologists. Vitamin and Mineral Supplementation in Pregnancy. **College Statement C-Obs 25**. 2008. Ammended May 2015.
7. Australian Red Cross Blood Service. Toolkit for Maternity Blood Management. Australian Red Cross Blood Service 2018.  
<http://resources.transfusion.com.au/cdm/singleitem/collection/p16691coll1/id/1000/rec/4>
8. Peña-Rosas JP, De-Regil LM, Garcia-Casal MN, Dowswell T. Daily oral iron supplementation during pregnancy. Cochrane Database of Systematic Reviews 2015, Issue 7. Art. No: CD004736. DOI:10.1002 / 14651858.CD004736.pub5.
9. National Blood Authority. Patient Blood Management Guidelines: Module 5 - Obstetrics and Maternity. Canberra: National Blood Authority 2015.
10. Haider BA, Olofin I, Wang M, et al. Anaemia, prenatal iron use, and risk of adverse pregnancy outcomes: systematic review and meta-analysis. *BMJ (Clinical Research Ed)* 2013;346:pf3443.
11. Devalia, V. , Hamilton, M. S., Molloy, A. M. on behalf of the British Committee for standards in Haematology, Guidelines for the diagnosis and treatment of cobalamin and folate disorders. **Br J Haematol**, 2014 166: 496-513. doi:10.1111/bjh.12959.

## Related WNHS policies, procedures and guidelines

- KEMH Clinical Guidelines: Obstetrics & Gynaecology:
- [B12 Management in Pregnancy guideline](#)
  - [Discomforts in Pregnancy: Common](#) - constipation
  - [Haemoglobinopathy Screening in Pregnancy](#)
  - Iron Therapy- Carboxymaltose; Polymaltose; Iron infusions

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