1. Routine Haemoglobin assessment should be done at booking
   If normal to be repeated during mid-trimester (20-24/52) and around 36/52

2. Iron Supplements in pregnancy
   - Tablet folic acid 0.5mg od in first trimester (13 weeks)
   - Tablet ferrous fumarate 200-400 mg od + folic acid 0.5mg od (or)
   - Tablet Obimin 1 tablet /day

3. If Haemoglobin is < 11g%
   a. Low MCV and MCH (result available on the same day), no history/family history of haemoglobinopathy and clinically no apparent medical illness.
      - Empirically treat as iron deficiency anaemia
      - Investigation: full blood picture (FBP)
      - Tab ferrous fumarate 400mg bd + Folic acid 500mcg od
      - Recheck Hb after 2-4 weeks (Hb expected to rise by 0.3g-1.0g per week)
      - If Hb rises as expected continue the same for the rest of the pregnancy
      - If Hb do not rise
         o Ask about compliance and review full blood picture
         o If the patient is compliant, perform the following investigation:
            ▪ Serum ferritin
            ▪ Hb electrophoresis
            ▪ Stool for ova and cyst
            ▪ Stool for occult blood
            ▪ BFMP if patient coming from an endemic area
   b. If MCV and MCH not available on the same day (i.e. in KD or small MCH/KK), no history/family history of haemoglobinopathy and clinically no medical illnesses.
      - Empirically treat as iron deficiency anaemia
      - Investigation: full blood picture(FBP)
      - Tab ferrous fumarate 400mg bd + Folic acid 500mcg od
      - Recheck Hb after 2-4 weeks (Hb expected to rise by 0.3g-1.0g per week)
      - If FBP shows microcytic hypochromic anaemia (iron deficiency)
         o If Hb rises as expected continue the same treatment for the rest of the pregnancy
         o If not a compliance problem, perform following investigation:
            ▪ Serum ferritin
            ▪ Hb electrophoresis
            ▪ Stool for ova and cyst
            ▪ Stool for occult blood
            ▪ BFMP if patient coming from an endemic area
      - If MCV and MCH is normal or high
         o Refer combined clinic/ antenatal specialist clinic for further assessment and management
4. **Categorization of women using haemoglobin and serum ferritin**

<table>
<thead>
<tr>
<th>Serum ferritin (µg/l)</th>
<th>Haemoglobin (g/dl)</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&gt;12</td>
<td>&gt;11</td>
</tr>
<tr>
<td>2</td>
<td>&lt;12</td>
<td>&gt;11</td>
</tr>
<tr>
<td>3</td>
<td>&lt;12</td>
<td>&lt;11</td>
</tr>
<tr>
<td>4</td>
<td>&gt;12</td>
<td>&lt;11</td>
</tr>
</tbody>
</table>

5. **Women with IDA and unable to tolerate or non-compliance to Ferrous Fumarate**

Options Include:

a. Change to different preparation (i.e Tab Iberet 1 tablet BD)

b. Parenteral iron therapy

c. Blood transfusion

6. **Elemental iron doses:**

For prophylaxis against IDA, 30-100 mg/day of elemental iron is enough, but for the purpose of treatment at least 180 mg/day of elemental iron is required.

**Amount of elemental iron in different preparations**

<table>
<thead>
<tr>
<th>Preparation</th>
<th>Elemental iron (mg/tablet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferrous fumarate (200mg)</td>
<td>60 mg</td>
</tr>
<tr>
<td>Iberet</td>
<td>105 mg of ferrous sulphate</td>
</tr>
<tr>
<td>Obimin/Obimin plus/ New obimin</td>
<td>30 mg of ferrous fumarate/ferrous sulphate</td>
</tr>
</tbody>
</table>

7. **Parenteral iron therapy:**

It has no advantage over oral iron if the latter is well tolerated. It is only indicated in patients who cannot absorb iron, non-compliant or developed serious side effect with oral iron.

**Preparation:** Iron Dextran (Imferon) - Intramuscularly

**Dose:** Elemental iron needed (mg) = (Desired HB - Patient’s Hb) x Weight (kg) x 2.21 + 1000

**Example:** (60 kg patient with Hb 7.0g/dl)

Elemental iron needed= (10-7) x 60 x 2.21 + 1000 =1398 mg

**Caution:**

There is small risk of hypersensitivity towards IM Imferon, it should only should only be given in a hospital. An initial test dose of 50 mg of IM Imferon is given followed by 100 mg daily until the total dose met.
8. Haemoglobin < 11g/dl in patient known to be α or β-thalassemia trait:
   a. Prescribe folic acid 5 mg daily
   b. Check serum ferritin
      - if serum ferritin < 12µg/l, to treat as concurrent IDA

9. Indications for blood transfusion during antenatal period:
   - Hb < 6 g/dl
   - Hb < 8 g/dl and POA > 36 weeks
   - Moderate and severe anaemia in patient with known heart disease or severe respiratory disease
   - Symptomatic anaemia
   - Placenta Praevia with Hb < 10g/dl
   - Patient who develop severe side effect to both oral and parenteral iron therapy

10. Anaemic patient in labour:
    - To Transfuse if Hb < 8 g/dl and transfer to the hospital with specialist if high risk patient.
    - High risk patient with Hb between 8-10g/dl require GXM of at least 2 pint of blood and transfer to the hospital with specialist if possible.
    - Patient with risk of PPH and anaemic is best delivered in the hospital with specialist.
    - In the event of advance labour where transfer is not possible specialist input is required regarding the need for transfusion. GXM of at least 2 pint of blood must be available for such patient.
    - Prophylactically, can start intravenous infusion of Pitocin (20 units in 500mls of Hartman’s saline) to run over 4 to 6 hours after the delivery of the baby. In grand multiparas start on 40 units Pitocin in 500mls Hartman’s infusion over 4 to 6 hours.
    - Closer maternal monitoring immediate postnatal period to be able to diagnose PPH early
Hb > 11 g/dl

Routine Hb Check at 20-24/52 and 36/52
Tab Ferous fumarate 200mg daily or
Tab Obimin 1 tablet daily
Tab Folic acid 5 mg daily
Hb < 11g/dl, POA < 28 week
No indication for blood transfusion, no apparent medical illness

Low MCV and MCH

MCV and MCH not available on the same day

Empirically treat as iron deficiency anaemia
- Investigation: Full blood picture
- Tab ferrous fumarate 400mg bd + Folic acid 500mcg od
- Recheck Hb after 4 weeks (Hb expected to rise by 0.3g-1.0g per week)

- Review Hb and full blood picture

Not microcytic and hypochromic anaemia
- Refer to combined or antenatal specialist clinic

Microcytic hypochromic anaemia but Hb not rises as expected
- Perform following investigation
  - Serum ferritin
  - Hb electrophoresis
  - Stool for ova and cyst
  - Stool for occult blood
  - BFMP if patient coming from an endemic area
- Change FF with T. Iberet 1 tab BD
- Review Patient in 4/52 If POA

Microcytic hypochromic anaemia but Hb rises as expected
- Continue same treatment for the rest of the pregnancy
- repeat Hb at 20-24/52 and 36/52
Diagnosis: Not IDA
- Manage accordingly
- Refer to Combined/Specialist antenatal clinic

Diagnosis: IDA but Hb did not rise as expected
- Non compliant
- Unable to tolerate oral preparation
Deworming/treat malaria/address issue of occult blood loss if indicated

Parenteral iron therapy (IM Imferon)
Hb < 11g/dl, POA 28-36 weeks
No indication for blood transfusion, no apparent medical illness

To follow above flow chart but follow-up every 2/52 instead of 4 weeks
Hb < 11g/dl, POA 36 weeks
No indication for blood transfusion, no apparent medical illness

Low MCV and MCH

MCV and MCH not available on the same day

Empirically treat as iron deficiency anaemia
- Investigation: Full blood picture
- Tab Iberet 1 tab bd + Folic acid 500mcg od
- Recheck Hb after 2 weeks or and during labour (Hb expected to rise by 0.3g-1.0g per week)