ANAEMIA IN PREGNANCY

INTRODUCTION
- In normal pregnancy, maternal plasma volume increases by up to 50%, red cell mass gradually increases by approximately 20% and haemoglobin (Hb) concentration drops. This normal physiological response may resemble iron deficiency anaemia.

DEFINITION
- Haemoglobin <110 g/L in the first trimester and <105 g/L in the second and third trimesters.

Causes of anaemia in pregnancy
- Iron deficiency
- Folic acid deficiency
- Vitamin B₁₂ deficiency
- Haemoglobin variants
- Other causes
- exclude chronic illness [e.g. recurrent urinary tract infection (UTI), chronic inflammatory bowel disease]
- women born outside the UK or with a history of foreign travel
- consider less common causes (e.g. chronic infections and parasitic infections)

Symptoms and signs
- Pallor
- Lethargy
- Shortness of breath
- Weight loss
- Depression
- Nausea
- Vomiting
- Gingivitis
- Diarrhoea
- Raised pulse rate
- Thready pulse

Diagnosing iron deficiency anaemia
- Screen for anaemia at booking and 28 weeks’ gestation
- Screen for sickle cell and thalassaemia at booking
- Do not give routine iron and folic acid supplementation until anaemia diagnosed (using pregnant ranges)
- Diagnose iron deficiency anaemia if mean corpuscular volume (MCV) <80 fl
- Check serum ferritin, serum iron and total iron binding capacity (TIBC) saturation. Iron deficiency indicated by:
  - ferritin level of <15 micrograms/L
  - serum iron level of <12 micromoles/L
  - TIBC saturation of <15%
- Women with malabsorption syndrome, haemoglobinopathy, epilepsy requiring anticonvulsants and multiple pregnancies are at increased risk of folate deficiency
- offer iron and folic acid supplementation
- Other groups may have an increased risk based on dietary or cultural factors. Assess on an individual basis

Advice to women with anaemia
Life-style
- Avoid alcohol
- Stop smoking

Dietary advice
- Animal protein – well cooked red meat (avoid pre-cooked chilled meat, and liver)
- Eggs
Anaemia in pregnancy 2013-15

- Milk
- Increase vitamin C to aid iron absorption (fresh orange juice, citrus fruits)
- Leafy green vegetables (not over-cooked)
- If concerns regarding compliance with dietary advice, give vitamin C as ascorbic acid 50 mg/day

**TREATMENT OF IRON DEFICIENCY ANAEMIA**

**Elemental iron**
- Give up to 120 mg elemental iron using one of the following preparations:
  - ferrous sulphate 200 mg 8–12 hrly
  - ferrous fumerate 322 mg (10 mL) 12-hrly
  - sodium feredetate 10 mL 8-hrly
- If these products are not tolerated, seek pharmacy advice

**Side effects**
- Advise woman that iron supplements may cause:
  - gastrointestinal upset with nausea and epigastric pain
  - where there is a history of constipation, use osmotic laxative

**Monitoring**
- Check haemoglobin 4 weeks after starting therapy
- an increase of 8 g/L/week is usual irrespective of the route of iron administration

**Response to treatment**
- Check compliance
- If not tolerant, try alternative preparations
- If inadequate response (<32 g/L), check iron studies, B₁₂ and folate levels and refer to antenatal clinic for next available appointment
- If not responding after 4 weeks effective therapy, refer woman to named consultant antenatal clinic where IV iron therapy will be considered – see Flowchart

**Other forms of anaemia**
- MCV is >96 fl, consider other forms of anaemia

**MACROCYTIC ANAEMIA**

**Definition**
- Haemoglobin value and red cell numbers are reduced but MCV is increased
- In pregnancy an MCV >96 fl is regarded as abnormal

**Treatment**
- Check levels of folate in blood and red blood cells and B₁₂ levels in first instance
- If folate deficiency diagnosed, start folic acid 5 mg/day. Iron supplementation may also be necessary
- If B₁₂ deficiency diagnosed, refer to GP or hospital antenatal clinic
- If both B₁₂ and iron supplementation required, start B₁₂ treatment first
- If folate and B₁₂ levels are normal, refer to consultant antenatal clinic who will consider referral to haematology

**Advice to woman**

**Lifestyle**
- Avoid alcohol
- Stop smoking

**Dietary**
- Folic rich foods:
  - leafy green vegetables (over boiling will destroy folic acid)
  - chick peas
  - bananas
  - citrus fruit
  - avocado
  - mushrooms
Anaemia in pregnancy 2013-15

- asparagus
- bread and cereals fortified with folic acid

**B12 deficiency known or diagnosed**
- Eat animal protein – fresh well-cooked meat (avoid pre-cooked chilled meat)
- Well-cooked eggs
- Milk
- Cheese (avoid soft runny cheeses e.g., brie)
- Give vitamin B12 injections (hydroxocobalamin) 1 mg 3 times/week for 2 weeks, then 1 mg every 3 months according to response
- Take weekly red cell counts and haemoglobin estimations until a maintenance dose is reached
- Iron supplementation is prescribed as before in addition to vitamin B12 as rapid response to regeneration of red blood cells may deplete iron stores – see **Flowchart**

**Anaemia flowchart:**

Anaemia Hb <10.5

- Oral iron
  - Ferrous sulphate 200 mg 8–12 hrly
  - Sodium feredetate 10 mL 8-hrly
  - Ensure compliance and provide good dietary advice
  - Check Hb 4 weeks later

  **Hb increase of >3.2 g/L**
  - Continue iron therapy until Hb at desired level (>105 g/L)

  **MCV <96 fl**
  - Normal vitamin B12 and folate
  - Low iron levels
  - Commence IV iron

  **MCV >96 fl**
  - Normal vitamin B12 and folate levels
  - Inform consultant obstetrician and refer for haematology opinion

  **MCV >96 fl**
  - Decreased folate levels
  - Commence folic acid 5 mg/daily

  **MCV >96 fl**
  - Decreased vitamin B12 levels
  - Commence vitamin B12 injections
  - Hydroxocobalamin
  - 1 mg 3 times/week for 2 weeks, then 3 monthly
  - Ensure postnatal follow-up by GP

- Check folate vitamin B12 and iron studies
- Refer to antenatal day assessment unit (if local practice)

**Hb increase of <3.2 g/L**