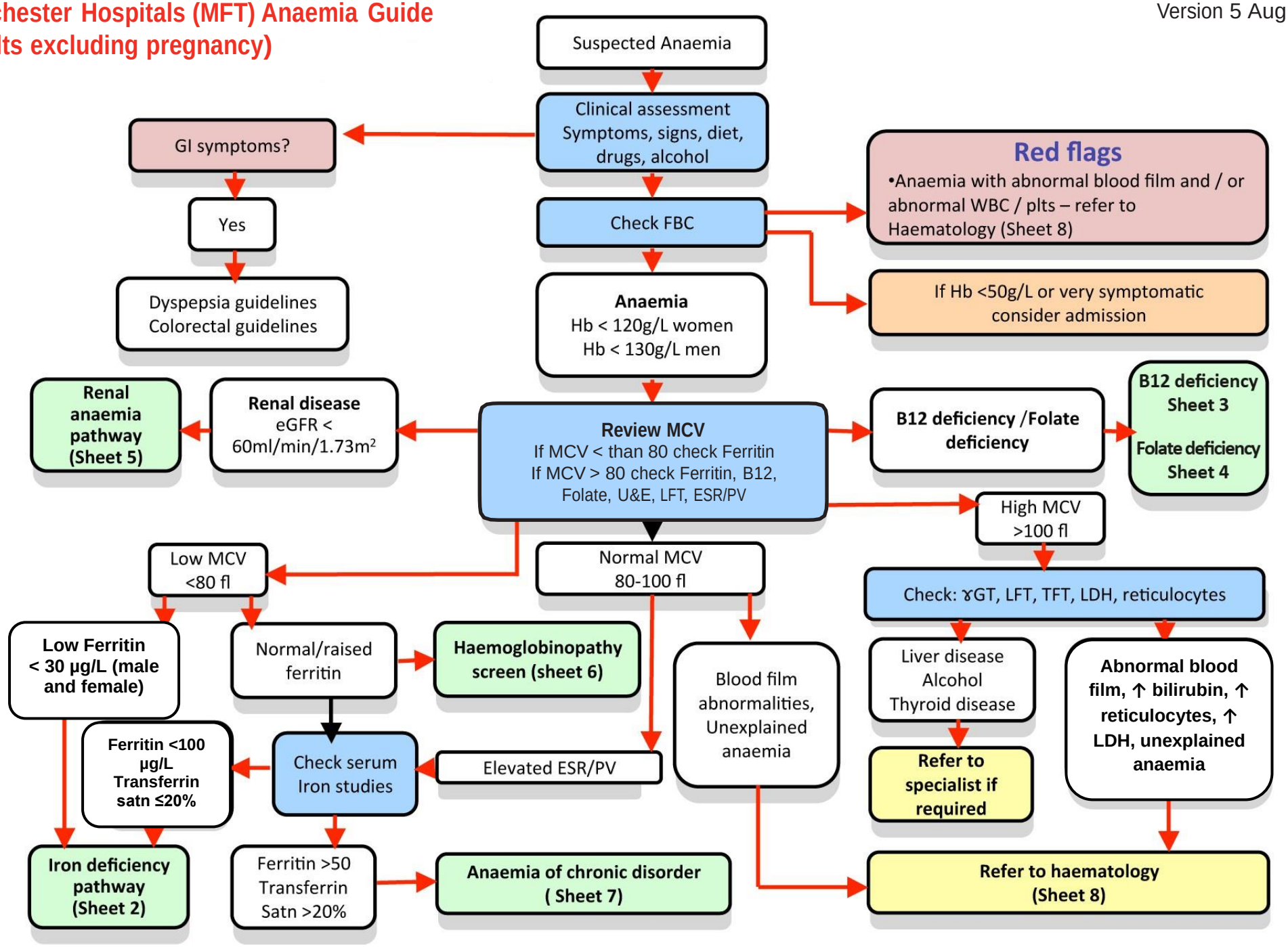
Manchester Hospitals (MFT) Anaemia Guide (Adults excluding pregnancy)

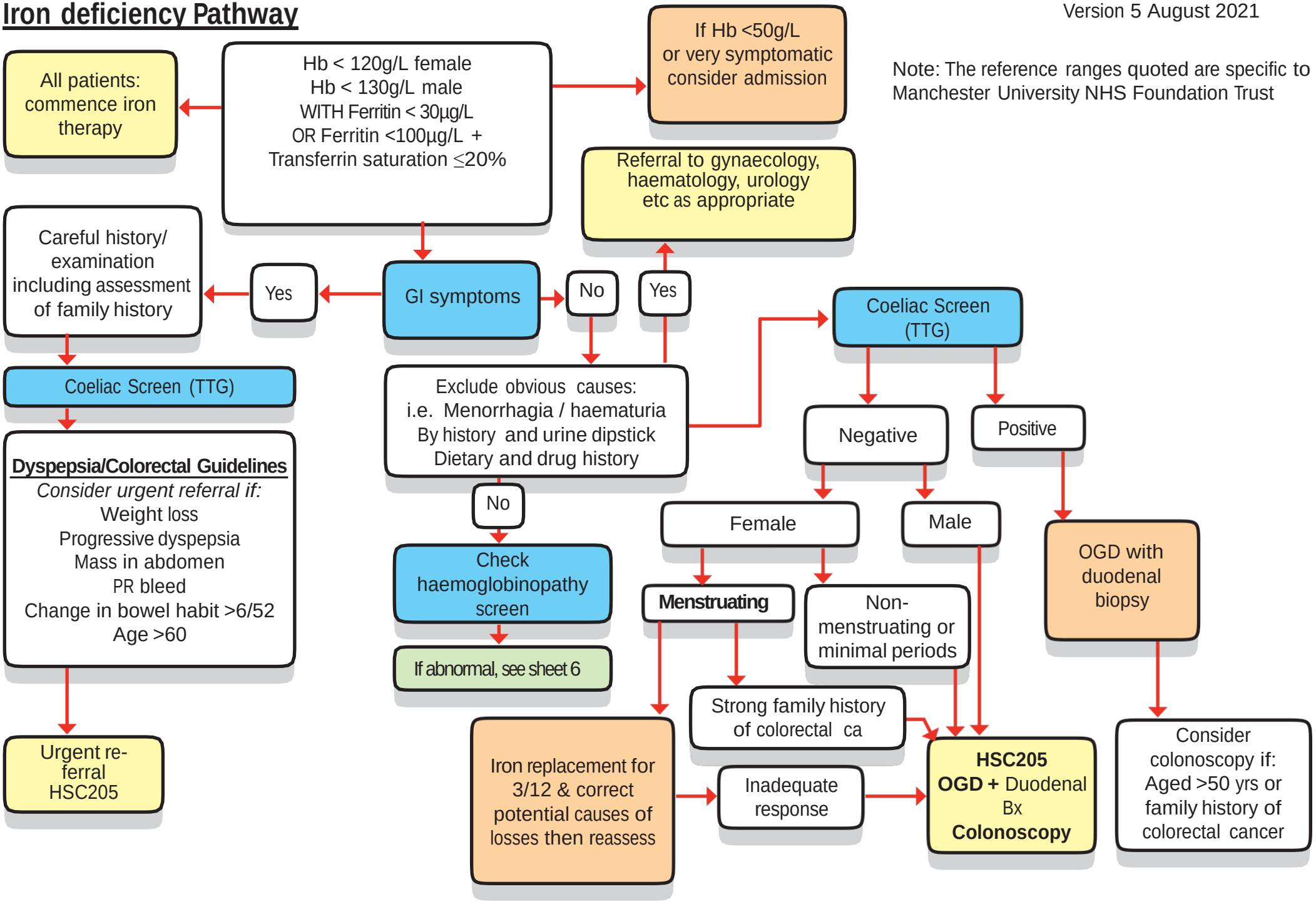
Version 5 Aug 2021



Iron deficiency Pathway

Version 5 August 2021

Note: The reference ranges quoted are specific to Manchester University NHS Foundation Trust



Iron deficiency Pathway

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Investigations

- Do a urine dipstick, 1% of IDA with have renal malignancy. Consider aspirin / NSAIDs as cause but investigate all IDA.
- A significant family history for colon ca is two 1st degree relatives or one if <40yrs.
- Consider OGD as first investigation as will exclude colonoscopy in gastric ca and coeliac and avoids bowel prep. Consider colonoscopy if: aged >50 yrs or family history of colorectal ca even in patients with confirmed coeliac disease.

Treatment

- Patients with established iron deficiency anaemia should be given 40-80mg elemental iron daily. This can be achieved with **oral ferrous sulphate 200mg od**. There is no reason to give more than one dose per day.
- Patients should be advised on correct administration to optimise absorption, including the use of ascorbic acid 500mg daily, taking on empty stomach in the morning, avoiding other medicines or antacids at same time.
- All patients should be counselled regarding diet including details of iron rich food sources and factors that may inhibit or promote iron absorption. This should be consolidated by the provision of an information leaflet in the appropriate language
- Link to iron in your diet leaflet: http://hospital.blood.co.uk/media/28644/161006-27400-164mp-iron-in-your-diet-final.pdf

Treatment Continued

- For nausea and epigastric discomfort, preparations with lower iron content or alternate day dosing should be tried. Slow release and enteric coated forms should be avoided.
- If not responsive to oral iron, consider non-compliance as a cause.
- Once Hb is in the normal range, supplementation should continue for three months.
- Parenteral iron should be considered for patients with confirmed iron deficiency who fail to respond to or are intolerant of oral iron. Parenteral iron is currently administered intravenously in a hospital setting
- Consider first line if: -
  - History of oral iron intolerance or poor compliance
  - Impaired gastrointestinal absorption
  - Haemodialysis
  - Major surgery must take place in < 3 weeks
- Blood transfusion should be reserved for those with risk of further bleeding, imminent cardiac compromise or symptoms requiring immediate attention. Iron treatment should follow transfusion to replenish stores

Iron salt	Amount	Contents of ferrous iron
Ferrous fumerate	200mg	65mg
Ferrous gluconate	300mg	35mg
Ferrous sulphate, dried	200mg	65mg

B12 deficiency

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Anaemia or clinical suspicion – check B12

B12 >197ng/L

B12 ≤197ng/L

BUT strong clinical suspicion (e.g.: macrocytic anaemia/ neuropsychiatric symptoms/ glossitis)

If anaemic but not symptomatic: (Check for IF factor antibodies)

Symptomatic (eg: neuropsychiatric symptoms / glossitis)

Check Intrinsic factor Antibodies (specificity 95% sensitivity 50%)

Referral to dietician if poor diet

Initial Treatment

If neurological symptoms:

IM hydroxocobalamin 1000micrograms every 2nd day until no further improvement then maintenance

If no neurological symptoms:

IM hydroxocobalamin 1000micrograms x3/week for 2 weeks then maintenance

See below for maintenance

Referral to gastro if: malabsorption not pernicious anaemia Or Pernicious anaemia with IDA/ folate def Or GI symptoms (URGENT if ?Gastric Ca)

Check FBC/ retics after 10/7 of treatment

If no improvement check folate / ferritin

Check FBC/ retics again at 8/52

If history suggests malabsorption Consider coeliac disease (check TTG)

Causes of B12 deficiency

- Pernicious anaemia
- Gastric causes:
  - Gastrectomy
  - Gastric resection
- Inadequate dietary intake of B12 e.g.:
  - Intestinal causes
  - Ileal resection
  - Chron's disease
- Medicines: colchicine, metformin, anticonvulsants, long term PPIs and H2 blockers
- Food based malabsorption associated with gastric atrophy; either age related or associated with long term PPI use- likely cause for 30-50% of cases with subclinical B12 deficiency

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B12 deficiency

Investigations

Pregnant women with low B12

- Serum B12 levels of 150 to 197 ng/L in pregnancy may be physiological and other biochemical tests to determine tissue deficiency are unproven.
- Check anti-intrinsic factor antibodies and treat as pernicious anaemia if positive.
- If negative, in order to limit extensive investigation with resultant anxiety, three injections of hydroxocobalamin are suggested to cover the pregnancy, and serum B12 levels checked two months post-partum to ensure resolution to normal levels

Patients on oral contraceptive or hormone replacement therapy

- These therapies can result in a low B12 level that does not require further investigation and treatment unless a strong clinical suspicion of B12 deficiency

Patients with type 2 diabetes on long term metformin (longer than 12 months)

These patients should have serum B12 monitored at 6 monthly intervals. If serum B12 levels fall, patients should have tests for

Treatment

For patients with neurological symptoms

Initial treatment:

Intramuscular (IM) injections of hydroxocobalamin 1000 micrograms every second day until no further improvement

Maintenance:

IM injections of hydroxocobalamin 1000 micrograms every 2 months for life

Oral cobalamin is not currently recommended for those with neurological symptoms.

For patients without neurological symptoms

Initial treatment:

1000 micrograms 3 times per week for 2 weeks
Intramuscular (IM) injections of hydroxocobalamin

Maintenance:

Long-term treatment where the underlying cause is not dietary: IM injections of hydroxocobalamin every 2-3 months for life

Long-term treatment where the underlying cause is dietary:

- Either oral cyanocobalamin tablets 50–150 micrograms daily between meals, or twice-yearly hydroxocobalamin 1000 micrograms injection (may be preferable in the elderly who are more likely to have malabsorption)
- In vegans, this treatment may need to be life-long
- In non-vegans treatment can be stopped once vitamin B12 levels have been corrected and diet has improved – but monitor B12 levels 6 monthly
- Advise consumption of foods rich in vitamin B12, eg: foods fortified with vitamin B12 - some soy products, and some breakfast cereals and breads, meat, eggs, and dairy products

Further monitoring is generally considered unnecessary - exceptions to this are:

Suspected lack of compliance with treatment
Recurrence of anaemia, neurological or other clinical symptoms

Folate deficiency

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Low serum folate <3.9 µg/L

Causes of folate deficiency

- Dietary deficiency e.g.: alcoholism, dietary fads
- Malabsorption e.g.: coeliac disease
- Excessive requirements
  - Physiological
  - Malignancy
  - Haemolytic anaemia
- Medicines
  - Colestyramine, sulfasalazine, methotrexate

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Ensure Vitamin B12 is normal prior to commencing treatment with folate

Consider coeliac disease (Check TTG)

Treatment
Dietary advice
Folic acid 5mg daily for 4 months
Longer if underlying cause is persistent

Follow up FBC/retics in 10 days to ensure normalising

Consider referral

Haematology
If suspect haematological malignancy or other blood disorder
Cause unclear

Gastro
Malabsorption
Coeliac

Dietician
If cause is poor diet

Folate deficiency

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Folate deficiency

Treatment

Give information on improving diet with natural sources of folate, e.g.:

- broccoli
- brussel sprouts
- asparagus
- peas
- chickpeas
- brown rice

Offer daily oral folic acid:

Treatment for 4 months is usually sufficient to replenish body stores if inadequate dietary intake is the cause treatment may be required for longer if the underlying cause is persistent

Follow up

FBC and reticulocyte count should be performed:

- After 10 days to check response to treatment: there should be a rise in the haemoglobin level and an increase in the reticulocyte count to above normal range
- After 8 weeks to confirm normal blood count
- On completion of treatment to confirm response

NB: If haemoglobin (Hb) initially responds and then stops, check ferritin to see if a secondary iron deficiency has occurred.

Further monitoring is generally considered unnecessary - exceptions to this are:

- Suspected lack of compliance with treatment
- Recurrence of anaemia

Renal Anaemia

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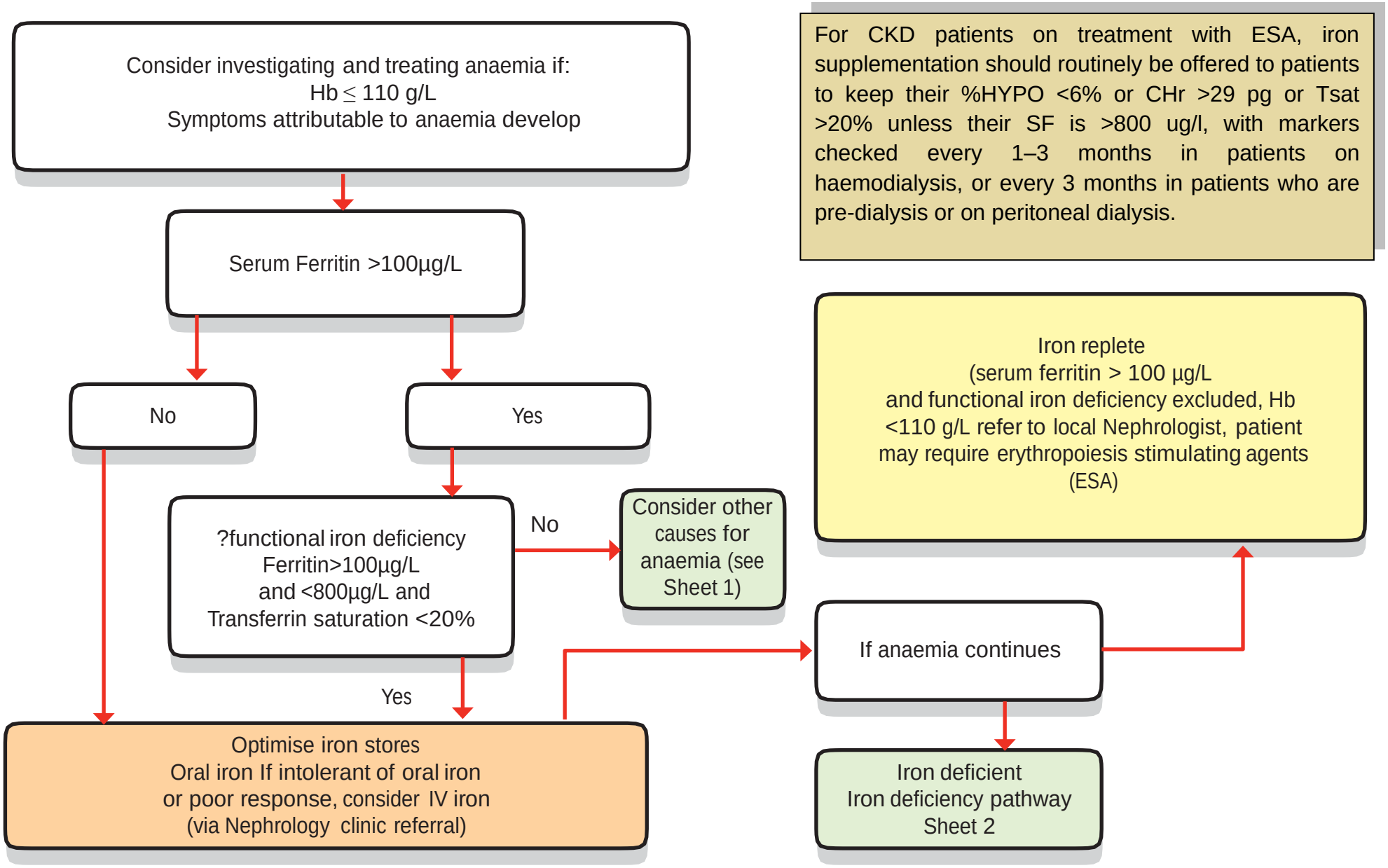

For CKD patients on treatment with ESA, iron supplementation should routinely be offered to patients to keep their %HYPO <6% or CHr >29 pg or Tsat >20% unless their SF is >800 ug/l, with markers checked every 1–3 months in patients on haemodialysis, or every 3 months in patients who are pre-dialysis or on peritoneal dialysis.

Haemoglobinopathies

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Haemoglobinopathies

- Inherited disorders of haemoglobin (haemoglobinopathy) should be considered in all individuals with microcytic anaemia, particularly if there is no evidence of iron deficiency or red cell changes persist after adequate iron replacement.
- Although these conditions are more frequently associated with individuals of non-northern European origin, they may be found in all ethnic groups.

Conditions most frequently associated with microcytic hypochromic indices include:

1. Alpha thalassaemia
2. Beta thalassaemia
3. Delta beta thalassaemia
4. Haemoglobin E

Carriers of haemoglobinopathies

- Carriers for these haemoglobinopathies are asymptomatic.
- Milder carriers may have a normal haemoglobin with minimal reduction in MCV and MCH while other carriers will have mild anaemia with more marked reduction in MCV and MCH.
- Carriers for haemoglobinopathy do not need haematology follow up however, individuals with more severe anaemia (> 20g/l below lower limit of normal) or those with symptoms or splenomegaly should be referred for a haematological review.

- It is important to recognize carrier states for these haemoglobinopathies as they do not require iron treatment and the information may be important for genetic counseling for themselves or other members of their family

It is also useful to refer back to historical results, for Hb, MCV and MCH, if available, as these remain relatively constant throughout adult

Further information for health professionals and information for carriers may be found on the following websites and these contain useful genetic counselling information for those contemplating pregnancy.

- **http://www.chime.ucl.ac.uk/APoGI/data/html/hb/menu.htm**
- **http://www.nhs.uk/Conditions/pregnancy-and-baby/Pages/screening-sickle-cell-thalassaemia-pregnant.aspx**

Leaflets and further advice are also available from the Manchester Sickle Cell/ Thalassaemia Centre

Tel: 0161 2743322

Anaemia of chronic disorder

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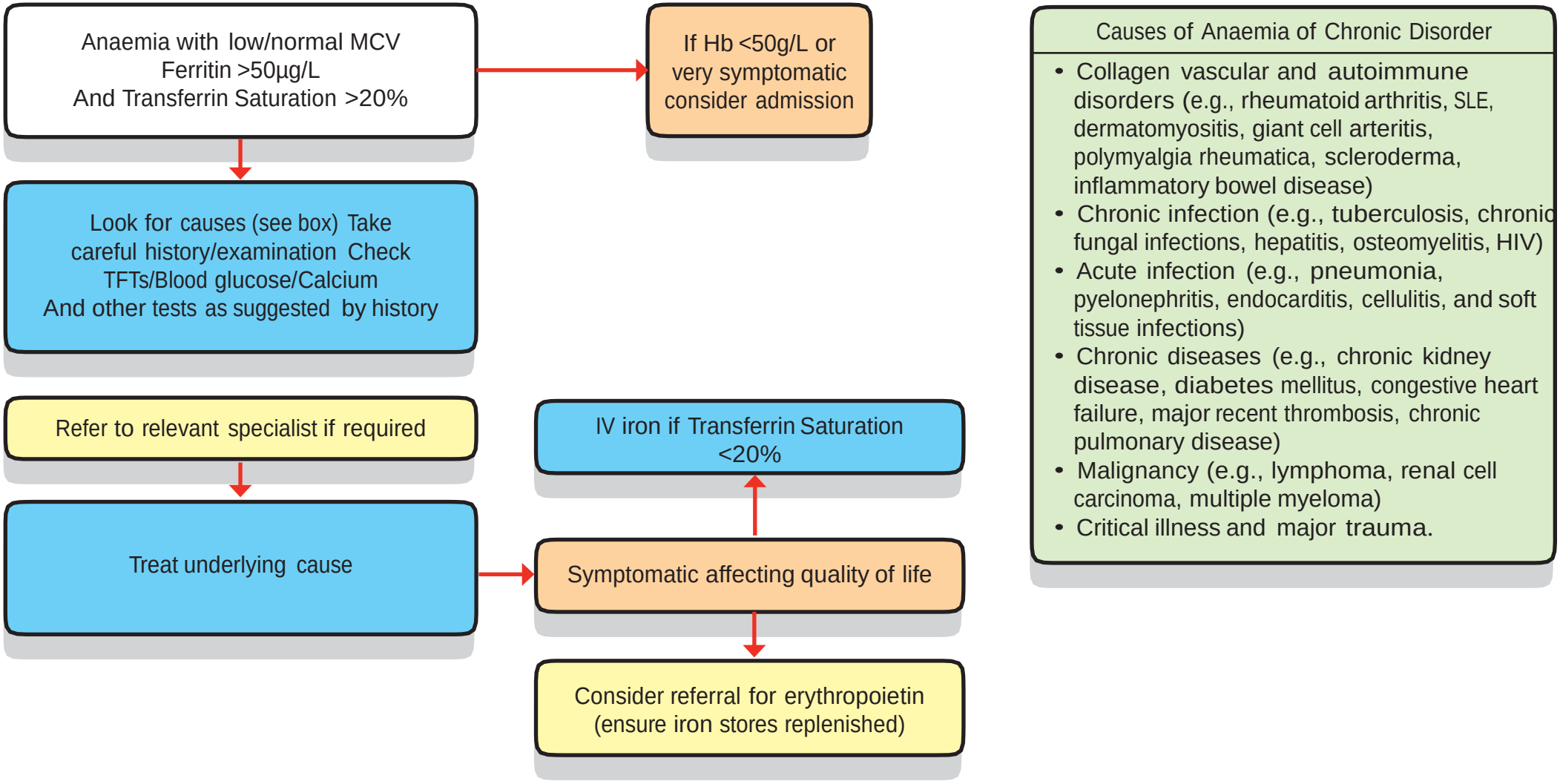

Haematology Referrals

Red flags

Film suggestive of leukaemia. Features of spinal cord compression, hypercalcaemia, acute renal failure. If Hb <50g/L or very symptomatic consider admission

→ Admit to hospital immediately

Urgent referral:

Suspected haematological malignancy:

- lymphadenopathy persisting for six weeks or more
- lymph nodes increasing in size
- lymphadenopathy associated splenomegaly
- hepatosplenomegaly
- bone pain associated with anaemia and a raised erythrocyte sedimentation rate (ESR) or plasma viscosity
- constellation of three or more of the following:
  - fatigue
  - night sweats
  - weight loss
  - Itching
  - breathlessness
  - bruising
  - recurrent
  - bone pain

→ Referral to haematology on HSC205 pathway

- Persistent unexplained anaemia
- Anaemia with abnormal blood film and / or abnormal white cell count / platelet count
- Anaemia with increased reticulocytes (>2%), jaundice (raised bilirubin) suggestive of haemolysis
- Anaemia with persistent unexplained macrocytosis (exclude liver disease, alcohol excess, B12/folate deficiency, hypothyroidism)

→ Referral to haematology

If unsure how quickly a patient needs to be seen please contact local haematologist on call