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**Anaemia**

**Presentation**

Definition

* Anaemia is defined as an Hb < 130 g/l in males and 120 g/l in females.
* In Pregnancy: Hb <110 g/l (T1), <105 g/l (T2), <100 g/l (T3).

**Clinical Findings**

* Step 1 is to establish the presence of anaemia: FBC noting Hb, MCV, MCH.
* Step 2: confirm with repeat FBC as well as other tests (reticulocytes, ferritin, B12/folate, U+E, creatinine, LFTs, CRP, blood film) with full clinical history and examination.
* Step 3: Establish type of anaemia and commence appropriate corrective therapy
* Step 4: monitor response to corrective treatment. Consider referral to appropriate speciality e.g. iron deficiency anaemia to gastroenterology / abnormal blood film to haematology.

**Causes**

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| Microcytic anaemia(MCV <80fl) | 1) Iron deficiency anaemia: if ferritin <30 very likely. If ferritin >30 check iron studies and CRP.2) Non-iron deficient causes1. Non-haematological: acute or chronic inflammation, chronic infection, malignancy, liver disease, renal failure
2. Haematological causes: Haemoglobinopathy e.g. Beta thalassaemia trait,
3. Rare causes: e.g. sideroblastic anaemia, paroxysmal nocturnal haemoglobinuria.
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| Macrocytic anaemia (MCV >100fl) | 1. Low B12 / folate: reticulocytes usually low, can get other cytopenias
2. Haemolysis: reticulocytes raised, Blood film often suggestive (needs haematology referral)
3. Alcohol / liver disease
4. Hypothyroidism
5. Drugs
6. Pregnancy
7. Bone marrow disorder e.g. MDS / myeloma / aplastic anaemia
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| Normocytic anaemiaMCV 80-100fl) | Wide differential diagnosis. Particularly in elderly patients often multifactorial cause if mild.1. Iron deficiency (early)
2. Mixed haematinic deficiency
3. Non-haematological e.g. renal failure, liver failure, hypothyroidism, anorexia / nutritional
4. Haematological e.g. myeloma / haemolysis / Hb S,C,D.
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**History **

Clinical history should include:

* Bleeding history / bowel symptoms
* Drug history
* Family history
* Social history including diet, alcohol and ethnic group

**Symptoms and Signs**

* Are there constitutional symptoms suggestive of malignancy (fever, weight loss, night sweats)
* Assess for lymphadenopathy and hepatosplenomegaly and masses.

**Investigations**

* Initial investigations should be directed by the MCV/MCH, reticulocytes and blood film

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| Initial investigations (once anaemia established)  | **Investigations to consider** |
| Repeat FBC + Blood film and reticulocytes | LDH, direct coombes test, haptoglobins (if haemolysis suspected) |
| B12/folate | TFTs |
| U+E / LFTs | Serum immunoglobulins and protein electrophoresis |
| Ferritin / iron studies | Auto-antibody screen: if connective tissue disorder suspected |
| CRP | Erythropoietin level |
|  | Testosterone |
|  | Coeliac / pernicious anaemia screen  |

**Referral**

Patients that SHOULD NOT be referred to haematology

* Patients with iron deficiency anaemia or blood loss (raised reticulocytes with no evidence of haemolysis) should be referred to the gastroenterologist (other than menstruating women) .
* Uncomplicated B12 or folate deficiency does not need to be referred to haematology.
* Anaemia due to chronic kidney disease

Indications for urgent referral to haematology for assessment

* Unexplained progressive symptomatic anaemia (usually Hb < 90 g/l)
* Evidence of haemolytic anaemia
* Anaemia with leucoerythroblastic blood film (without other cause e.g. prostate cancer)
* Anaemia with associated cytopenias, splenomegaly or lymphadenopathy
* Anaemia with abnormal blood film where haematology referral recommended
* Consider discussing / referring patients with persistent unexplained anaemia

**References**

1. A Smith. Guide to evaluation and treatment of anaemia in general practice. Prescriber 23(21):25. Wiley 2012