Anaemia in adults

Disclaimer

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Red Flags

- Anaemia with weight loss, fevers, bone pain, and night sweats
- Anaemia with unexplained change in bowel habit
- Abnormalities in other blood cell lines
- Severe anaemia with haemodynamic instability

Background – About Anaemia in adults

- 10% of people aged > 65 years living in the community have anaemia. After the age of 50 years, the prevalence rises rapidly.
- Most anaemia is mild. Only 3% of women and 1.5% of men have haemoglobin levels < 110 g/L.
- There are many possible causes of anaemia, which require careful assessment and investigation.

Assessment

Practice Point

Manage anaemia before surgery
Iron deficiency with or without anaemia is a contraindication to major elective surgery and may result in deferral of surgery. Manage proactively.

Anaemia is often asymptomatic and identified as an incidental laboratory finding, or on a preoperative assessment.

1. Determine the cause in all patients, regardless of age and gender.

   Causes
   Anaemia can be caused by:
   - bone marrow pathology – important to exclude
   - iron, folate, and B12 deficiencies
   - acute or chronic blood loss
   - thyroid disorders
   - haemolysis
   - renal or liver insufficiency
   - anaemia of chronic inflammation (ACI)
   - chronic infections
   - medications e.g., methotrexate, valproate
   - haemoglobinopathy or congenital haemolytic anaemias
   - alcohol excess.

2. Take a history.
   Ask about:
   - symptoms of:
     - anaemia, e.g. fatigue, lethargy, shortness of breath.
     - possible malignancy, e.g. fevers, night sweats, weight loss, bone pain, change in bowel habit.
   - dietary intake and history of food intolerances, especially gluten.
• alcohol consumption.
• menstruation or other history of bleeding.
• underlying conditions, e.g. renal disease, liver disease, inflammatory or autoimmune disease.
• previous blood transfusions.
• medications – ask especially about NSAIDs and aspirin (blood loss), metformin, proton pump inhibitors, valproate (B12 deficiency), cytotoxics (aplastic anaemia) oral anticoagulants.
• family history.

3. Examine the patient for signs of:

• **severe anaemia.**
  - Pallor of skin, mucus membranes and nails
  - Signs of *cardiac failure* e.g., tachycardia, hypotension, heart murmur, inspiratory crackles

• **possible causes.**
  Including:
  - Abnormal bleeding or bruising
  - Melaena
  - Jaundice
  - Lymphadenopathy
  - Hepatosplenomegaly
  - Abdominal mass
  - Rectal mass on digital rectal exam
  - Suspected bone marrow dysfunction from blood film

4. Arrange investigations.

• **FBE**
• **Blood film**
  - Gives blood cell morphology which may help indicate the possible cause.
  - This needs to be specifically requested on the laboratory form.
• **Reticulocyte count**
  Indicates whether bone marrow is functioning normally and responsive to red cell loss.
  If reticulocyte count is:
  - low (e.g., decreased functioning marrow) – may be due to nutritional deficit, anaemia of chronic inflammation, renal failure, or bone marrow malignancy or infiltration.
  - normal – assess in relation to the mean corpuscular volume (MCV).
  - high – increased loss of red cells due to active haemolysis or blood loss.
• **Urea, electrolytes, and creatinine**
• **Liver function tests (LFT)**
• **Thyroid function tests (TFT)**
• **Iron studies including ferritin, B12, folate**
• **CRP**
• **3 stool samples for faecal occult blood**
5. Interpret the FBE according to the mean corpuscular volume (MCV).

**Mean corpuscular volume (MCV)**

<table>
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<tr>
<th>Result</th>
<th>Action</th>
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| Microcytic anaemia (MCV < 80 fL) | • Initially consider iron deficiency (check ferritin on iron studies) or anaemia of chronic inflammation (check C-reactive protein and inflammatory markers). When iron deficiency coexists with inflammatory disease, ferritin may be spuriously normal as it is an acute phase protein.  
  • If neither of the above, consider haemoglobinopathy (e.g., thalassemia) and request haemoglobinopathy screen. |
| Normocytic anaemia (MCV 80 to 100 fL) | Consider recent haemolysis (check reticulocyte count), haemorrhage, renal failure, liver disease, thyroid or other endocrine abnormality, anaemia of chronic inflammation or bone marrow pathology e.g., paraproteinaemias and secondary cancers. |
| Macrocytic anaemia (MCV > 100 fL) | • Consider alcohol excess, folate or B12 deficiency, thyroid deficiency, and medications e.g., hydroxyurea.  
  • If none of the above, consider bone marrow pathology including myelodysplasia, leukaemia and secondary cancers (consider referral to haematology). |

6. **Interpret investigation results.** Conflicting results may occur when iron deficiency is associated with an inflammatory response and ferritin may be normal.

7. **If initial results or clinical information are insufficient to determine the cause, consider further investigations.**

**Further investigations**

- Colonoscopy
- Gastroscopy
- Serum for electrophoresis (EPG), immunofixation electrophoresis (IFE), and serum-free light chains (SFLC)
- Direct antiglobulin (Coombs) test (DAT)
- LDH
- Haptoglobin
- Serology (for chronic infection or coeliac disease)
- Rheumatoid factor
- Anti-CCP
- Helicobacter breath test
- Pelvic ultrasound
- Urinary tract imaging
- Abdominal CT scan
- Any other as indicated
Management

Most anaemia will be managed in general practice.

1. If severe symptomatic anaemia and the patient:
   • is haemodynamically unstable, refer to the local emergency department.
   • has weight loss, fevers, bone pain, and night sweats, consider early referral to a haematologist to exclude bone marrow malignancies.
   • stable, consult with the appropriate clinic or specialty related to the cause.

2. Arrange urgent or routine haematology referral if anaemia is associated with any of:
   • blood film or other findings indicative of haematological disease, e.g., leukaemia, myelodysplasia, myeloma.
   • abnormalities of other blood cell lines, e.g. thrombocytopenia and neutropenia will require close monitoring and consideration of referral.
   • suggested haemolysis, e.g. reticulocytosis, hyperbilirubinaemia, elevated LDH, absent haptoglobin, or positive direct antiglobulin test.

3. If asymptomatic or symptoms are mild, identify and treat the underlying cause.
   **Underlying cause**
   • If anaemia is associated with gynaecological problems that cannot be managed in general practice, request urgent or routine gynaecology assessment.
   • Anaemia associated with suspected gastrointestinal loss should be investigated as appropriate including consideration of:
     - faecal occult blood test x3
     - proctoscopy
     - pill cam
     - CT abdomen/pelvis
     - H. pylori – urease breath test
     - endoscopy/colonoscopy.
   • After investigations as described, urgent or routine general surgery assessment or urgent or routine gastroenterology assessment referral may be appropriate.
   • If the patient requires long-term NSAIDs, consider adding PPI or H2-receptor blockers, anaemia in this setting requires investigation as for suspected gastrointestinal loss.
   • If menorrhagia, manage as per Heavy Menstrual Bleeding.
   • If overt non-gastrointestinal blood loss (e.g., haematuria, haemoptysis, recurrent epistaxis), manage as clinically appropriate.
   • If dietary cause of iron, folate, or B12 deficiency, work with the patient to modify their diet and consider dietitian assessment.

4. If the patient is scheduled for surgery, notify the surgeon of the anaemia to determine the appropriate course of action, including correction of anaemia and management of the underlying cause, which may require a delay or rescheduling of the surgery.

5. If no cause is identified through testing, it may be appropriate to monitor clinically with FBE and other investigations as indicated. Seek haematology advice.
Referral

- If signs of severe symptomatic anaemia with haemodynamic instability, arrange admission to the emergency department.
- If severe symptomatic anaemia and patient has weight loss, fevers, bone pain, and night sweats, consider early referral to a haematologist to exclude bone marrow malignancies.
- Arrange urgent or routine haematology referral if anaemia is associated with any of:
  - blood film or other findings indicative of haematological disease, e.g., leukaemia, myelodysplasia, myeloma.
  - abnormalities of other blood cell lines, e.g. thrombocytopenia and neutropenia.
  - suggested haemolysis, e.g. reticulocytosis, hyperbilirubinaemia, elevated LDH, absent haptoglobin, or positive direct antiglobulin test.
- If anaemia is associated with gynaecological problems that cannot be managed in general practice, request urgent or routine gynaecology assessment.
- If suspected gastrointestinal blood loss or patient requires long-term NSAIDs, consider referral for urgent or routine general surgery assessment or urgent or routine gastroenterology assessment after careful investigation as described in assessment.
- If underlying dietary cause, e.g. iron, folate, or B12 deficiency, consider dietitian assessment.
- If no cause is identified through testing, seek haematology advice.

Information

For health professionals

Further information

- Australian Commission on Safety and Quality in Health Care – Resources for Improved Patient Blood Management
- Australian Red Cross Blood Service:
  - Anaemia and Haemostasis Overview
  - Iron Deficiency Anaemia Overview
  - Patient Blood Management Guidelines
- RACGP – Patient Blood Management: The GP’s Guide

For patients

- Australian Red Cross Blood Service:
  - I Need to Know About Sickle Cell
  - I Need to Know About Thalassaemia
- Better Health Channel – Anaemia
- Patient – Anaemia

Disclaimer

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