Anaemia

Resident with anaemia (see *Definition of, and when to suspect, anaemia* - practice point 1)

1. Assess resident in room, in position of comfort
2. Check vital signs - review *Recognition of the deteriorating resident*
3. If systolic blood pressure < 90mmHG or significantly lower than usual for resident, assist resident to lie down if tolerated
4. If not immediately life-threatening review *Checklist for contact* and ring GP

UNSTABLE VITALS → Review documented resident choices (Advance Health Directive, Advance Care Plan or Acute Resuscitation Plan) and refer to *Management of resident with unstable vital signs pathway*

STABLE VITALS

With GP assess resident for *red flags* (see practice point 2) and perform *history and examination* (see practice point 3)

RED FLAGS PRESENT → Review documented resident choices (Advance Health Directive, Advance Care Plan or Acute Resuscitation Plan) and refer to *Management of resident with unstable vital signs pathway*

RED FLAGS DEVELOP → Review documented resident choices (Advance Health Directive, Advance Care Plan or Acute Resuscitation Plan) and refer to *Management of resident with unstable vital signs pathway*

NO RED FLAGS

Perform full blood count, electrolytes, renal and liver function tests. See *Interpretation of laboratory investigations* (practice point 4); institute falls risk management plan, refer to dietitian if indicated

IRON DEFICIENCY ANAEMIA

1. **Commence trial of oral iron** at 100 to 210 mg elemental iron daily e.g. ferro-tab contains ferrous fumarate 200 mg - this is 65.7 mg elemental iron - deliver as one table twice or three times daily to achieve required dose of elemental iron
2. **Review medications and where clinically appropriate cease:**
   - Medications that reduce iron absorption e.g. calcium supplements, antacids, proton pump inhibitors, H2-receptor antagonists
   - Medications that are associated with risk of GI bleed: NSAIDS, glucocorticoids, anticoagulants
3. **Undertake advance care planning discussion with resident and / or their substitute health decision maker** to determine goals of care and discuss risks / benefits of further investigation - where goals of care are active or resident wishes to pursue further investigation, refer to gastroenterologist for consideration of endoscopy / colonoscopy
4. **Monitor response to treatment** - monitor vital signs regularly and repeat full blood count at intervals; expect haemoglobin to rise within ~ 3 to 4 weeks by 20 g/L - if no response is observed:
   - Revisit diagnosis - where typical laboratory findings of iron deficiency are not present, consider anaemia of chronic disease AND
   - Review medications / compliance with oral iron AND
   - Review for ongoing occult blood loss

ONGOING SYMPTOMATIC ANAEMIA

1. Refer to *HHS RaSS* at GP discretion
2. Monitor for development of *red flags* (see practice point 2) in interim to review

ANAEMIA DUE TO OTHER CAUSE

1. Where iron deficiency anaemia is not identified, where clinically appropriate undertake further investigations to identify the cause
2. Treat as appropriate to the cause identified and in a manner consistent with resident goals of care

ONGOING SYMPTOMATIC ANAEMIA → Refer to *HHS RaSS* at GP discretion; Monitor for development of *red flags* (see practice point 2) in interim to review

Anaemia practice points

1) Definition of, and when to suspect, anaemia

Anaemia is a risk factor for increased falls, frailty, decreased cognition, hospitalisation, morbidity and mortality.

Anaemia is defined by the World Health Organisation as:

A haemoglobin of less than 120 g per L in women and less than 130 g per L in men

Consider anaemia in residents who have:

- Pallor
- Fatigue
- Dyspnoea or shortness of breath
- Headache
- Restless leg syndrome
- Symptoms of blood loss e.g. rectal bleeding
- Worsening or new onset angina
- Diffuse alopecia or hair loss
- Tachycardia
- Syncope

2) Assessment of resident with anaemia: red flags

Red flags in anaemic residents need to be considered in the context of the residents life trajectory and expressed choices.

Red flags include:

1. **Severe anaemia < 70 g / L** in symptomatic resident
2. Potentially life-threatening complications of anaemia:
   - Haemodynamic compromise: hypotension, pallor, cold clammy skin, tachycardia, dyspnoea
   - Secondary angina (chest pain) or heart failure
   - Acute confusion or altered level of consciousness
   - Syncope or pre-syncope
3. **Persistent or severe abdominal or back pain**
4. **Acute bleeding, particularly in those on oral anticoagulants or anti-platelet agents**
   - GI bleeding may present with any of:haematemesis (vomiting of blood) OR rectal bleeding OR melaena (black, tarry stools) OR severe back or abdominal pain (abdominal aortic aneurysm)
   - Epistaxis unresponsive to digital pressure on the nose cartilage for 10 minutes or posterior nasal bleeding or haemoptysis
   - Macroscopic haematuria or vaginal bleeding
   - Traumatic bleeding

3) Assessment of resident with anaemia: history and examination

1. **Symptoms of**
   - Anaemia (see *Definition of, and when to suspect, anaemia* - practice point 1)
   - Underlying cause:
     - Bleeding: Gastrointestinal, ENT, vaginal or traumatic bleeding or haematuria, severe abdominal / back pain
     - Underlying coagulation disorder: Excessive bruising
     - Haemolysis: Jaundice and dark urine
     - Haematological malignancy: Night sweats or weight loss
     - Chronic diseases that may be associated with anaemia of chronic disease
     - Recurrent infections: Pancytopenia
2. **Dietary history including alcohol intake**
3. **Medications or supplements that:**
   - Cause haemolysis e.g. penicillin, levodopa, cephalosporins, NSAIDs, clopidogrel
   - Increase bleeding risk e.g. anticoagulants, antiplatelet agents, NSAIDs, corticosteroids, bisphosphonates, ginkgo
   - Affect folate levels or metabolism e.g. alcohol, phenytoin, methotrexate, trimethoprim-sulfamethoxazole
   - Decrease B12 absorption e.g. metformin, colchicine, proton pump inhibitors, histamine blockers
   - Supress the bone marrow e.g. azathioprine, methotrexate, hydroxyurea

**Assessment of resident with anaemia: history and examination continues on the next page

Anaemia practice points

3) Assessment of resident with anaemia: history and examination (cont'd)

4. **Examination findings:**
   - Haemodynamic instability
   - Conjunctival pallor
   - Clinical signs or heart failure
   - Iron deficiency: koilonychia (spoon-shaped nails), angular cheilitis (inflammation of corners of mouth), glossitis (inflamed tongue) and diffuse alopecia (thinning hair), clinical evidence of bleeding, abdominal masses
   - Haemolysis: jaundice, enlarged spleen
   - Underlying malignancy or aplastic anaemia: abnormal bruising, petechiae , lymphadenopathy, enlarged spleen pancytopenia or coagulopathy: petechiae, bruising, spontaneous bleeding e.g. epistaxis, haematuria

4) Interpretation of laboratory investigations in residents with anaemia

Reticulocyte count	Mean corpuscular volume (MCV)*	Cause	Prevalence	Peripheral smear	Other
High (> 2 per cent)	Normal or elevated	**Post-haemorrhage**	5 to 10 per cent	Polychromasia due to increased reticulocyte count	Iron studies initially normal in acute haemorrhage
		Haemolysis	Uncommon	Spherocytes, fragments of blood cells	Iron studies normal in acute haemolysis; may be reflective of iron deficiency in chronic haemolysis; haemoglobinuria; elevated bilirubin, lactate dehydrogenase (LDH) and reduced haptoglobin
Normal or low (< 2 per cent)	Low (MCV < 80fL)	**Iron deficiency**	15 to 30 per cent	Pencil cells; tear drop cells in severe iron deficiency	Serum iron low, total iron binding capacity high, ferritin low; haemoglobin normalises with trial of iron replacement
	Normal or low	**Anaemia of chronic disease**	30 to 45 per cent	Burr cells in uraemia; Spur cells in liver disease / renal failure	Evidence of renal impairment, liver or hypothyroidism, elevated inflammatory markers, iron studies may show low iron, low total iron binding capacity and ferritin > 100microg/L)
	High (MCV > 100fL)	**Vitamin B12 and / or folate deficiency**	5 to 10 per cent	Oval macrocytes, hyper-segmented neutrophils; if severe:teardrop poikilocytes and red cell fragments	B12 / red cell folate levels low
		Myelo-dysplastic syndrome	5 per cent	Tear drop cells; oval macrocytosis; hypogranular or hypolobulated neutrophils; blast cells; giant or hypogranular platelets, Pappenheimer bodies, presence of a minor population of hypochromic microcytic cells = dimorphic smear	Cytopenias

Anaemia references

1. Goodnough LT, Schrier SL. Evaluation and management of anemia in the elderly. Am J Hematol. 2014;89(1):88-96.
2. World Health Organization. Indicators and Strategies for Iron Deficiency and Anemia Programmes. Report of the WHO/UNICEF/UNU Consultation. Geneva, Switzerland, 1993.
3. Abid SA, Gravenstein S, Nanda A. Anemia in the Long-Term Care Setting. Clin Geriatr Med. 2019;35(3):381-9.
4. Joosten E. Strategies for the laboratory diagnosis of some common causes of anaemia in elderly patients. Gerontology. 2004;50(2):49-56.
5. Gastrointestinal Expert Groups, Therapeutic Guidelines: Gastrointestinal Melbourne: Therapeutic Guidelines limited; 2016.
6. Smith DL. Anemia in the elderly. Am Fam Physician. 2000;62(7):1565-72.
7. Bain BJ. Diagnosis from the blood smear. N Engl J Med. 2005;353(5):498-507.

Anaemia version control

Pathway	Anaemia				
Document ID	CEQ-HIU-FRAIL-60004	**Version no.**	1.0.0	**Approval date**	16/03/2022
Executive sponsor	Executive Director, Healthcare Improvement Unit				
Author	Improving the quality and choice of care setting for residents of aged care facilities with acute healthcare needs steering committee				
Custodian	Queensland Dementia Ageing and Frailty Network				
Supersedes	New				
Applicable to	Residential aged care facility (RACF) registered nurses and general practitioners in Queensland serviced by a RACF acute care Support Service (RaSS)				
Document source	Internal (QHEPS) and external				
Authorisation	Executive Director, Healthcare Improvement Unit				
Keywords	Anaemia, Iron deficiency				
Relevant standards	Aged Care Quality Standards Standard 2: ongoing assessments and planning with consumers Standard 3: personal care and clinical care, particularly 3(3) Standard 8: organisational governance				