2022 RACGP curriculum and syllabus for Australian general practice

Haematological presentations

Rationale

Instructions

This section provides a summary of the area of practice for this unit and highlights the importance of this topic to general practice and the role of the GP.

General practitioners (GPs) have an essential role in the diagnosis and ongoing care of patients with acute, chronic and progressive haematological conditions. Full blood count and blood chemistry are some of the most common pathology tests ordered in general practice and venesection is a common office-based procedure.[1] When combined with history-taking and examination, these investigations are vital to identifying underlying blood disorders.[2-4]

Blood and metabolic disorders contribute 1.3% of the total burden of disease and 4.1% of health expenditure in Australia.[5] Of these, anaemia is a major contributing factor, affecting almost half a million people;[6] in contrast, hereditary haemochromatosis (HHC) affects an estimated one in 250 individuals of northern European backgrounds.[7] Haematological malignancies account for approximately 11% of all cancers.[8]

One of the most common haematological presentations in general practice is iron deficiency anaemia. Causes of iron deficiency range from menorrhagia to worm infestation to nutritional deficiency. Iron deficiency is also implicated in other medical conditions like restless legs and heart failure. GPs play an important role in evaluating and managing iron deficiency. It can develop silently with non-specific symptoms[9] and is often not the primary reason for a patient's presentation. Approximately 9% of hospitalisations for potentially preventable conditions are related to iron deficiency anaemia.[6] Anaemia is more common among Aboriginal and Torres Islander peoples when compared to non-Indigenous Australians,[10] especially anaemia related to nutritional deficiencies and chronic kidney disease.[11,12] Pre-operative anaemia is associated with adverse post-operative outcome.[13] Regular and scheduled health assessments and antenatal care provide an opportunity to identify patients at risk of anaemia, highlighting the importance of the relationship between the GP, patient, their family and the community.[14]

GPs also play an important role in diagnosing blood cancers based on a patient's symptoms and risk factors. The combination of hypercalcaemia, anaemia and kidney dysfunction, with or without bone pain, especially in elderly individuals, can indicate an underlying myeloma.[15] In young patients, recurrent non-specific symptoms like general constitutional symptoms with anaemia, increased susceptibility to infections and increased bleeding and bruising, should raise suspicion of an acute leukaemia.[9]

Bleeding and clotting disorders can be acquired or familial. They are often associated with comorbidities like systemic lupus erythematosus (SLE) or be secondary to other medical conditions like malignancies.[16] With increasing diversity in the Australian population, the incidence of inherited haemoglobinopathies like thalassaemia and sickle cell disease is likely to become more prevalent.[17] Thrombosis is a common presentation in general practice, making diagnosis and management an essential competency. Screening for an underlying coagulopathy or a prothrombotic state[7] according to clinical guidelines is also an important part of the GP's role.

References

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Competencies and learning outcomes

Instructions

This section lists the knowledge, skills and attitudes that are expected of a GP for this contextual unit. These are expressed as measurable learning outcomes, listed in the left column. These learning outcomes align to the core competency outcomes of the seven core units, which are listed in the column on the right.

Communication and the patient–doctor relationship	
Learning outcomes	Related core competency outcomes
The GP is able to:	

Communication and the patient–doctor relationship	
• communicate with patients and family members in a sensitive, empathic manner while disclosing possible blood disorders, including difficult diagnoses such as haematological malignancies	1.1.1, 1.1.2, 1.1.3, AH1.3.1, 1.3.1, 1.4.1
• use clear and effective communication to share information about blood disorders, taking into account the patient's level of understanding	1.1.6, 1.2.1, 1.2.2, 1.4.1, 1.4.2

Applied knowledge and skills	
Learning outcomes	Related core competency outcomes
The GP is able to:	
• use diagnostic haematology services alongside clinical presentations for investigating anaemia, iron storage and deficiency conditions	AH2.1.2, 2.1.3, 2.1.7, 2.1.9, 2.3.1, RH2.3.1
• interpret commonly requested pathology investigations such as full blood counts, blood and urine chemistry	2.1.6, 2.1.7, AH2.1.1
• identify significantly and acutely ill patients, including children, with a haematological disease like febrile neutropenia or acute leukaemia	2.1.3, AH2.1.2, 2.1.4, 2.1.8
• provide continuity of care in the management of genetic haematological conditions	2.3.1, 2.3.2, 2.3.4, AH2.3.2
• discuss the possibility of rare, or less common haematological conditions in undifferentiated or unusual investigation results	AH2.1.2, 2.2.1, 2.2.4, 2.2.8, 2.2.10, 2.3.4, RH2.3.1
• identify haematological effects of commonly prescribed medications, for example, aspirin and bleeding, combined oral contraceptives and thrombosis risk	2.1.3, 2.1.9

Population health and the context of general practice	
Learning outcomes	Related core competency outcomes
The GP is able to:	
• identify and screen at-risk populations for haematological conditions	3.1.1
• advocate for timely access to appropriate quality care for patients with acute, chronic or rare haematological and associated metabolic conditions	3.2.4

Professional and ethical role	
Learning outcomes	Related core competency outcomes
The GP is able to:	
• outline a professional development plan to maintain haematology-related procedural skills such as phlebotomy and iron infusion	4.1.1, 4.2.1, 4.2.2, RH4.2.3

Organisational and legal dimensions

Organisational and legal dimensions	
Learning outcomes	Related core competency outcomes
The GP is able to:	
• implement policies and procedures to ensure timely follow-up, recall for blood test results and monitoring of chronic conditions	5.1.3, AH5.1.3, AH5.2.1
• explain and document informed consent for transfusion of blood or blood-related products	5.2.2, 5.2.3

Case consultation example

Instructions

1. Read this example of a common case consultation for this unit in general practice.
2. Thinking about the case example, reflect on and answer the questions in the table below.

You can do this either on your own or with a study partner or supervisor.

The questions in the table below are ordered according to the RACGP clinical exam assessment areas (https://www.racgp.org.au/getmedia/f93428f5-c902-44f2-b98a-e56d9680e8ab/Clinical-Competency-Rubric.pdf.aspx) and domains, to prompt you to think about different aspects of the case example.

Note that these are examples only of questions that may be asked in your assessments.

Extension exercise: Create your own questions or develop a new case to further your learning.

15-year-old Lisa is brought in by her mother as she has been looking pale and feeling lethargic for the past three months.

Questions for you to consider	Clinical exam assessment area (https://www.racgp.org.au/getattachment/2f8f615f-4c4d-4e51-8c8c-935fb0e2ca10/Clinical-Competency-Rubric-2022.aspx)	Domains

Questions for you to consider	Clinical exam assessment area (https://www.racgp.org.au/getattachment/2f8f615f-4c4d-4e51-8c8c-935fb0e2ca10/Clinical-Competency-Rubric-2022.aspx)	Domains
What strategies would you use to communicate with a teenager who presents with a parent? If Lisa was an Aboriginal or Torres Strait Islander, how would you carry out the consultation? What if they were both recent immigrants who spoke little English? How would you sensitively obtain a menstrual and sexual history from Lisa?	1. Communication and consultation skills	1,2,5
What other information would you want to know to identify the possible cause of Lisa's pallor and lethargy? What examination would you do? What other information would you need to understand about how the symptoms are impacting Lisa? What dietary or family history would you like to know in relation to Lisa's symptoms?	2. Clinical information gathering and interpretation	2
What preliminary investigations would you consider to confirm your provisional diagnosis? If you consider anaemia as your diagnosis, what would you consider and look for to identify the type of anaemia? Are there any other investigations you might consider if Lisa were a refugee? What if she were 70 years old, or 5 years old?	3. Making a diagnosis, decision making and reasoning	2
What factors would you consider when treating anaemia? How would you manage the underlying causes of these symptoms? To manage anaemia, what guidelines or protocols would you refer to?	4. Clinical management and therapeutic reasoning	2
What strategies would you use to prevent dietary-induced anaemia? If Lisa was of Mediterranean descent, would you consider any additional screening for her and her family? If Lisa lived in a remote community, how would you change your approach? If she was an Aboriginal or Torres Strait Islander, how would that change your approach?	5. Preventive and population health	1,2,3
How would you manage Lisa's confidentiality if her mother insisted on staying during the consultation?	6. Professionalism	4

Questions for you to consider	Clinical exam assessment area (https://www.racgp.org.au/getattachment/2f8f615f-4c4d-4e51-8c8c-935fb0e2ca10/Clinical-Competency-Rubric-2022.aspx)	Domains
How would you assess Lisa's capacity to consent for an iron infusion if this was needed? What would your approach be if the patient was a child who needed a transfusion of blood products, but the parents refused based on their beliefs?	7. General practice systems and regulatory requirement	5
What do you need to consider before planning for an iron infusion? How would you gain the skills to do a transfusion or an iron infusion? How would you manage and report an adverse reaction after an iron infusion?	8. Procedural skills	2
What factors would you consider while managing an asymptomatic patient with a haemoglobin level (Hb) of 80g/l?	9. Managing uncertainty	2
How would you manage a symptomatic patient with an Hb of 6? With an Hb of 10? Is there any other information apart from the Hb level that might change your management? If Lisa was diagnosed with acute leukaemia and lived in a remote location, how would that change your management approach?	10. Identifying and managing the significantly ill patient	2

Words of wisdom

Instructions

This section includes tips related to this unit from experienced GPs. This list is in no way exhaustive but gives you tips to consider applying to your practice.

Extension exercise: Speak to your study group or colleagues to see if they have further tips to add to the list.

1. Many incidental haematological findings may have a significant underlying blood disorder like persistent lymphocytosis (chronic leukaemias) or very high ESR with increased globulins (plasma cell disorders like smouldering myeloma or monoclonal gammopathy of undetermined significance [MGUS]).
2. It's advisable to document in a patient's record any asymptomatic haematological findings, such as inherited haemoglobinopathy, to decrease their risk of an adverse outcome if, for example, they require a blood transfusion.
3. Become familiar with guidelines for withholding a patient's antiplatelet and anticoagulant medications when they have elective surgery.
4. Become familiar with patient blood management guidelines and protocols when working in rural or remote locations.
5. Be prepared to deal with anaphylaxis during a routine iron infusion.
6. A normal ferritin level doesn't rule out an iron deficiency anaemia, as it is an acute phase protein elevated in an infection, inflammation or malignancy.
7. In iron deficiency anaemia without an obvious cause in patients over the age of 50, consider gastrointestinal malignancy.

Learning strategies

Instructions

This section has some suggestions for how you can learn this unit. These learning suggestions will help you apply your knowledge to your clinical practice and build your skills and confidence in all of the broader competencies required of a GP.

There are suggestions for activities to do:

- on your own
- with a supervisor or other colleague
- in a small group
- with a non-medical person, such as a friend or family member.

Within each learning strategy is a hint about how to self-evaluate your learning in this core unit.

On your own

From your patient database, identify three patients with haemochromatosis who you have managed in the past 12 months. Check the local hospital recommendations or Therapeutic Guidelines (https://www.tg.org.au) for management of haemochromatosis. Consider your practice against the guidelines.

- *What did you do well? What could you improve?*
- *Was there anything you were uncertain about, and how did you manage that (eg a patient who doesn't want venesection but it is indicated by guidelines)?*

From your patient database, identify three of your patients who required any surgical procedure while being on oral anticoagulants. Review guidelines on how to manage anticoagulation during the peri-operative period. Consider your practice against the guidelines.

- *How did you manage the situation? How did you manage uncertainty? What resources did you use to manage the situation?*
- *Did you find any gaps in your knowledge? How do you plan to apply the principles you learnt in future?*

With a supervisor

Have a case-based discussion with your supervisor about a recent patient who had a large volume haematemesis.

- *How would you manage a patient with high volume bleeding? What if you were working in a remote community? How would you manage the situation if the patient was an Aboriginal or Torres Strait Islander?*
- *How would you manage an urgent hospital transfer if the patient had limited English?*
- *Ask your supervisor for feedback.*
- *Where did you do well, where could you have done better, and what resources will you use to fill any gaps in your knowledge?*

Role play the following clinical scenario with your supervisor. One of your patients, five-year-old Alan, has been diagnosed with acute leukaemia. His patients are anxiously waiting to see you about his diagnosis.

- *How would you explain Alan's diagnosis to his parents? How do you plan to support them?*
- *Would you do anything differently if the family was Aboriginal or Torres Island Strait Islander?*
- *If his parents don't agree with your suggestion to refer him to a haemato-oncologist, how would you manage this situation?*
- *Ask your supervisor for feedback. How would you handle a similar situation in the future?*

Present an education session to your supervisor on 'Investigating an abnormal white blood cell count in an asymptomatic patient'.

- *What resources would you use for the session? Where would you look for guidelines?*
- *What did you learn from this session? How will you implement your learning in your day-to-day practice?*

In a small group

Discuss the following scenario with your fellow learners: You identify an increased lymphocyte count from a patient's routine health check.

- *What are the factors you would consider for further evaluation of this abnormal result?*
- *If the patient is anxious, what strategies would you use to convey the results?*
- *How would you decide whether to refer the patient to a haematologist?*
- *Do a literature search for managing an incidental finding of isolated increased lymphocyte count and compare your practice against the recommended guidelines.*

Discuss the following scenario with a colleague. A young female patient presents with easy bruising and bleeding, even from minor injuries.

- *List the differential diagnoses for her easy bruising and the clinical clues for possible causes. How would you evaluate her in your practice?*
- *What resources would you use to learn more about bleeding disorders?*
- *Does your colleague have any other ideas? What have you learnt from this exercise that you will take into your clinical practice?*

Have a discussion in your group about a patient from a Mediterranean background with inherited haemoglobinopathy.

- *What resources would you refer to?*
- *If the patient wants to have a baby, what advice would you give? Would you involve any other family member in the discussion? Why?*
- *Would you do anything different in your clinical practice after your discussion?*

With a friend or family member

Explain iron deficiency in both children and adults to a friend or family member. Include the importance of iron for children's development, and how a diet of iron-rich foods can be used to treat iron deficiency.

- *What resources did you use to help you prepare?*
- *What practical suggestions did you have to help the parents increase iron in their child's diet? Were you surprised by the types of food which contain high levels of iron?*
- *Ask your friend or family member to explain back to you how diet can be used to treat iron deficiency. Did they find your explanation easy to understand?*
- *What lessons did you learn that you could incorporate in your future practice?*

Ask a friend or family member what they know about leukaemia. Offer to explain the different types of leukaemia to them.

Guiding topics and content areas

Instructions

These are examples of topic areas for this unit that can be used to help guide your study.

Note that this is not a complete or exhaustive list, but rather a starting point for your learning.

- Interpret and further evaluate common haematologic investigations:
  - low and high haemoglobin levels
  - leucocytosis with neutrophilia
  - leucocytosis with lymphocytosis
  - isolated thrombocytopenia
  - high ESR
  - high ferritin with high transferrin saturation
  - low ferritin with low iron levels and low transferrin saturation
  - deranged liver function tests with high ferritin levels
  - raised protein levels with reversal of albumin globulin ratio
  - thrombocytopenia in an adult and a child
  - macrocytosis
  - haematological abnormalities in different infectious diseases like Epstein–Barr virus (EBV), acute human immunodeficiency virus (HIV).
- Obtain a detailed history and perform a focused clinical examination of different types of anaemia:
  - iron deficiency and other hypoproliferative anaemias, as occur in acute and chronic inflammation, chronic kidney disease
  - inherited haemoglobinopathies, such as thalassaemia
  - megaloblastic anaemias, such as B12 and folate deficiencies
  - haemolytic anaemias caused by common drugs, such as cephalosporins and non-steroidal anti-inflammatories
  - blood loss due to gastrointestinal disorders, such as angiodysplasias
  - blood loss related to menstrual disorders.
- Generate differential diagnoses for anaemia in a child by gathering information through a focused history and examination, which might include:
  - nutritional deficiencies, such as iron, B12 and folate deficiency
  - parasitic infections, such as hookworm infestation
  - inherited haemoglobinopathies, such as thalassaemia and sickle cell disease
  - G6PD deficiency.
- Evaluate a patient with recurrent fever who may have an undiagnosed malignancy, such as acute leukaemia.
- Evaluate and manage a patient with lymphadenopathy, with or without splenomegaly.

- Evaluate and manage a patient with polycythaemia.
- Evaluate and manage idiopathic thrombocytopenic purpura (ITP) in children and adults.
- Investigate a patient presenting with polycythaemia for primary causes, such as polycythaemia rubra or secondary to conditions, such as smoking or exogenous testosterone administration.
- Investigate an individual who presents with abnormal blood counts for asymptomatic myeloproliferative disorders, such as chronic leukaemias and lymphomas.
- Identify, evaluate and manage a patient with haemochromatosis, including performing a venesection.
- Manage a patient with iron deficiency refractory to oral iron therapy with iron infusion.
- Identify, evaluate and manage plasma cell disorders in an asymptomatic adult who presents with an elevated ESR and raised serum protein and globulin during a routine blood investigation:
    - multiple myeloma
    - monoclonal gammopathy of undetermined significance (MGUS).
- Identify common haematological presentations in high-risk populations, including:
    - anaemia in Aboriginal and Torres Strait Islander peoples
    - haemoglobinopathies in certain immigrant populations; for example, individuals from South-East Asian, Middle Eastern and Mediterranean regions
    - nutritional deficiency-related anaemias in refugee populations
    - pregnancy.
- Generate an immunisation plan for an individual presenting with functional asplenia or splenectomy.
- Manage a patient presenting with an episode of unprovoked thrombosis such as deep vein thrombosis and investigate appropriately where the cause is unclear.
- Prepare a list of common drug interactions from a haematological perspective; for example, warfarin with paracetamol.
- Evaluate and manage a patient receiving chemotherapy and presenting with febrile neutropenia.

Learning resources

Instructions

The following list of resources is provided as a starting point to help guide your learning only and is not an exhaustive list of all resources. It is your responsibility as an independent learner to identify further resources suited to your learning needs, and to ensure that you refer to the most up-to-date guidelines on a particular topic area, noting that any assessments will utilise current guidelines.

Journal articles

How to evaluate thrombocytopenia when ordering routine blood tests.

- Sharma S. Incidentally detected thrombocytopenia (http://www.racgp.org.au/afp/2014/october/incidentally-detected-thrombocytopaenia-in-adults). Aust Fam Physician 2014;43(10):700–04.

A practical tool to help perform intravenous iron replacement in general practice.

- Naim M, Hunter J. Intravenous iron replacement: Management in general practice (http://www.racgp.org.au/download/documents/AFP/2010/November/201011naim.pdf). Aust Fam Physician 2010; 39(11): 839–41.

Practical information on managing anti-coagulation/antiplatelet agents when patients undergo an elective surgical procedure.

- Rahman A, Latona J. New oral anticoagulants and perioperative management of anticoagulant/antiplatelet agents (http://www.racgp.org.au/afp/2014/december/new-oral-anticoagulants-and-perioperative-management-of-anticoagulantantiplatelet-agents). Aust Fam Physician 2014;43(12):861–66.

Updated management guidelines for multiple myeloma.

- Tomlinson R. Multiple myeloma: Updated approach to management in 2018 (https://www1.racgp.org.au/ajgp/2018/august/multiple-myeloma). Aust J Gen Pract 2018;47(8):526–29.

Textbooks

A practical approach to anaemia.

- Murtagh J, Rosenblatt J, Coleman J, Murtagh C, editors. John Murtagh's General Practice, 7th edn. Sydney: McGraw Hill, 2018. (Available from the RACGP Library.)

A comprehensive guide to interpretation of common haematological investigations.

- Sonic Edu. Sonic Pathology Handbook (https://www.soniceducation.com.au/clinical-resources/sonic-edu/). (Free to register with a GP provider number.)

Online resources

A reference guide for common clinical problems like leukaemia and common pathology tests such as Factor V Leiden mutation.

- Royal College of Pathologists of Australasia (https://www.rcpa.edu.au/Manuals/RCPA-Manual/Clinical-Problems).

A practice approach to anaemia in children.

- Royal Children's Hospital, Melbourne. Clinical Practice Guidelines: Anaemia in children (http://www.rch.org.au/clinicalguide/guideline_index/Anaemia).

An overview of bleeding disorders in Australia.

- National Blood Authority Australia. Australian Bleeding Disorders Registry: Annual report 2018-19 (http://www.blood.gov.au/system/files/ABDR-Annual-Report-2018-19-FINAL.pdf).

A comprehensive resource for transfusion practice and blood management guidelines.

- BloodSafe: elearning Australia. Practice Guidelines (https://bloodsafelearning.org.au/resource-centre/other-resources/practice-guidelines).

A helpful resource for day-to-day interpretation of inflammatory markers results.

- The Royal College of Pathologists of Australasia. Making sense of inflammatory markers (https://www.rcpa.edu.au/getattachment/13421292-28ae-4a1d-bdb4-3c91c073d7f2/Making-Sense-of-Inflammatory-Markers.aspx).

Information on evaluating a patient with abnormal blood counts.

- The Royal College of Pathologists of Australasia. Abnormal full blood count in an asymptomatic patient (https://www.rcpa.edu.au/getattachment/fcf0229a-e129-4281-a95a-40edc8f2e4be/Abnormal-full-blood-count-in-the-asymptomatic-pati.aspx).

Learning activities

eLearning activities on haematological presentations.

- The Royal Australian College of General Practitioners. *gplearning* (http://www.racgp.org.au/education/professional-development/online-learning/gplearning):
  - AJGP Clinical Challenge – Sep 2021: Haematology and biochemistry.
  - check, unit 563, August 2019: Blood disorders.

This contextual unit relates to the other unit/s of:

- Cardiovascular health (https://www.racgp.org.au/curriculum-and-syllabus/units/cardiovascular-health)
- Child and youth health (https://www.racgp.org.au/curriculum-and-syllabus/units/child-and-youth-health)
- Emergency medicine (https://www.racgp.org.au/curriculum-and-syllabus/units/emergency-medicine)
- Endocrine and metabolic health (https://www.racgp.org.au/curriculum-and-syllabus/units/metabolic-and-endocrine-health)
- Gastrointestinal health (https://www.racgp.org.au/curriculum-and-syllabus/units/gastrointestinal-health)
- Infectious diseases (https://www.racgp.org.au/curriculum-and-syllabus/units/infectious-diseases)
- Kidney and urinary health (https://www.racgp.org.au/curriculum-and-syllabus/units/kidney-and-urinary-health)
- Pregnancy and reproductive health (https://www.racgp.org.au/curriculum-and-syllabus/units/pregnancy-and-reproductive-health)
- Sexual health and gender diversity (https://www.racgp.org.au/curriculum-and-syllabus/units/sexual-health-and-gender-diversity)
- Women's health (https://www.racgp.org.au/curriculum-and-syllabus/units/womens-health)
