Health Services Programs
Outpatient Redesign Project

Haematology Adult
Clinical Prioritisation Criteria (CPC)
Outpatient Referral Criteria

Version: 1.0

Approval date: DD/MM/20YY

Last edited: 20/05/2024

Contents

Summary

This document contains the Clinical Prioritisation Criteria (CPC) for most frequently referred Adult Haematology conditions.

Haematology (adult) conditions

Please note this is not an exhaustive list of all conditions for outpatient services and does not exclude consideration for referral unless specifically stipulated in the exclusions section.

- Acute Leukaemia
- Anaemia
- Bleeding Disorders
- Haemoglobinopathy or Red Cell Disorders
- Leucocytosis and Lymphocytosis
- Lymphadenopathy
- Macrocytosis
- Neutropenia
- Pancytopenia / Bicytopenia
- Paraproteinaemia
- Polycythaemia
- Thrombocytopenia
- Thrombocytosis
- Thrombosis Disorders

Out of scope

Not all conditions are covered by the CPC, as certain conditions may be considered out of scope or managed by other specialist services:

- Splenomegaly – CPC not created
- Iron deficiency
    - Iron Deficiency with or without Anaemia - Adult CPC (gastroenterology)
- Thalassemia minor – refer to the Haematology molecular multidisciplinary meeting team at the Royal Adelaide Hospital via Health.CALHNCancerHaematologyReferrals@sa.gov.au. The aim of this is to clarify antenatal risk assessment or clarify diagnosis

Exclusions for public specialist outpatient services

Not all conditions are appropriate for referral into the South Australian public health system. The following are not routinely provided in a public specialist outpatient service:

- Hyperferritinaemia
    - Elevated Serum Ferritin - what should GPs know?
    - British Society for Haematology - Investigation and management of a raised serum ferritin
- Uncomplicated Haemochromatosis
    - Guidelines and referral for therapeutic venesection are found at Australian Red Cross Lifeblood - Ferritin

Emergency information

See the individual condition pages for more specific emergency information.

Feedback

We welcome your feedback on the Clinical Prioritisation Criteria and website, please email us any suggestions for improvement at Health.CPC@sa.gov.au.

Review

The Haematology (adult) CPC is due for review in July 2026.

Evidence statement

See Haematology (adult) evidence statement (evidence statement to be linked here).

This document is for consultation only.

Acute Leukaemia

Referral to emergency

If any of the following are present or suspected, please refer the patient to the emergency department (via ambulance if necessary) or seek emergent medical advice if in a remote region.

All cases of acute leukaemia are a haematological emergency and should be immediately discussed with the duty haematologist and considered for admission to hospital either directly or via the emergency department.

Contacts for clinical advice

For clinical advice and guidance in relation to referral pathways, please contact the duty haematologist via the relevant metropolitan Local Health Network switchboard and ask to speak to the relevant specialty service.

Please contact the duty or on call haematologist via switchboard so the referral may be expedited, and the patient reviewed as soon as possible.

Central Adelaide Local Health Network

- Royal Adelaide Hospital (08) 7074 0000

Northern Adelaide Local Health Network

- Lyell McEwin Hospital (08) 8182 9000

Southern Adelaide Local Health Network

- Flinders Medical Centre (08) 8204 5511

Triage categories

Category 1 (appointment clinically indicated within 30 days)

- suspected diagnosis of any possible acute leukaemia
    - All cases of acute leukaemia are a haematological emergency and should be immediately discussed with the duty haematologist and considered for admission to hospital either directly or via the emergency department.

Category 2 (appointment clinically indicated within 90 days)

- nil

Category 3 (appointment clinically indicated within 365 days)

- nil

Referral information

For information on referral forms and how to import them, please view general referral information.

Essential referral information

All cases of acute leukaemia are a haematological emergency and should be immediately discussed with the duty haematologist and considered for admission to hospital either directly or via the emergency department.

Clinical management advice and resources

Clinical management advice

Clinical resources

- Optimal Care Pathway - Acute myeloid leukaemia

- Optimal Care Pathway - Children, adolescents and young adults with acute leukaemia
- Aboriginal and Torres Strait Islander patients will need a culturally appropriate referral. To view the optimal care pathway for Aboriginal and Torres Strait Islander people and the corresponding quick reference guide, visit:
    - Optimal Care Pathway for Aboriginal and Torres Strait Islander people with cancer
    - Optimal care pathway for Aboriginal and Torres Strait Islander people with cancer - Quick Reference Guide

Consumer resources

nil

Key Words

leukaemia, acute leukaemia, haematology, outpatients

Anaemia

Referral to emergency

If any of the following are present or suspected, please refer the patient to the emergency department (via ambulance if necessary) or seek emergent medical advice if in a remote region.

- haemoglobin (Hb <80gm/L) with symptoms of:
    - angina,
    - hypercalcaemia,
    - evidence of haemolysis,
    - abnormal blood film (circulating blasts, leucoerythroblastic blood picture)

Contacts for clinical advice

For clinical advice, please telephone the relevant metropolitan Local Health Network switchboard and ask to speak to the relevant specialty service.

Central Adelaide Local Health Network

- Royal Adelaide Hospital (08) 7074 0000

Northern Adelaide Local Health Network

- Lyell McEwin Hospital (08) 8182 9000

Southern Adelaide Local Health Network

- Flinders Medical Centre (08) 8204 5511

Inclusions, exclusions and triage categories

Inclusions

- persistent unexplained anaemia (haemoglobin <80g/L) with no cause found and haematinic (iron, B12, folate) deficiency has been ruled out

Exclusions

- iron deficiency
- B12 deficiency
- folate deficiency

Triage categories

Category 1 (appointment clinically indicated within 30 days)

- anaemia (haemoglobin Hb >80) with:
    - neutropenia or thrombocytopenia
    - lymphadenopathy/splenomegaly
    - leucoerythroblastic blood picture on blood film examination
- unexplained persistent anaemia (Hb <80g/L) without red flags (such as circulating blasts, leucoerythroblastic blood picture)
- anaemia of any degree with evidence of haemolytic anaemia

Category 2 (appointment clinically indicated within 90 days)

- unexplained persistent Hb level of 80-100gm/L

Category 3 (appointment clinically indicated within 365 days)

- unexplained persistent Hb >100gm/L

Referral information

For information on referral forms and how to import them, please view general referral information.

Essential referral information

Completion required before first appointment to ensure patients are ready for care. Please indicate in the referral if the patient is unable to access mandatory tests or investigations as they incur a cost or are unavailable locally.

- identifies as Aboriginal and/or Torres Strait Islander
- relevant social history, including identifying if you feel your patient is from a vulnerable population and/or requires a third party to receive correspondence on their behalf.
- interpreter requirements
- detailed history
    - duration, symptoms, bleeding, diet history
- past medical history
- medication history including prior B12 or oral or intravenous iron therapy
- known or investigated causes of iron deficiency
    - bleeding or malabsorption
- blood results
    - complete blood examination (CBE)
    - blood film examination
    - liver function tests (LFTs)
    - electrolytes, urea, creatinine (EUC)
    - estimated glomerular filtration rate (eGFR)
    - lactate dehydrogenase (LDH)
    - iron studies
    - B12
    - folate
    - c-reactive protein (CRP)
    - reticulocyte count
    - direct antiglobulin test (DAT)
    - haptoglobin
    - serum protein electrophoresis
    - serum free light chains
- any endoscopy or coloscopy results

Additional information to assist triage categorisation

- parvovirus serology
- flow cytometry
- Antinuclear antibody (ANA) test

Clinical management advice and resources

Clinical management advice

Anaemia is defined as Hb < 135 g/L in an adult male and Hb < 125 g/L in an adult female. Causes of anaemia may be multifactorial including haematinic deficiencies, viral infections for example, parvovirus infection, bleeding disorders, anaemia of chronic disease, bone marrow disorders such as myelodysplasia, aplastic anaemia, multiple myeloma.

Iron deficiency should generally be referred to general medicine, gastroenterology, or gynaecology as appropriate for further investigation. Similarly, uncomplicated B12 / folate deficiency does not require routine referral to haematology (see macrocytosis guideline). See Gastroenterology Iron Deficiency with or without Anaemia - Adult CPC

Simple intravenous (IV) iron infusions often do not require a hospital admission. The following services can administer iron infusions in the community

- Sefton Park Intermediate Care
- Metropolitan Referral Unit (MRU)

Clinical resources

- SA Health - Iron deficiency resources for GPs
- SA Health - Anaemia management
- Australian Red Cross Lifeblood - Treating iron deficiency anaemia
- National Blood Authority Australia - iron product choice and dose calculation guide for adults
- SA Health - Drug and Therapeutics Information Services (DATIS)

Consumer resources

- Australian Red Cross Lifeblood – Patients
- SA Health - Iron deficiency and iron therapy

Key Words

Haematology, anaemia, haematinic deficiencies, haematological condition

Bleeding Disorders

Referral to emergency

If any of the following are present or suspected, please refer the patient to the emergency department (via ambulance if necessary) or seek emergent medical advice if in a remote region.

- Injury or bleeding in a person with a bleeding disorder (for example, haemarthrosis)
    - Please contact the duty haematologist via switchboard so the referral may be expedited, and the patient reviewed as soon as possible

Contacts for clinical advice

For clinical advice, please telephone the relevant metropolitan Local Health Network switchboard and ask to speak to the relevant specialty service.

Central Adelaide Local Health Network

- Royal Adelaide Hospital (08) 7074 0000

Northern Adelaide Local Health Network

- Lyell McEwin Hospital (08) 8182 9000

Southern Adelaide Local Health Network

- Flinders Medical Centre (08) 8204 5511

Inclusions, exclusions and triage categories

Inclusions

- a patient with a suspected bleeding disorder that requires the development of a primary care management plan. Urgency of review will be influenced by;
    - any planned surgical intervention
    - the severity of abnormal blood results

Exclusions

- advice regarding anticoagulation management can be sought from the duty haematologist but does not require a clinic review

Triage categories

Category 1 (appointment clinically indicated within 30 days)

- nil

Category 2 (appointment clinically indicated within 90 days)

- pregnant and suspected Von Willebrand Disease or other bleeding disorder
  a patient with a suspected bleeding disorder with
    - any planned surgical intervention
    - moderately to markedly abnormal blood results

Patients may be seen in less than 90 days depending on the clinical information provided

Category 3 (appointment clinically indicated within 365 days)

- any patient with a suspected bleeding disorder not meeting the above criteria. **Usually seen within 3-6 months.**

Referral information

For information on referral forms and how to import them, please view general referral information.

Essential referral information

Completion required before first appointment to ensure patients are ready for care. Please indicate in the referral if the patient is unable to access mandatory tests or investigations as they incur a cost or are unavailable locally.

- identifies as Aboriginal and/or Torres Strait Islander
- relevant social history, including identifying if you feel your patient is from a vulnerable population and/or requires a third party to receive correspondence on their behalf.
- interpreter requirements
- current medication list
- past medical history
- blood results
    - complete blood examination (CBE)
    - blood film examination
    - liver function tests (LFTs)
    - electrolytes, urea, creatinine (EUC)
    - estimated glomerular filtration rate (eGFR)
    - lactate dehydrogenase (LDH)
    - coagulation studies, including:
        - international normalised ratio (INR)
        - activated partial thromboplastin time (APTT)
        - fibrinogen
- if appropriate, Von Willebrand Disease screen OR coagulation assays appropriate to family history, for example factor assays for haemophilia
- history of bleeding diathesis
    - gum bleeding post brushing, menorrhagia, spontaneous haematomas, bleeding post-surgical intervention(including minor and major surgery), hemarthrosis, gastrointestinal and intracranial bleeding
    - bleeding requiring blood transfusion or inpatient hospital admission
- family history of miscarriage, thrombotic or bleeding disorders

Additional information to assist triage categorisation

- nil

Clinical management advice and resources

Clinical management advice

Any patient with a known bleeding disorder and active bleeding should be referred urgently to emergency.

Serious bleeding disorders, for example, haemophilia A and B, will be diagnosed in early life. Less serious disorders, for example, von Willebrand's disease (vWD), may present in adulthood (type 1 & 2). A form of vWD can be acquired later in life associated with autoimmune disease. Only type 3 vWD causes severe bleeding problems. Other inherited clotting factor deficiencies are very rare.

Treatment options in mild vWD include tranexamic acid and desmopressin.

Clinical resources

- Haemophilia Foundation Australia

Consumer resources

- Haemophilia Foundation Australia
- Australian Red Cross Lifeblood - Bleeding Disorders

Key Words

thrombosis, bleeding disorder, venous thromboembolism, haemophilia, von Willebrand Disease, haematology, haematological condition

Haemoglobinopathy or Red Cell Disorders

Referral to emergency

If any of the following are present or suspected, please refer the patient to the emergency department (via ambulance if necessary) or seek emergent medical advice if in a remote region.

- sickle cell crisis (symptoms including stroke symptoms or chest pain in someone with known sickle cell disease)

Contacts for clinical advice

For clinical advice, please telephone the relevant metropolitan Local Health Network switchboard and ask to speak to the relevant specialty service.

Central Adelaide Local Health Network

- Royal Adelaide Hospital (08) 7074 0000

Northern Adelaide Local Health Network

- Lyell McEwin Hospital (08) 8182 9000

Southern Adelaide Local Health Network

- Flinders Medical Centre (08) 8204 5511

Inclusions, exclusions and triage categories

Inclusions

- transfusion dependent thalassemia
- proportion of thalassemia intermedias
- sickle cell disease
- assessment of reproductive risk in carrier couples planning pregnancy is discussed in an SA Pathology MDT. Referrals to this MDT can be sent to Haematology. No clinic appointments will be made.

Exclusions

- asymptomatic carriers of sickle cell disease or thalassemia
- pregnant couples with screening bloods indicating a risk of thalassemia/haemoglobinopathy in the foetus
- family planning issues – please refer to Paediatric Reproductive Genetics Unit (PRGU) for genetic counselling

Triage categories

Category 1 (appointment clinically indicated within 30 days)

- nil

Category 2 (appointment clinically indicated within 90 days)

- sickle cell disease
- transfusion dependent confirmed thalassemia

Category 3 (appointment clinically indicated within 365 days)

- thalassemia intermedia

Referral information

For information on referral forms and how to import them, please view general referral information.

Pregnant couples with screening bloods indicating a risk of thalassemia/haemoglobinopathy in the foetus should be referred to the Haematology molecular multidisciplinary meeting team at the Royal Adelaide Hospital via Health.CALHNCancerHaematologyReferrals@sa.gov.au. The aim of this is to

clarify antenatal risk assessment or clarify diagnosis

Essential referral information

Completion required before first appointment to ensure patients are ready for care. Please indicate in the referral if the patient is unable to access mandatory tests or investigations as they incur a cost or are unavailable locally.

- identifies as Aboriginal and/or Torres Strait Islander
- relevant social history, including identifying if you feel your patient is from a vulnerable population and/or requires a third party to receive correspondence on their behalf interpreter requirements
- history
    - symptoms
- current medication list
- past medical history
- family history of a haemoglobinopathy or red cell disorders
- blood results:
    - complete blood examination (CBE)
    - blood film examination
    - liver function tests (LFTs)
    - electrolytes, urea, creatinine (EUC)
    - estimated glomerular filtration rate (eGFR)
    - iron studies
    - haemoglobin variant analysis
    - alpha thalassaemia genetic tests (where relevant)
    - Eosin-5-maleimide binding studies (where relevant for hereditary spherocytosis)
- if the patient is pregnant or planning pregnancy
    - please supply the above information, as well as laboratory results for **both partners** if there are concerns regarding pregnancy or family planning.

Additional information to assist triage categorisation

- nil

Clinical management advice and resources

Clinical management advice

nil

Clinical resources

- Royal Australian College of General Practitioners (RACGP) - Genomics in general practice: Haemoglobinopathies

Consumer resources

- nil

Key Words

sickle cell disease, thalassaemia, thalassemia intermedia, haemoglobinopathy, red cell disorders, haematology, haematological condition

Leucocytosis and Lymphocytosis

Referral to emergency

If any of the following are present or suspected, please refer the patient to the emergency department (via ambulance if necessary) or seek emergent medical advice if in a remote region.

- New suspected chronic myeloid leukaemia or leucocytosis (neutrophilia, eosinophilia, basophilia, monocytosis) with EITHER
    - WCC >100 x 10^9/L OR
    - symptoms of hyperviscosity (headaches, visual changes, acute thrombosis, unexplained dyspnoea).
- Lymphocytosis with blasts/immature cells on blood film examination

Please contact the duty haematologist via switchboard so the referral may be expedited, and the patient reviewed as soon as possible.

Contacts for clinical advice

For clinical advice, please telephone the relevant metropolitan Local Health Network switchboard and ask to speak to the relevant specialty service.

Central Adelaide Local Health Network

- Royal Adelaide Hospital (08) 7074 0000

Northern Adelaide Local Health Network

- Lyell McEwin Hospital (08) 8182 9000

Southern Adelaide Local Health Network

- Flinders Medical Centre (08) 8204 5511

Inclusions, exclusions and triage categories

Triage categories

Category 1 (appointment clinically indicated within 30 days)

- suspected chronic myeloid leukaemia.
    - please arrange for *BCR-ABL1* PCR via SA Pathology
- unexplained leucocytosis WCC > 50 x 10^9/l (for example neutrophilia, eosinophilia, monocytosis) in the absence of reactive or inflammatory conditions
- leucoerythroblastic blood film examination
- lymphocytosis in association with:
    - cytopenia's anaemia, neutropenia, or thrombocytopenia
    - constitutional symptoms such as unexplained weight loss >10%, night sweats or unexplained fevers, splenomegaly or progressive lymphadenopathy

Category 2 (appointment clinically indicated within 90 days)

- lymphocytosis >20 x 10^9/L
- rapidly rising lymphocyte count, doubling time <3months with WCC >50. **Usually seen within 6 weeks**

Category 3 (appointment clinically indicated within 365 days)

- asymptomatic persistent lymphocytosis >5 x 10^9 not fulfilling the above criteria
- persistent leucocytosis not meeting the above criteria in the absence of reactive or inflammatory conditions

Referral information

For information on referral forms and how to import them, please view general referral information.

Essential referral information

Completion required before first appointment to ensure patients are ready for care. Please indicate in the referral if the patient is unable to access mandatory tests or investigations as they incur a cost or are unavailable locally.

- identifies as Aboriginal and/or Torres Strait Islander
- relevant social history, including identifying if you feel your patient is from a vulnerable population and/or requires a third party to receive correspondence on their behalf.
- interpreter requirements
- current medication list
- past medical history
- blood results:
    - full blood examination (FBE)
    - blood film examination
    - liver function tests (LFTs)
    - electrolytes, urea, creatinine (EUC)
    - estimated glomerular filtration rate (eGFR)
    - lactate dehydrogenase (LDH)
    - c-reactive protein (CRP)
    - lymphocyte surface markers performed on peripheral blood (only for lymphocytosis)
    - serum immunoglobulin levels and direct antiglobulin rest (Coombs test)
- *BCR-ABL1* polymerase chain reaction (PCR) via SA Pathology laboratories for suspected chronic myeloid leukaemia
- any prior stool culture results for parasitic infections (if there is eosinophilia)
- history and assessment for 'reactive' causes for example smoking, infection, inflammation or neoplasm
- examination for lymphadenopathy, hepatosplenomegaly including careful palpitation of all lymph node areas, spleen and liver
- any prior imaging
- prior biopsy results

Additional information to assist triage categorisation

- antineutrophil Cytoplasmic Antibodies (ANCA)
- extractable nuclear antigen (ENA) test
- antinucelar antibody (ANA) test
- strongyloides serology

Clinical management advice and resources

Clinical management advice

Leucocytosis is defined as white cell count >11 x 10^9/L. The leucocytosis (neutrophilia or eosinophilia), may be reactive for example due to an allergy or parasitic infections or may indicate a primary bone marrow disorder such as chronic myeloma leukaemia, chronic eosinophilic leukaemia. It has a wide differential diagnosis ranging from normal response to infection through to haematological malignancies including acute leukaemia's. Detection of a leucocytosis should prompt scrutiny of the differential white cell count, other full blood count parameters and blood film examination.

Lymphocytosis is associated with lymphocyte counts > 4 x 10^9/L Lymphocytosis can be seen in reactive conditions such as acute viral infections, post splenectomy, smoking or lymphoproliferative conditions for example, monoclonal B lymphocytosis (MBL), chronic lymphocytic leukaemia. Chronic lymphocytosis is characteristic of chronic lymphocytic leukaemia (CLL), the incidence of which peaks between 60 and 80 years of age. In its early stages, this condition is frequently asymptomatic, with treatment only being required on significant progression.

Clinical resources

- Optimal Care Pathway Quick Reference Guide - Chronic myeloid leukaemia
- Optimal Care Pathway - Chronic myeloid leukaemia
- Optimal Care Pathway Quick Reference Guide - Chronic lymphocytic leukaemia
- Optimal Care Pathway - Chronic lymphocytic leukaemia
- Aboriginal and Torres Strait Islander patients will need a culturally appropriate referral. To view the optimal care pathway for Aboriginal and Torres Strait Islander people and the corresponding quick reference guide, visit:
    - Optimal Care Pathway for Aboriginal and Torres Strait Islander people with cancer
    - Optimal care pathway for Aboriginal and Torres Strait Islander people with cancer - Quick Reference Guide

Consumer resources

- Lymphoma Australia
- The Leukaemia Foundation
- Cancer Australia
- Beyond Blue
- Cancer Council's Cancer Information and Support Service

Key Words

leucocytosis, lymphocytosis, lymphoma, chronic myeloid leukaemia, CLL, haematology, haematological condition

Lymphadenopathy

Referral to emergency

If any of the following are present or suspected, please refer the patient to the emergency department (via ambulance if necessary) or seek emergent medical advice if in a remote region.

- suspected spinal cord compression, superior vena cava syndrome (SVC), high corrected calcium (>3.0mmol/L)

Contacts for clinical advice

For clinical advice, please telephone the relevant metropolitan Local Health Network switchboard and ask to speak to the relevant specialty service.

Central Adelaide Local Health Network

- Royal Adelaide Hospital (08) 7074 0000

Northern Adelaide Local Health Network

- Lyell McEwin Hospital (08) 8182 9000b

Southern Adelaide Local Health Network

- Flinders Medical Centre (08) 8204 5511

Inclusions, exclusions and triage categories

Triage categories

Category 1 (appointment clinically indicated within 30 days)

- If ANY of the following are present:
  - symptomatic lymphadenopathy
  - markedly elevated lactase dehydrogenase (LDH) (> 300U/L)
  - bulky disease (>3cm diameter of LN mass)
  - marked B symptoms:
    - presence of persistent high-grade fever (>38C), drenching night sweats, unexplained weight loss (>10% weight loss in 6 months) or new onset severe intractable pruritus
  - concurrent unexplained cytopenia's (for example, anaemia (haemoglobin < 105g/L), thrombocytopenia (platelets < 120)
  - extra nodal masses
  - clinical history of rapid growth

If in any doubt over whether to refer urgently or observe, discuss with the duty haematologist regarding the optimal timing and route for referral.

Category 2 (appointment clinically indicated within 90 days)

- patients who are clinically well with stable minor enlargement of LN (<2cm) persisting for > 6 weeks with no obvious infective precipitant
- If ALL the following are present. If the patient's situation changes, re-refer for urgent review.
  - asymptomatic or minimally symptomatic lymphadenopathy
  - normal FBC and stable creatinine and liver function
  - clinical history of slow growth
  - non bulky disease
  - clinically well (absence of the following –fevers, night sweats, weight loss or pruritus)

Category 3 (appointment clinically indicated within 365 days)

- minor borderline but persistent lymphadenopathy which is non-progressive with stable Chronic lymphocytic leukaemia (CLL) phenotype

Referral information

For information on referral forms and how to import them, please view general referral information.

Essential referral information

Completion required before first appointment to ensure patients are ready for care. Please indicate in the referral if the patient is unable to access mandatory tests or investigations as they incur a cost or are unavailable locally.

- identifies as Aboriginal and/or Torres Strait Islander
- identify within your referral if you feel your patient is from a vulnerable population and/or requires a third party to receive correspondence on their behalf
- interpreter requirements
- current medications and allergies
- past medical history
- detailed history of present signs and symptoms
    - duration of lymphadenopathy
    - weight loss
    - night sweats
    - fevers
    - pruritus +/- rash
- blood results:
    - full blood examination (FBE)
    - blood film examination
    - liver function tests (LFTs)
    - electrolytes, urea, creatinine (EUC)
    - estimated glomerular filtration rate (eGFR)
    - lactate dehydrogenase (LDH)
    - calcium
    - Serum electrophoresis (EPG)
- prior imaging, including CT staging scans of the neck, chest, abdomen and pelvis (with contrast)
- biopsy results confirming presence of a lymphoproliferative disorder
    - a core or excisional biopsy is required for the definitive diagnosis and histological subtyping of a lymphoproliferative disorder. If lymphoma is suspected, it is preferable to obtain 2 x 18G core biopsies (one core sent in formalin for histology and the second sent fresh for flow cytometry) A fine needle aspiration (FNA) should only be performed if required to exclude a solid organ malignancy.

Additional information to assist triage categorisation

- antinucelar antibody (ANA) test /extractable nuclear antigen (ENA) test/ angiotensin converting enzyme (ACE), viral serologies, as clinically indicated
- lymphocyte surface markers

Clinical management advice and resources

Clinical management advice

Lymphadenopathy may occur in infective, inflammatory, or malignant conditions and may be isolated or widespread involving more than one nodal group. Concerning features associated with lymphadenopathy are progressive, persistent lymphadenopathy, constitutional symptoms (night sweats, unexplained weight loss, fevers), hepatosplenomegaly.

Clinical resources

- Optimal Care Pathway - Hodgkin and diffuse large B-cell lymphomas
- Optimal Care Pathway - Hodgkin and diffuse cell large B-cell lymphomas quick reference guide
- Optimal Care Pathway Quick Reference Guide - low-grade lymphomas
- Lymphoma Australia
- Cancer Council - Lymphoma fact sheet

Consumer resources

- Lymphoma Australia
- Cancer Council - Lymphoma fact sheet

Key Words

Lymphadenopathy, lymphoproliferative disorder, lymphoma, low grade lymphoma, B-cell lymphoma, haematology, haematological condition

Macrocytosis

Referral to emergency

If any of the following are present or suspected, please refer the patient to the emergency department (via ambulance if necessary) or seek emergent medical advice if in a remote region.

- nil

Contacts for clinical advice

For clinical advice, please telephone the relevant metropolitan Local Health Network switchboard and ask to speak to the relevant specialty service.

Central Adelaide Local Health Network

- Royal Adelaide Hospital (08) 7074 0000
- The Queen Elizabeth Hospital (08) 8222 6000

Northern Adelaide Local Health Network

- Lyell McEwin Hospital (08) 8182 9000
- Modbury Hospital (08) 8161 2000

Southern Adelaide Local Health Network

- Flinders Medical Centre (08) 8204 5511
- Noarlunga Hospital (08) 8384 9222

Inclusions, exclusions and triage categories

Triage categories

Category 1 (appointment clinically indicated within 30 days)

- myelodysplasia (based on blood film report)
- macrocytosis with any accompanying cytopenia (for example anaemia, neutropenia)

Category 2 (appointment clinically indicated within 90 days)

- nil

Category 3 (appointment clinically indicated within 365 days)

- persistent macrocytosis without cytopenia
- suspected myelodysplasia (based on blood film report) without accompanying cytopenia

Referral information

For information on referral forms and how to import them, please view general referral information.

Essential referral information

Completion required before first appointment to ensure patients are ready for care. Please indicate in the referral if the patient is unable to access mandatory tests or investigations as they incur a cost or are unavailable locally.

- identifies as Aboriginal and/or Torres Strait Islander
- identify within your referral if you feel your patient is from a vulnerable population and/or requires a third party to receive correspondence on their behalf
- interpreter requirements
- alcohol history
- medication history
- blood results:
    - full blood examination (FBE)
    - blood film examination
    - reticulocyte count
    - liver function tests (LFTs)
    - electrolytes, urea, creatinine (EUC)

    - estimated glomerular filtration rate (eGFR)
    - iron studies
    - B12
    - Folate
    - thyroid function tests
    - serum protein electrophoresis
    - serum free light chains
- urine for Bence jones proteins

Additional information to assist triage categorisation

nil

Clinical management advice and resources

Clinical management advice

Macrocytosis is defined as a Mean Cell Volume (MCV) > 90fL. Common causes of macrocytosis include B12 and folate deficiency, thyroid disorders, alcohol misuse, certain drugs such as methotrexate or hydroxyurea. Macrocytosis can also be seen in pregnancy. Less common causes include bone marrow disorders such as myelodysplasia

Treat B12/ folate deficiency before referral

Uncomplicated B12 or folate deficiency does not require routine referral for haematology outpatient assessment.

Clinical resources

- Optimal Care Pathway - Myelodysplastic syndromes
- Optimal Care Pathways - Myelodysplastic syndromes quick reference guide

Consumer resources

- Cancer Council - Myelodysplastic syndrome

Key Words

Macrocytosis, myelodysplastic syndrome, haematology, haematological condition

Neutropenia

Referral to emergency

If any of the following are present or suspected, please refer the patient to the emergency department (via ambulance if necessary) or seek emergent medical advice if in a remote region.

- neutrophil count < 0.5 x 10^9/L but otherwise well, please call duty haematologist
- active sepsis in association with unexplained neutropenia
    - please contact the duty haematologist via switchboard so the referral may be expedited, and the patient reviewed as soon as possible.

Contacts for clinical advice

For clinical advice, please telephone the relevant metropolitan Local Health Network switchboard and ask to speak to the relevant specialty service.

Central Adelaide Local Health Network

- Royal Adelaide Hospital (08) 7074 0000
- The Queen Elizabeth Hospital (08) 8222 6000

Northern Adelaide Local Health Network

- Lyell McEwin Hospital (08) 8182 9000
- Modbury Hospital (08) 8161 2000

Southern Adelaide Local Health Network

- Flinders Medical Centre (08) 8204 5511
- Noarlunga Hospital (08) 8384 9222

Inclusions, exclusions and triage categories

Inclusions

- ongoing persistent neutropenia

Exclusions

- isolated neutropenia <3months duration (resolved neutropenia)

Triage categories

Category 1 (appointment clinically indicated within 30 days)

- neutropenia (absolute neutrophil count ANC <0.5 x 10^9/L) with no sepsis in association with anaemia or thrombocytopenia, lymphadenopathy, or splenomegaly

Category 2 (appointment clinically indicated within 90 days)

- ongoing persistent neutropenia without evidence of anaemia or thrombocytopenia with ANC 0.5-1.0 x 10^9/L

Category 3 (appointment clinically indicated within 365 days)

- ongoing persistent neutropenia of 1.0-1.5 x 10^9/L

Referral information

For information on referral forms and how to import them, please view general referral information.

Essential referral information

Completion required before first appointment to ensure patients are ready for care. Please indicate in the referral if the patient is unable to access mandatory tests or investigations as they incur a cost or are unavailable locally.

- identifies as Aboriginal and/or Torres Strait Islander
- identify within your referral if you feel your patient is from a vulnerable population and/or requires a third party to receive correspondence on their behalf

- interpreter requirements
- ethnic origin
- current medication list
- history of autoimmune conditions
- blood results:
    - full blood examination (FBE)
    - blood film examination
    - liver function tests (LFTs)
    - electrolytes, urea, creatinine (EUC)
    - estimated glomerular filtration rate (eGFR)
    - lactate dehydrogenase (LDH)
    - lymphocyte surface markers on peripheral blood
    - antinuclear antibody (ANA), extractable nuclear antigen antibodies (ENA), anti-double stranded DNA (dsDNA)
- history of previous CBE results
- viral screen including human immunodeficiency virus (HIV), hepatitis B and C serology

Additional information to assist triage categorisation

- nil

Clinical management advice and resources

Clinical management advice

Neutropenia is defined as an absolute neutrophil count (ANC) < 1.8 x 109/L. Causes of neutropenia include drugs, viral infections, autoimmune conditions, benign ethnic neutropenia, cyclical neutropenia, B12 or folate deficiency, bone marrow disorders such as myelodysplasia, aplastic anaemia, or malignant infiltration of the marrow by a non-haematological malignancy.

Neutropenia is categorised as:

- mild –ANC 1.0-1.7 x 10^9/L
- moderate – ANC 0.5-1.0 x 10^9/L
- marked – ANC <0.5 x 10^9/L

Benign ethnic neutropenia (BEN) is an inherited neutropenia mainly occurring among people of African or Middle Eastern descent. The neutrophil count in this condition is usually between 1-1.5 x 10^9/L however it can occasionally be less than 1.0 x 10^9/L. and is not usually associated with an increased risk of infections.

Suggested assessment in primary care of a patient who is asymptomatic and has a mild neutropenia (ANC >1.0 x 10^9/L) with or without an accompanying mild thrombocytopenia but normal haemoglobin.

- The blood test should be repeated 6-8 weeks later with a blood film
- review of medications that may contribute to lowering of neutrophil count for example, anti-psychotic drugs Olanzapine or a high dose of Omeprazole.

Clinical resources

- SA Health - Febrile Neutropenia Management (Adults) Clinical Guideline
- Therapeutic Guidelines - Febrile Neutropenia
- The Royal College of Pathologists of Australia (RCPA) - Neutropenia

Consumer resources

- nil

Key Words

neutropenia, benign ethnic neutropenia, BEN, haematology, haematological condition

Pancytopenia/ Bicytopenia

Referral to emergency

If any of the following are present or suspected, please refer the patient to the emergency department (via ambulance if necessary) or seek emergent medical advice if in a remote region.

- Bicytopenia/pancytopenia with circulating blasts on blood film examination (see acute leukaemia CPC).
- Severe pancytopenia as defined by (any 2 or more of)
    - haemoglobin <80gm/L
    - neutrophils <0.5X10^9/L
    - platelets <30X10^9/L

Severe pancytopenia should be referred as an emergency and discussed with Haematology registrar.

Contacts for clinical advice

For clinical advice, please telephone the relevant metropolitan Local Health Network switchboard and ask to speak to the relevant specialty service.

Central Adelaide Local Health Network

- Royal Adelaide Hospital (08) 7074 0000
- The Queen Elizabeth Hospital (08) 8222 6000

Northern Adelaide Local Health Network

- Lyell McEwin Hospital (08) 8182 9000
- Modbury Hospital (08) 8161 2000

Southern Adelaide Local Health Network

- Flinders Medical Centre (08) 8204 5511
- Noarlunga Hospital (08) 8384 9222

Triage categories

Triage categories

Category 1 (appointment clinically indicated within 30 days)

- Bicytopenia/pancytopenia (haemoglobin Hb <80g/L, neutrophils <1.0 x 10^9/L, platelets <50 x 10^9/L)
- Bicytopenia/pancytopenia with splenomegaly or leucoerythroblastic blood picture on blood film examination or lymphocyte surface markers showing an abnormal myeloid or lymphoid cell population.

Category 2 (appointment clinically indicated within 90 days)

- any two of the following:
    - Hb >100g/L
    - neutrophil > 1.0 x 10^9/L
    - platelet level >75 x 10^9/L

Regularly monitor complete blood examination every 2-3 weeks, should the cytopenia progress to category 1 referral parameters.

Category 3 (appointment clinically indicated within 365 days)

- nil

Referral information

For information on referral forms and how to import them, please view general referral information.

Essential referral information

Completion required before first appointment to ensure patients are ready for care. Please indicate in the referral if the patient is unable to access mandatory tests or investigations as they incur a cost or are unavailable locally.

- identifies as Aboriginal and/or Torres Strait Islander
- identify within your referral if you feel your patient is from a vulnerable population and/or requires a third party to receive correspondence on their behalf
- interpreter requirements
- past medical history
- medication history
- current medication list
- blood results:
    - complete blood examination (CBE)
    - estimated glomerular filtration rate (eGFR)
    - liver function tests (LFTs)
    - lactase dehydrogenase (LDH)
    - blood film examination
    - lymphocyte surface markers on peripheral blood
    - B12
    - Folate
    - Iron studies
- any prior imaging results (ultrasound, CT scan, PET scan)

Additional information to assist triage categorisation

- reticulocyte count

Clinical management advice and resources

Clinical management advice

Pancytopenia refers to a combination of anaemia, leukopenia and thrombocytopenia. Causes relate to decreased production or bone marrow failure, immune-mediated destruction or non-immune mediated peripheral sequestration.

Pancytopenia or bicytopenia may be due to drugs, haematinic deficiencies, viral infections, or bone marrow disorders such as myelodysplasia, aplastic anaemia, acute leukaemia etc.

Clinical resources

- The Royal College of Pathologists of Australasia (RCPA) - Pancytopenia

Consumer resources

- nil

Key words

pancytopenia, bicytopenia, haematology, haematological condition

Paraproteinaemia

Referral to emergency

If any of the following are present or suspected, please refer the patient to the emergency department (via ambulance if necessary) or seek emergent medical advice if in a remote region.

- Any new paraprotein with features of acute worsening renal impairment, hyperviscosity (headaches, visual changes, epistaxis), symptomatic hypercalcaemia (confusion, ECG changes), threatened spinal cord compression (back pain, urinary or bowel incontinence, lower limb sensory changes).

  Please contact the duty haematologist via switchboard so the referral may be expedited, and the patient reviewed as soon as possible

Contacts for clinical advice

For clinical advice, please telephone the relevant metropolitan Local Health Network switchboard and ask to speak to the relevant specialty service.

Central Adelaide Local Health Network

- Royal Adelaide Hospital (08) 7074 0000
- The Queen Elizabeth Hospital (08) 8222 6000

Northern Adelaide Local Health Network

- Lyell McEwin Hospital (08) 8182 9000
- Modbury Hospital (08) 8161 2000

Southern Adelaide Local Health Network

- Flinders Medical Centre (08) 8204 5511
- Noarlunga Hospital (08) 8384 9222

Exclusions and triage categories

Exclusions

- raised immunoglobulin levels in the absence of:
  - a monoclonal paraprotein band on serum electrophoresis and/or
  - raised serum free light chains abnormal ratio and/or
  - presence of urinary bence jones proteins

Triage categories

Category 1 (appointment clinically indicated within 30 days)

- any new paraprotein, abnormal kappa or lambda light chain results with:
  - recent onset unexplained anaemia
  - recent unexplained significant renal impairment
  - asymptomatic mild hypercalcaemia
  - lytic bone lesions or pathological fracture, not at risk of cord compromise
  - unexplained cardiac failure
  - urinary proteinuria
- significant elevation of serum free light chains (>1000)

Category 2 (appointment clinically indicated within 90 days)

- nil

Category 3 (appointment clinically indicated within 365 days)

- any new paraprotein, abnormal kappa or lambda light chain results without any features of symptomatic myeloma, lymphoproliferative disorder or amyloidosis. **Usually seen within 3-6months**

Referral information

For information on referral forms and how to import them, please view general referral information.

Essential referral information

Completion required before first appointment to ensure patients are ready for care. Please indicate in the referral if the patient is unable to access mandatory tests or investigations as they incur a cost or are unavailable locally.

- identifies as Aboriginal and/or Torres Strait Islander
- identify within your referral if you feel your patient is from a vulnerable population and/or requires a third party to receive correspondence on their behalf
- interpreter requirements
- medication history
- current medication list
- physical examination of the skin, all lymph node groups, abdomen, neurological and cardiorespiratory examination
- blood results:
    - full blood examination (FBE)
    - blood film examination
    - liver function tests (LFTs)
    - electrolytes, urea, creatinine (EUC)
    - estimated glomerular filtration rate (eGFR)
    - lactate dehydrogenase (LDH)
    - calcium
    - serum electrophoresis (EPG) and immunofixation to confirm underlying monoclonal protein
    - serum free light chains
    - Beta-2-microglobulin
    - Urine Bence Jones protein
- CT skeletal survey or any other prior imaging.
    - Please note that an IgM paraprotein is more commonly associated with a lymphoproliferative disorder. Hence please organise CT neck, chest, abdomen, pelvis.

Additional information to assist triage categorisation

Clinical management advice and resources

Clinical management advice

Monoclonal proteins, detected on serum protein electrophoresis, may be associated with plasma cell dyscrasias such as monoclonal gammopathy of uncertain significance (MGUS), multiple myeloma, amyloidosis, or lymphoproliferative disorders such as chronic lymphocytic leukaemia (CLL), Waldenstroms macroglobulinaemia.

Occasionally, in MGUS or multiple myeloma, there also may be abnormal clonal light chain production resulting in a clonal proliferation of either kappa or lambda light chains with an abnormal kappa/lambda ratio.

MGUS is a diagnosis of exclusion: 3% of over-70s have paraproteins which are frequently found incidentally and not associated with symptoms or physical findings. The overall risk of MGUS progression to myeloma is around 1% per year – this remains constant over time

Bone scans are usually negative for the lytic lesions seen in myeloma. CT skeletal survey is recommended to screen for myeloma related lytic lesions.

IgM monoclonal protein is exceedingly rare in myeloma and is more commonly seen in low grade lymphomas

Clinical resources

- Optimal Care Pathway - Multiple Myeloma Quick Reference Guide
- Optimal Care Pathway - Multiple myeloma
- Myeloma Australia - Health professional resources
- Leukaemia Foundation Australia

Consumer resources

- Myeloma Australia - Information and support groups
- Leukaemia Foundation Australia

Key Words

Monoclonal proteins, paraprotein, paraproteinemia, haematological condition, haematology

Polycythaemia

Referral to emergency

If any of the following are present or suspected, please refer the patient to the emergency department (via ambulance if necessary) or seek emergent medical advice if in a remote region.

- polycythaemia with associated symptoms of ischaemia for example neurological symptoms, chest discomfort or vision changes. Please note that patients with any signs and symptoms of an acute myocardial event or acute neurological event should be directed to the nearest emergency department as a medical emergency

Contacts for clinical advice

For clinical advice, please telephone the relevant metropolitan Local Health Network switchboard and ask to speak to the relevant specialty service.

Central Adelaide Local Health Network

- Royal Adelaide Hospital (08) 7074 0000
- The Queen Elizabeth Hospital (08) 8222 6000

Northern Adelaide Local Health Network

- Lyell McEwin Hospital (08) 8182 9000
- Modbury Hospital (08) 8161 2000

Southern Adelaide Local Health Network

- Flinders Medical Centre (08) 8204 5511
- Noarlunga Hospital (08) 8384 9222

Inclusions, exclusions and triage categories

Inclusions

- suspicion of primary polycythaemia
- JAK2 mutation – indicative of myeloproliferative neoplasm
- haematocrit persistently (3 months apart) above 0.52 L/L in men and 0.48 L/L in women and no secondary cause

Exclusions

- polycythaemia due to a secondary cause (for example chronic hypoxia, renal disease, smoking, androgen use)

Triage categories

Category 1 (appointment clinically indicated within 30 days)

- haemoglobin (Hb) > 200g/L and asymptomatic
- hematocrit (HCT) > 0.6 (men), >0.56 (women) and asymptomatic
- Hb (upper limit of normal) with thrombosis

Category 2 (appointment clinically indicated within 90 days)

- persistent unexplained elevated haematocrit (Male >0.51, Female >0.48)
- Hb > upper limit of normal with:
    - JAK2 V617F or exon 12 mutation

Category 3 (appointment clinically indicated within 365 days)

- Hb > upper limit of normal to 200g/L or HCT 0.51 to 0.60 (men) with no red flags
- Hb > upper limit of normal to 185g/L or HCT 0.48 to 0.56 (women) with no red flags

Referral information

For information on referral forms and how to import them, please view general referral information.

Essential referral information

Completion required before first appointment to ensure patients are ready for care. Please indicate in the referral if the patient is unable to access mandatory tests or investigations as they incur a cost or are unavailable locally.

- identifies as Aboriginal and/or Torres Strait Islander
- identify within your referral if you feel your patient is from a vulnerable population and/or requires a third party to receive correspondence on their behalf
- interpreter requirements
- past medical history
- medication history
- current medication list including supplements
- blood results:
    - full blood examination (FBE)
    - blood film examination
    - iron studies
- history of chronic hypoxia, smoking, renal disease (for example renal cysts, renal artery stenosis)

Additional information to assist triage categorisation

- erythropoietin level (please note that this test cannot be rebated under medicare, please check with pathology provider)
- JAK2 V617F
- JAK2 exon 12 mutation testing (non medicare rebatable)
- chest radiograph if respiratory issues
- ultrasound abdomen (renal or hepatic tumour)
- body mass index
- testosterone replacement

Clinical management advice and resources

Clinical management advice

Polycythaemia refers to an increase in haemoglobin above the normal range. This can be primary polycythaemia where there is an increase in red cell mass due to a mutation in red blood progenitor cells; or secondary polycythaemia where various conditions which lead to an increased erythropoietin production (such as hypoxia) can also cause an increase in haemoglobin. Certain medications for example anabolic steroids or androgens may also cause polycythaemia

Patients with secondary polycythaemia rarely benefit from venesection however it is important to define the cause in such a circumstance as polycythaemia may be an epiphenomenon of a more sinister non-haematological disorder such as renal cell carcinoma, OSA or advanced pulmonary disease (COPD) that requires its own specific management.

It is reasonable to refer patients for haematology review if polycythaemia is transient or mild (HCT <0.51for men, <0.48 for women) and primary polycythaemia has been excluded (JAK2 negative) however appropriate investigation and follow up for important secondary causes must be undertaken.

Do not give iron therapy to patients who are iron deficient but have an elevated haematocrit.

Do not give iron replacement for patients who have been receiving venous sections for polycythaemia.

Clinical resources

- Leukaemia Foundation - Polycythaemia (Rubra) Vera
- Leukemia & Lymphoma Society - Polycythaemia Vera (PV)
- The Royal College of Pathologists of Australasia (RCPA) – Polycythaemia
- The Royal College of Pathologists of Australasia (RCPA) - Polycythaemia Vera

Consumer resources

- Leukaemia Foundation
- Leukaemia and Lymphoma Society

Key Words

polycythaemia, polycythaemia vera, PV, haematology, haematological condition

Thrombocytopenia

Referral to emergency

If any of the following are present or suspected, please refer the patient to the emergency department (via ambulance if necessary) or seek emergent medical advice if in a remote region.

- platelet count <20 x 10^9/L or if actively bleeding, presence of red cell fragments or blasts on blood film examination or associated with coagulation abnormalities.
- platelet count < 50 x 10^9/L, with concurrent thrombosis
    - Please contact the duty haematologist via switchboard so the referral may be expedited, and the patient reviewed as soon as possible.

Contacts for clinical advice

For clinical advice, please telephone the relevant metropolitan Local Health Network switchboard and ask to speak to the relevant specialty service.

Central Adelaide Local Health Network

- Royal Adelaide Hospital (08) 7074 0000

Northern Adelaide Local Health Network

- Lyell McEwin Hospital (08) 8182 9000

Southern Adelaide Local Health Network

- Flinders Medical Centre (08) 8204 5511

Inclusions, exclusions and triage categories

Inclusions

- persistent unexplained thrombocytopenia

Exclusions

- stable isolated thrombocytopenia attributed to non-haematological causes with platelet count ≥100 and no abnormalities on coagulation testing are usually not reviewed in clinic. Please re-refer if platelet levels drop.

Triage categories

Category 1 (appointment clinically indicated within 30 days)

- persistent platelet level < 50 x 10^9/L
- platelet count 50-100 x 10^9/L in association with:
    - other cytopenia (haemoglobin < 100g/L, Neutrophils < 1 x 10^9 /L) splenomegaly, lymphadenopathy, pregnancy, or upcoming surgery

Category 2 (appointment clinically indicated within 90 days)

- persistent, unexplained thrombocytopenia <80 x 10^9 /L

Category 3 (appointment clinically indicated within 365 days)

- persistently low platelet level 80 x 10^9/L but <100 x 10^9/L

Referral information

For information on referral forms and how to import them, please view general referral information.

Essential referral information

Completion required before first appointment to ensure patients are ready for care. Please indicate in the referral if the patient is unable to access mandatory tests or investigations as they incur a cost or are unavailable locally.

- identifies as Aboriginal and/or Torres Strait Islander

- identify within your referral if you feel your patient is from a vulnerable population and/or requires a third party to receive correspondence on their behalf
- interpreter requirements
- medication history including recent heparin administration
- alcohol history
- blood results:
    - full blood examination (FBE)
    - blood film examination
    - liver function tests (LFTs)
    - electrolytes, urea, creatinine (EUC)
    - estimated glomerular filtration rate (eGFR)
    - B12
    - Folate
    - Lactate dehydrogenase (LDH)
    - Coagulation studies including:
        - international normalised ratio (INR)
        - activated partial thromboplastin time (APTT)
        - Fibrinogen
        - D-dimer
- autoimmune screen, including screening for antiphospholipid syndrome
    - Lupus anticoagulant
    - Anticardiolipin
    - Beta-2-glycoprotein-1 antibodies
- viral screening including human immunodeficiency virus (HIV), hepatitis B and C serology

Additional information to assist triage categorisation

- ultrasound upper abdomen

Clinical management advice and resources

Clinical management advice

Thrombocytopenia is defined as platelet count <150 x 10^9/L. Most patients with platelet counts of >50 x 10^9/L are asymptomatic.

Given spurious thrombocytopenia due to collection, storage or in vitro clumping of platelets is not uncommon, all low results should be confirmed with repeat testing with a full blood count (FBC), coagulation screen and ELFT within at least a week of initial recognition of thrombocytopenia. Suggest sending FBE analysis in an ACD tube which reduces platelet clumping.

Differential diagnosis of thrombocytopenia includes autoimmune causes such as idiopathic thrombocytopenia purpura (primary or secondary), drugs including alcohol misuse, primary marrow disorder, liver disease (with or without cirrhosis), hypersplenism, haematinic deficiency such as B12 or folate deficiency, microangiopathic haemolytic anaemia due to disseminated intravascular coagulopathy or thrombotic thrombocytopenia purpura.

Clinical resources

- The Royal College of Pathologists of Australasia (RCPA) - Thrombocytopenia
- The Royal College of Pathologists of Australasia (RCPA) - Immune Thrombocytopenia

Consumer resources

- ITP Australia New Zealand

Key words

Thrombocytopenia, immune thrombocytopenia, ITP, haematology, haematological condition

Thrombocytosis

Referral to emergency

If any of the following are present or suspected, please refer the patient to the emergency department (via ambulance if necessary) or seek emergent medical advice if in a remote region.

- Platelet count >1000 x 10^9 /L, associated with any of the associated features
    - deep vein thrombosis (DVT)
    - pulmonary embolism (PE)
    - transient ischaemic attack
    - cerebral vascular accident
    - myocardial infarction
    - unstable angina
    - other non-specified thrombotic event
    - clinically significant bleeding

Contacts for clinical advice

For clinical advice, please telephone the relevant metropolitan Local Health Network switchboard and ask to speak to the relevant specialty service.

Central Adelaide Local Health Network

- Royal Adelaide Hospital (08) 7074 0000

Northern Adelaide Local Health Network

- Lyell McEwin Hospital (08) 8182 9000

Southern Adelaide Local Health Network

- Flinders Medical Centre (08) 8204 5511

Inclusions, exclusions and triage categories

Inclusions

- persistently elevated (over 3 months) platelet counts above 450 X 10^9/l that are not associated with iron deficiency or post splenectomy

Exclusions

- isolated elevated platelet count due to iron deficiency, infections or inflammation

Triage categories

Category 1 (appointment clinically indicated within 30 days)

- persistent platelet count >1000 x 10^9/L regardless of symptoms
- persistent platelet level > 600 X 10^9/l
    - without iron deficiency or post splenectomy, and
    - recent thrombosis or symptoms of hyperviscosity

Category 2 (appointment clinically indicated within 90 days)

- persistent platelet level > 450 X 10^9/l, asymptomatic

Category 3 (appointment clinically indicated within 365 days)

- nil

Referral information

For information on referral forms and how to import them, please view general referral information.

Essential referral information

Completion required before first appointment to ensure patients are ready for care. Please indicate in the referral if the patient is unable to access mandatory tests or investigations as they incur a cost or are unavailable locally.

- identifies as Aboriginal and/or Torres Strait Islander
- identify within your referral if you feel your patient is from a vulnerable population and/or requires a third party to receive correspondence on their behalf
- interpreter requirements
- blood results:
    - complete blood examination (FBE) (showing monitoring over 3 months)
    - blood film examination
    - liver function tests (LFTs)
    - lactase dehydrogenase (LDH)
    - electrolytes, urea, creatinine (EUC)
    - estimated glomerular filtration rate (eGFR)
    - iron studies
    - c-reactive protein (CRP)
    - JAK2 V617F mutation (if available),
- history of smoking
- history of malignancies, recent trauma or surgeries

Additional information to assist triage categorisation

- myeloproliferative leukaemia (MPL) mutation (not medicare rebatable)
- calreticulin (CALR) (not medicare rebatable)

Clinical management advice and resources

Clinical management advice

Thrombocytosis is defined as platelet count >450 x 10^9/L. Thrombocytosis may be associated with iron deficiency, reactive or inflammatory conditions. Thrombocytosis is also commonly seen post splenectomy. Occasionally, thrombocytosis may be associated with bone marrow disorders such as a myeloproliferative neoplasm (MPN) or myelodysplasia. In myeloproliferative disorders, very high platelet counts can be associated with both thrombosis and bleeding risk (due to platelet dysfunction).

Clinical resources

- The Royal College of Pathologists (RCPA) - Thrombocytosis

Key words

Thrombocytosis, myeloproliferative disorder, haematology, haematological condition

Thrombosis Disorders

If any of the following are present or suspected, please refer the patient to the emergency department (via ambulance if necessary) or seek emergent medical advice if in a remote region.

- Injury or bleeding in a person with a bleeding disorder (for example, haemarthrosis)
    - Please contact the duty haematologist via switchboard so the referral may be expedited, and the patient reviewed as soon as possible

Contacts for clinical advice

For clinical advice, please telephone the relevant metropolitan Local Health Network switchboard and ask to speak to the relevant specialty service.

Central Adelaide Local Health Network

- Royal Adelaide Hospital (08) 7074 0000

Northern Adelaide Local Health Network

- Lyell McEwin Hospital (08) 8182 9000

Southern Adelaide Local Health Network

- Flinders Medical Centre (08) 8204 5511

Inclusions, exclusions and triage categories

Inclusions

- venous thromboembolism (VTE) in pregnancy will be reviewed in the haematology clinic. Please provide information on gestation as well as current anticoagulation treatment
- thrombosis due to malignancy or hormone-induced requiring the development of a primary care management plan
- recurrent multiple episodes of unprovoked thrombosis

Exclusions

- first episode of provoked thrombosis which are associated with recent (<4-6 weeks) surgery, immobility or trauma are usually not reviewed in the haematology clinic
- most patients with superficial thrombophlebitis
- advice regarding anticoagulation can be sought from the duty haematologist but does not require a clinic review

Triage categories

Category 1 (appointment clinically indicated within 30 days)

- venous thromboembolism (VTE) in pregnancy will be reviewed in the haematology clinic. Please provide information on gestation as well as current anticoagulation treatment

Category 2 (appointment clinically indicated within 90 days)

- thrombosis due to malignancy or hormone-induced requiring the development of a primary care management plan
- recurrent multiple episodes of unprovoked thrombosis

Category 3 (appointment clinically indicated within 365 days)

- nil

Referral information

For information on referral forms and how to import them, please view general referral information.

Essential referral information

Completion required before first appointment to ensure patients are ready for care. Please indicate in the referral if the patient is unable to access mandatory tests or investigations as they incur a cost or are unavailable locally.

- identifies as Aboriginal and/or Torres Strait Islander
- relevant social history, including identifying if you feel your patient is from a vulnerable population and/or requires a third party to receive correspondence on their behalf.
- interpreter requirements
- current medication list
- past medical history
- blood results
    - complete blood examination (CBE)
    - blood film examination
    - liver function tests (LFTs)
    - electrolytes, urea, creatinine (EUC)
    - estimated glomerular filtration rate (eGFR)
    - lactate dehydrogenase (LDH)
    - coagulation studies
        - international normalised ratio (INR)
        - activated partial thromboplastin time (APTT)
        - fibrinogen
- if appropriate, Von Willebrand Disease screen OR coagulation assays appropriate to family history, for example factor assays for haemophilia
- history of prior thrombosis or miscarriages
- family history of miscarriage, thrombotic or bleeding disorders
- relevant prior imaging for those previous thrombosis

Additional information to assist triage categorisation

- nil

Clinical management advice and resources

Clinical management advice

Conditions that may increase the risk of venous thromboembolism (VTE) include malignancies, recent long distance travel, recent immobility for example, injury, trauma or surgery, pregnancies. The usual treatment duration for a provoked VTE varies between 6 weeks to 3 months, and in the outpatient setting, may include enoxaparin, warfarin and direct oral anticoagulant (DOACs) such as apixaban and rivaroxaban.

Low- risk superficial vein thrombosis

Isolated superficial vein thrombosis is at low risk of extension to a proximal deep vein thrombosis (DVT) or pulmonary embolism (PE) if it:

- occurs as a complication of intravenous cannulation
- is located > 3 cm from the deep venous system and is shorter than 5 cm (and the patient has no other VTE risk factors).

Low-risk superficial vein thrombosis does require anticoagulant therapy, provide symptomatic care including topical or oral NSAID therapy for 7-14 days.

Intermediate- risk superficial vein thrombosis

An isolated superficial vein thrombosis is at an intermediate risk of extension to a proximal DVT or PE if it is located > 3 cm from the deep venous system and is longer than 5 cm. Anticoagulant therapy can be used.

High risk superficial vein thrombosis

An isolated superficial vein thrombosis is at high risk of becoming a proximal DVT or PE if it:

- extends to within 3 cm from the deep venous system
- spreads despite appropriate anticoagulant therapy for an intermediate-risk superficial vein thrombosis.

Treat patients with an anticoagulant for 3 months.

Clinical resources

- DermNet - Superficial thrombophlebitis
- Therapeutic Guidelines - Superficial thrombosis – log in required

Consumer resources

nil

Key Words

thrombosis, bleeding disorder, venous thromboembolism, haemophilia, Von Willebrand Disease, haematology, haematological condition