

Surgical Education and Assessment Modules (SEAM) - Haematology

Module Overview

Rationale	This module has been designed to introduce you to the topics of blood cell disorders, disorders of haemostasis, and principles of transfusion.	
Learning Objectives	<p>By the end of this module you should be able to:</p> <ol style="list-style-type: none"> 1. Recognise abnormalities of blood parameters and the implications for further investigation and patient management 2. Choose investigations and management for specific disorders of haemostasis 3. Identify the indications and mechanisms of actions of commonly used anti-coagulants and anti-platelet agents 4. Decide peri-operative management of patients on long-term anti-coagulants and anti-platelet agents 5. Prescribe thrombo-prophylaxis according to risk-stratification 6. Determine the indications for transfusion and its complications 7. Describe the role of massive transfusion protocol 	
Topics and keywords	Topic	Keywords
	Disorders of blood cells	<i>anaemia, polycythaemia, leucocytosis, leucopaenia, thrombocytosis, thrombocytopenia, platelet, infections, neutrophilia</i>
	Disorders of haemostasis	<i>VTE, patterns of bleeding, warfarin, clopidogrel, heparin, oral anticoagulants, fibrinolytic agents</i>
	Principles of transfusion	<i>massive blood transfusion, haemoglobin, risk, assessing blood loss, parameters, haemorrhage control</i>
Recommended Further Reading	Educational material provided within this module is not intended to be complete, and is not a textbook. Trainees are expected to undertake further reading in order to complete the module successfully.	
	Recommended Reading	Learning Objective
	Australian Red Cross Blood Service. Patient Blood Management Guidelines .	2
	The Australia & New Zealand Working Party on the Management and Prevention of Venous Thromboembolism (VTE). Best Practice Guidelines for Australia & New Zealand, 4th edition .	5
	Kumar, V., Aster, J. C., & Abbas, A. K. <i>Robbins & Cotran pathologic basis of disease</i> , Chapter 13. 9th edition: Saunders, US, 2015.	1
	McBeth, P.B., Weinberg, J.A., Sarani, B., Yeung, L.Y.Y., May, A.K. A surgeon's guide to anticoagulant and antiplatelet medications part one: Warfarin and new direct oral anticoagulant medications. <i>Trauma Surg Acute Care Open</i> Jul 2016, 1 (1). https://tsaco.bmj.com/content/1/1/e000020	3
	National Blood Authority Australia. Patient Blood Management Guidelines: Module 1: Critical Bleeding/Massive Transfusion .	6, 7

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	Yeung, L.Y.Y., Sarani, B., Weinberg, J.A., McBeth, P.B., May, A.K. Surgeon's guide to anticoagulant and antiplatelet medications part two: Antiplatelet agents and perioperative management of long-term anticoagulation. <i>Trauma Surg Acute Care Open</i> Jul 2016, 1 (1). https://tsaco.bmj.com/content/1/1/e000022	3, 4
Prerequisites	N/A	
How this module will be assessed	The e-learning module comprises learning activities and opportunities for Formative Assessment, with feedback. The Summative Assessment comprises twenty (20) Type A, Type X, and Type R multiple choice questions.	

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Learning Activities & Formative Assessment

Cognitive level	Learning Objective	Module Topic	Learning Activity	Formative Assessment
Apply	Recognise abnormalities of blood parameters and the implications for further investigation and patient management	Disorders of blood cells	<p>After reading about common blood disorders (anaemia, polycythaemia, leucocytosis, leucopaenia, thrombocytosis, thrombocytopenia) learners will step through a case scenario to assess the causes of an abnormal blood parameter.</p> <p>Learners will be able to identify causes of reduced mean corpuscular volume (MCV), based on indicators learnt in the module.</p>	Learners will be able to identify causes of high haemoglobin concentration, based on indicators learnt in the module.
Apply	Choose investigations and management for specific disorders of haemostasis	Disorders of haemostasis	After reading about the mechanism of haemostasis and the coagulation cascade, the learner will complete a matching exercise to demonstrate familiarity with the causes of blood abnormalities.	Learners will recognise conditions that prolong prothrombin time, as well as the appropriate management of patients on long-term anti-coagulants and anti-platelet agents.
Apply	Identify the indications and mechanisms of actions of commonly used anti-coagulants and anti-platelet agents		After reading about antiplatelet and anticoagulant drugs, the learner will complete a matching exercise to demonstrate knowledge of appropriate use of blood tests to determine causes of coagulations disorders.	Learners will identify the mechanisms of action for anticoagulants and antiplatelet agents in various patient case scenarios.
Evaluate	Decide peri-operative management of patients on long-term anti-coagulants and anti-platelet agents		Learners will step through a case scenario to make decisions on the preoperative assessment of the patient on long-term anticoagulants or antiplatelet agents.	
Apply	Prescribe thrombo-prophylaxis according to risk-stratification		After reading about VTE prophylaxis, including rates and risk factors, learners will complete a risk stratification exercise for VTE prophylaxis, sorting patients into low, moderate, and high risk categories.	Learners will evaluate the appropriate use of VTE prophylaxis, based on indicators learnt in the module.
Evaluate	Determine the indications for transfusion and its complications	Principles of transfusion	After reading about indications for transfusion and the associated risks, the learner will be able to identify parameters measured during a massive transfusion, based on indicators learnt in the module.	Learners will identify the risk of contracting bacterial sepsis from transfusion, based on risks learnt in the module.
Apply	Describe the role of massive transfusion protocol			