

MD4003 CLINICAL REASONING

MODULE IDENTIFICATION and OVERVIEW:

This MD4003 (Clinical Reasoning) 20-credit module is not a traditional teaching module; instead, it focuses on the application of knowledge gained in previous semesters. It is highly practical and hands-on in nature. The module is delivered exclusively in small-group formats and runs in parallel with the student-selected module MD4002 during the second semester. The prerequisite for enrolment on this module is the successful completion of modules MD3001 and MD3002.

Across the semester, students receive a total of 24 contact hours, delivered over five cycles of slightly varying length. Each student attends one full day every two weeks. The morning sessions are divided into three components: integrated clinical scenarios and a combination of two activities selected from revision tutorials, workshops, or practical skills sessions. Afternoon sessions are typically structured into two parts: a case discussion, followed by an additional session which may also take the form of a tutorial, workshop, or practical. During the case discussion sessions, students reflect on their performance and consider ways to improve, building on the learning from the morning activities.

LEARNING OBJECTIVES:

- Revisit and consolidate core clinical skills.
- Apply a cognitive and analytical approach to clinical problem-solving.
- Integrate clinical knowledge with practical clinical skills.
- Develop strategies to cope with uncertainty and complexity in clinical practice.
- Demonstrate increasing independence in learning and professional development.
- Apply evidence-based reasoning to clinical problems.
- Work effectively both individually and collaboratively in pairs and multidisciplinary teams when managing clinical scenarios.
- Take focused patient histories and perform relevant clinical examinations efficiently within a specified time limit.
- Interpret clusters of symptoms and clinical signs to formulate appropriate differential diagnoses.
- Recognise and describe clinical pathological signs from photographs and other visual clinical materials.
- Integrate, synthesise, and critically analyse clinical information from multiple sources.
- Demonstrate clinical reasoning, data interpretation, and diagnostic decision-making skills.
- Develop appropriate patient management strategies and justify clinical decisions.
- Demonstrate effective communication skills, including concise oral case presentations and clinical summaries.
- Demonstrate the knowledge, skills, confidence, and professional behaviours required for successful transition into the clinical learning environment.

TEACHING DELIVERY:

Integrated clinical scenarios

Working individually or in pairs, students undertake two simulated clinical scenarios during each session. For each scenario, students obtain a history from a simulated patient and synthesise the information into a concise oral clinical summary for presentation to the facilitator. They are then required to use the information gathered to guide a focused clinical examination. Where appropriate examination findings are elicited, relevant clinical information is provided through images, verbal descriptions, or audio recordings. Students are subsequently expected to formulate appropriate differential diagnoses, investigations, and management plans, supported by clinical reasoning. When working in pairs, students have the

opportunity to alternate roles across the two scenarios, ensuring active participation in both history taking and clinical decision-making. This format promotes the integration and application of previously acquired knowledge, encouraging students to make clinical decisions based on the information available and to take increasing responsibility for those decisions. It also develops teamwork, oral communication, and clinical reasoning skills within a safe, facilitated learning environment.

Case Discussion sessions

Discussion of the integrated clinical scenarios is facilitated by a member of academic staff, providing students with opportunities to reflect on their performance and identify areas for further development. The discussion focuses on the clinical reasoning underpinning each case, encouraging students to justify their decisions and consider alternative approaches. The primary aim is to develop clinical reasoning and reflective practice rather than to acquire detailed knowledge of the individual cases.

New Skills Practicals and Workshops

In addition to consolidating the extensive clinical skills acquired in previous modules, students are introduced to a range of advanced skills that support their ongoing clinical development. These include ABCDE simulation scenarios, breast examination, breaking bad news, safe prescribing and drug calculations, fluid management, and extended Focused Assessment with Sonography in Trauma (eFAST). Clinical decision-making and clinical reasoning workshops are incorporated throughout the module to further develop students' diagnostic and management reasoning. A key component of the module is the multidisciplinary ward simulation, which provides students with the opportunity to work collaboratively with members of the wider healthcare team in the assessment and management of acutely unwell patients. This immersive experience integrates clinical knowledge, practical skills, communication, teamwork, and patient safety in a realistic clinical environment.

Revision Tutorials

The module adopts a spiral curriculum, revisiting key topics to consolidate and extend knowledge and skills acquired in previous years. Relevant anatomy is reviewed in the context of clinical examination and diagnostic imaging, reinforcing its application to clinical practice. Clinical reasoning is further developed through an interactive clinical escape room, which provides an engaging and collaborative opportunity to apply knowledge and decision-making skills in a simulated environment.

All students are required to achieve recertification in Basic Life Support (BLS) before the May examination period. This training is delivered separately by the NHS clinical education team.

Guided Studies

The module adopts a flipped classroom approach, supported by a series of structured Guided Studies aligned with each of the five teaching cycles. These Guided Studies require students to revise material from previous semesters while preparing for the applied learning activities within each cycle. Students are expected to complete the Guided Studies before attending the scheduled sessions, enabling them to consolidate prior learning and arrive prepared to apply their knowledge in practical, interactive clinical scenarios. This approach maximises the value of face-to-face teaching by focusing on the application of knowledge, clinical reasoning, and problem-solving rather than the delivery of new content.

TIMETABLE:

Cycle:	Morning Sessions 3 hours			Afternoon Sessions 2 or 3 hours	
1	CVS Scenario RS Scenario	ALS and Hear-sim	Clinical Escape room	Case Discussions	ABCDE Simulations
2	GI Scenario Challenge	Safe Prescribing	Clinical Probability	Case Discussion	X -Sectional Anatomy
3	*Ward Simulation	*Laboratory Clinical Reasoning Scenarios		*Ward Simulation	*Laboratory Clinical Reasoning Scenarios
4	Trauma Scenario Neuro Scenario	eFAST	Fluid Management	Drug Calculations	Investigating Difficult Cases
5	Breast Cancer Patients History taking	Breast Examination		Discussing Bad News	Clinical Data Reasoning

Key:

Integrated clinical scenario simulations	Revision Tutorials
Practical Skills	Workshops

*Morning or afternoon only

ASSESSMENT:

Assessment for this module comprises a 12-station graded Objective Structured Clinical Examination (OSCE), which contributes 100% of the module mark (20-credit). The OSCE is conducted during the May examination diet and is designed to assess students' competence in the application of clinical knowledge, practical skills, communication, and clinical reasoning across a range of simulated clinical scenarios.

The examination consists of seven 7-minute stations and five 10-minute stations. The 7-minute stations incorporate integrated clinical reasoning and clinical data interpretation, requiring students to synthesise information from a variety of clinical sources to inform diagnosis and possible management. The 10-minute stations assess more complex clinical tasks and may also include elements of clinical data interpretation, alongside the assessment of practical procedures, communication skills, and patient management. Formative opportunities for students to practise clinical data interpretation will be incorporated into Cycle 5 to prepare them for the OSCE.

To pass the assessment, students must achieve both: the overall OSCE pass mark (cut score) determined using the approved regression-based standard-setting method; and a pass in a minimum of 8 of the 12 OSCE stations (>60% of stations).

Failure to meet either of these requirements will result in failure of the OSCE. Students who fail the assessment will be required to undertake a re-sit during the July examination diet. The re-sit assessment will be conducted in the same format as the May OSCE.

READING RESOURCES:

Macleod's Clinical Diagnosis

3rd (2024) ISBN 978-0443125034

Sandilands, Morrison, Merriman

Elsevier

Electronic link: https://librarysearch.st-andrews.ac.uk/permalink/44USTA_INST/6vqs55/alma991001074379708966

Oxford Handbook of Clinical Medicine
11th (2024) ISBN 978-019884401-3
Wilkinson et al
Oxford University Press

ATTENDANCE:

Attendance at all components of the cycle is compulsory. Failure to attend at least 80% of the module will result in your name being withdrawn from entry to the OSCE examination.

MODULE COORDINATORS:

Dr Predrag Bjelogrić pb10@st-andrews.ac.uk
Dr Peter Williamson pjw21@st-andrews.ac.uk (deputy)