

A framework for thinking about a clinical reasoning curriculum

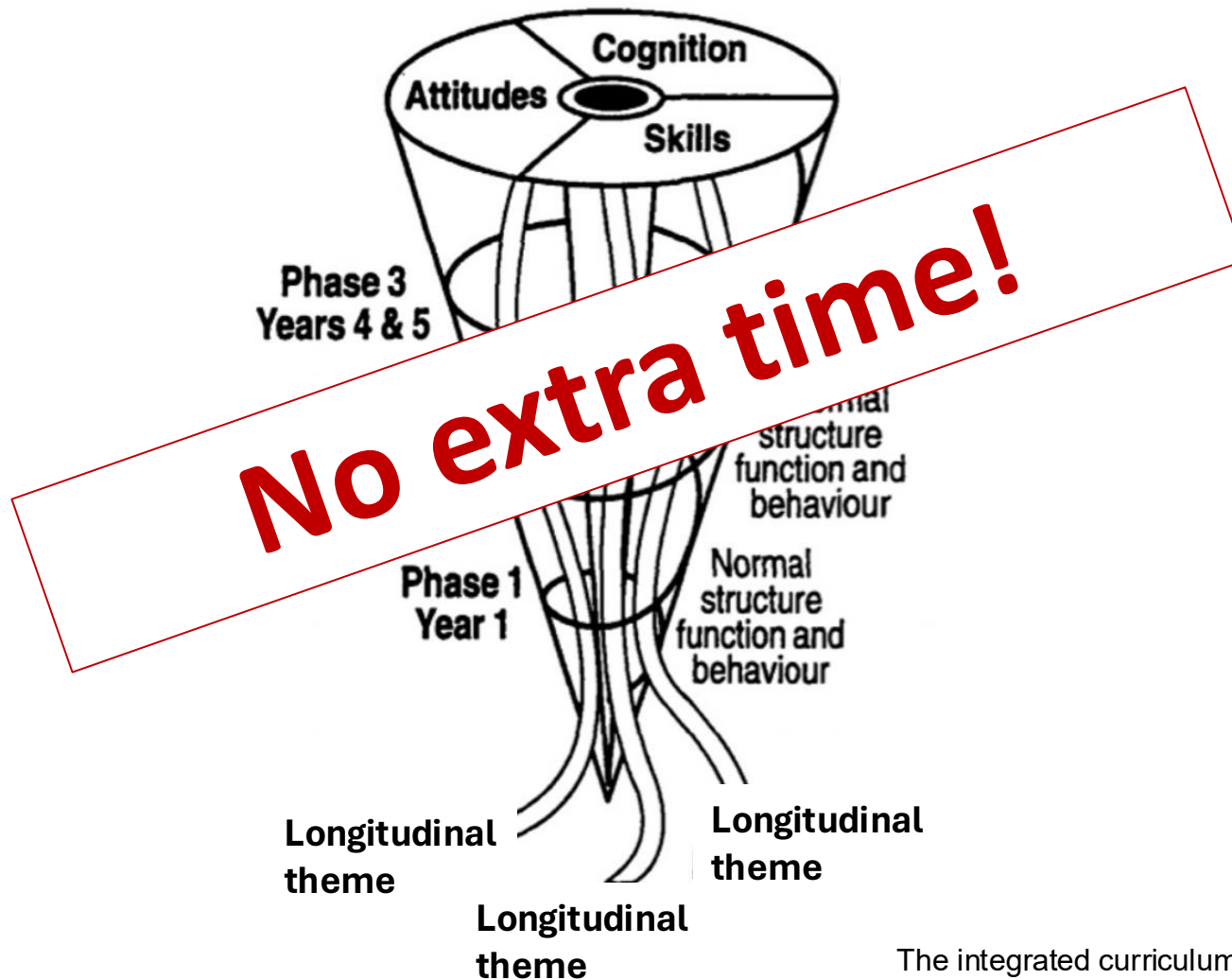
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www.creme.org.uk

To explore:

- A framework for a clinical reasoning curriculum
- Staff development

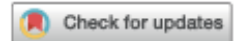
Spiral curriculum



The integrated curriculum in medical education. AMEE Guide no 96. Med Teach. 2015; 37: 312-322.

MEDICAL TEACHER

2021, VOL. 43, NO. 2, 152–159

<https://doi.org/10.1080/0142159X.2020.1842343>MEDICAL
TEACHERTaylor & Francis
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Consensus statement on the content of clinical reasoning curricula in undergraduate medical education

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Joanna Matthan^f , Mini Singh^g  On behalf of the UK Clinical Reasoning in Medical
Education (CReME) consensus statement group





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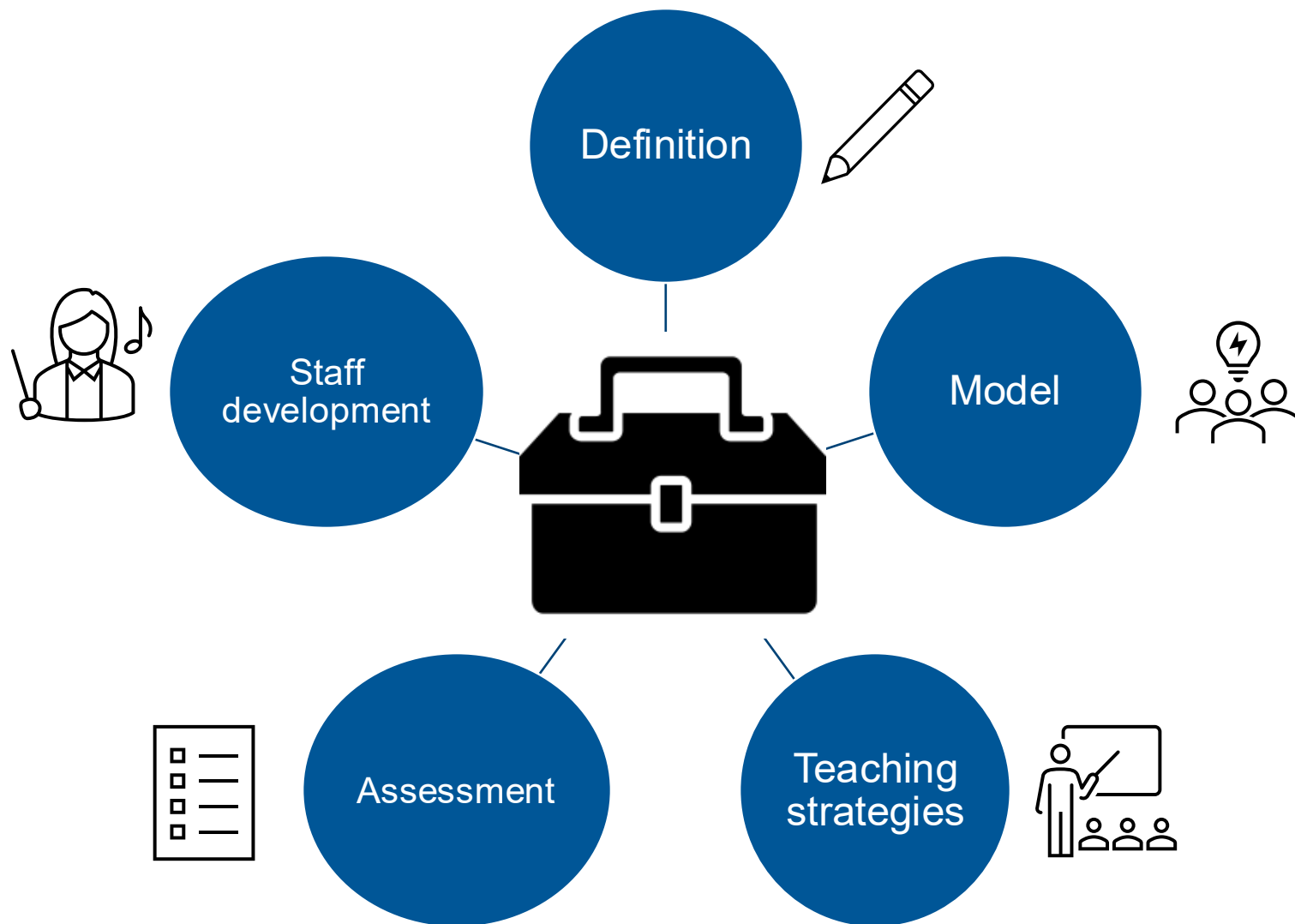
From principles to practice: embedding clinical reasoning as a longitudinal curriculum theme in a medical school programme

Mini Singh, Lisa Collins, Rebecca Farrington, Matthew Jones, Harish Thamby, Pippa Watson, Christian Warner, Kurt Wilson and Jessica Grundy

From the journal [Diagnosis](#)

<https://doi.org/10.1515/dx-2021-0031>







Definition

Clinical reasoning is a process by which clinicians:

- Collect cues, process information, understand the patient's problems
- Plan and implement appropriate action plans
- Evaluate the outcomes and learn from the entire process

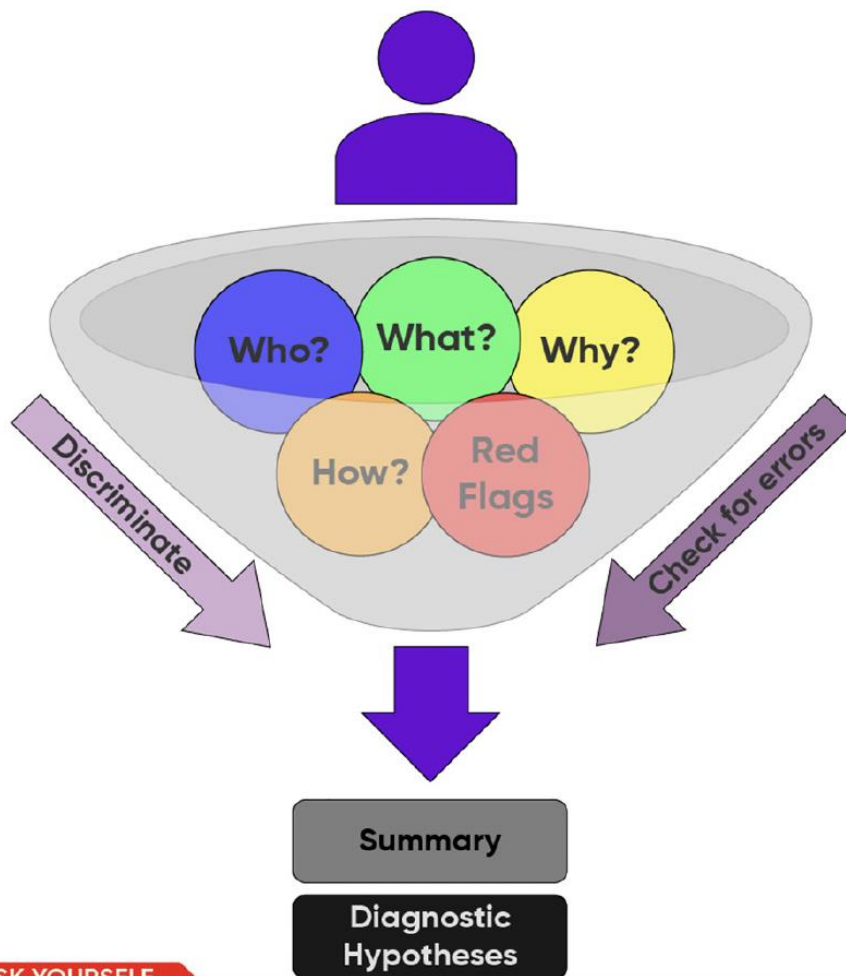
Singh M et al. (2022). From principles to practice: embedding clinical reasoning as a longitudinal curriculum theme in a medical school programme" *Diagnosis*, 9(2): 184-194.

- How is CR teaching and learning being delivered in your context?
- What models are you using (if any)?



Model

Thinking like a Doctor



ASK YOURSELF

What did I learn that I can use again?
What else do I need to learn now?

Who?	Think about age, gender and initial problem. What are common causes/conditions? Think about epidemiology, risk factors and circumstances.
What?	From the opening statement what systems or anatomical structures could be involved?
Why?	Think about why you are asking, not just what you are asking. Why you are examining, not just what.
How?	Explain symptoms and signs by linking your knowledge of pathology and physiology, onset, duration and sequence of events to the history and examination.
Red flags	Consider symptoms and signs for "should not miss" diagnoses.
Discriminate	Differentiate relevant from irrelevant information. Narrow down to the most important. Look for gaps. Do you need to go back and clarify, or examine some more?
Check for errors	Explain any information that doesn't fit with your ideas. Are you ignoring things that don't fit your hypotheses, or giving something too much weight? Do you need to ask more questions or re-examine?
Summary	Summarise your case with relevant positive and negative findings, relating to your differential diagnoses.
Diagnostic Hypotheses	Suggest up to three differential diagnoses with justification. What conditions do you need to exclude?



Teaching strategies

What does not work

Teaching clinical reasoning concepts alone
(e.g. short courses)

Teaching metacognition separate from content



Strong evidence that students must have:

- A deep foundation of factual knowledge
 - Understand facts and ideas in a conceptual framework
 - Organise their knowledge in a way that facilitates retrieval and application
-
- A metacognitive approach to instruction is important



What does work

- Spaced retrieval
- Elaboration*
- Script-based teaching
- Practice with cases
- Low complexity, low fidelity, high instructional support --> high complexity, high fidelity, low instructional support



Cooper N et al. (2020). Consensus statement on the content of clinical reasoning curricula in undergraduate medical education. *Medical Teacher*, 43(2), 152–159.

Different types of knowledge

Metacognitive

- Knowledge of, and awareness of, one's own cognition

Procedural

- How to go about something, methods of inquiry, criteria for using skills or approaches

Conceptual

- The inter-relationships among the basic elements – understanding

Factual

- The basic elements learners must know to be able to solve problems – knowing facts

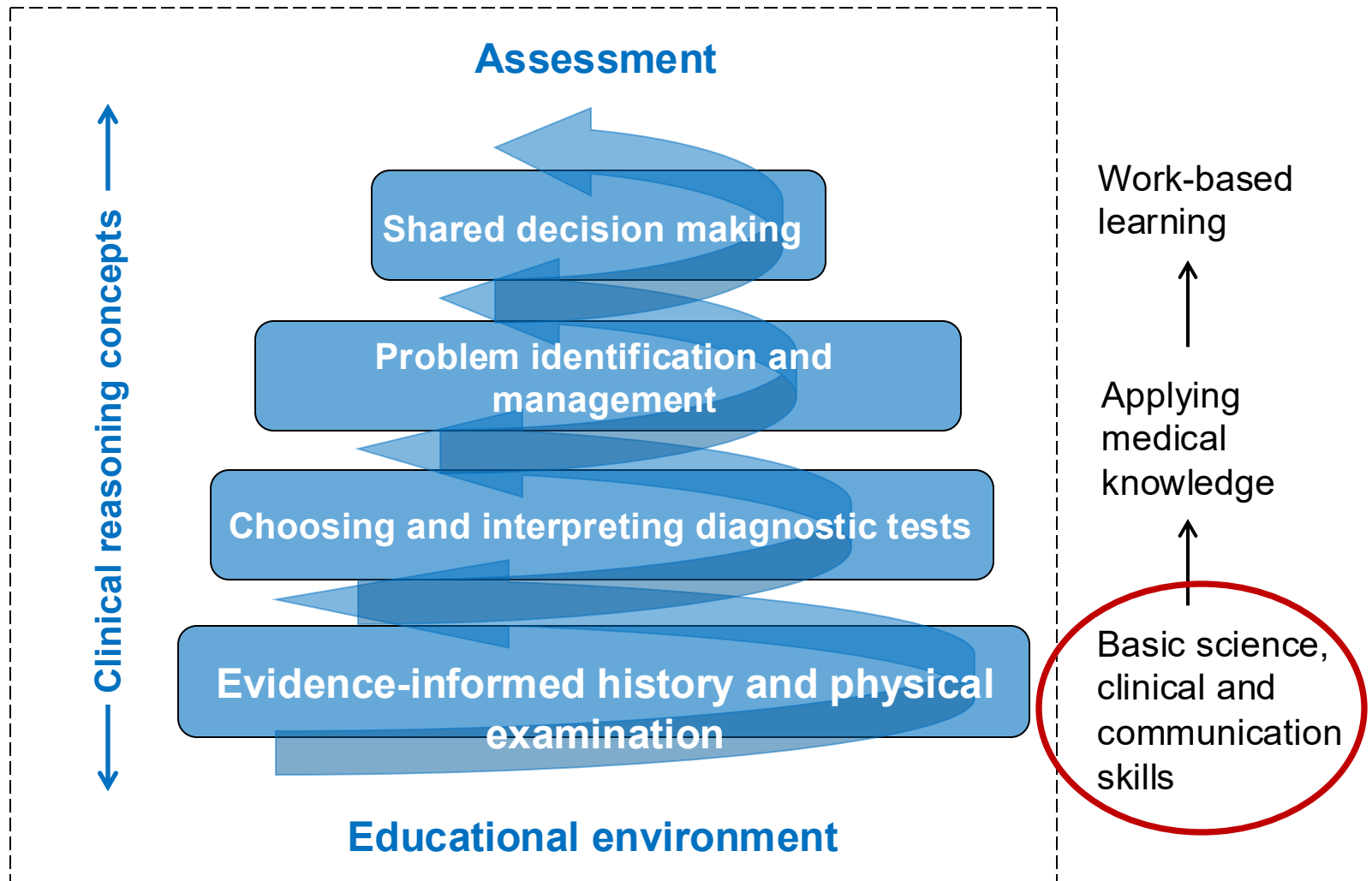
5 areas of instruction:

- Evidence-informed history and physical examination
- Choosing and interpreting diagnostic tests
- Problem identification and management*
- Shared decision-making
- Clinical reasoning concepts

- Metacognition and reflection
- Explicit, think-aloud discourse
- Active learning
- Giving and receiving feedback
- Application of effective learning strategies to content
- Care with language
- Accuracy of thinking
- Attention to affect and motivation
- Improving SRL

Winston KA et al (2012). The role of the teacher in remediating at-risk medical students. *Medical Teacher*; 34: e372-e742.

Spiral curriculum





Assessment

- How does your institution assess clinical reasoning?

ASSESSMENT of REASONING TOOL



SOCIETY to
IMPROVE
DIAGNOSIS in
MEDICINE

Learner: _____

Evaluator: _____

Did the Learner...	Assessment		
	Minimal	Partial	Complete
Collect/report history and examination data in a hypothesis-directed manner ?	- Non-directed in questioning and exam - Asked questions without clear focus on potential diagnoses	Questioning and exam generally reflective of potential diagnoses, but some less relevant or tangential questions	Followed clear line of inquiry, directing questioning and exam to specific findings likely to increase or decrease likelihood of specific diagnoses
Articulate a complete problem representation using descriptive medical terminology?	- Included extraneous information - Missed key findings - Did not translate findings into medical terminology	Generally included key clinical findings (both positive and negative) but either missed some key findings or missed important descriptive medical terminology	- Gave clear synopsis of clinical problem - Emphasized important positive and negative findings using descriptive medical terminology
Articulate a prioritized differential diagnosis of most likely, less likely, unlikely, and "can't miss" diagnoses based on the problem representation?	Missed key elements of differential diagnosis, including likely diagnoses or "can't miss" diagnoses	Gave differential diagnosis that included likely and "can't miss" diagnoses but either missed key diagnoses or ranked them inappropriately	Gave accurately ranked differential diagnosis including likely and "can't miss" diagnoses
Direct evaluation/treatment towards high priority diagnoses ?	- Directed evaluation and treatment toward unlikely/unimportant diagnoses - Did not evaluate or treat for most likely/"can't miss" diagnoses	Major focus of evaluation and treatment was likely and "can't miss" diagnoses but included non-essential testing	- Efficiently directed evaluation and treatment towards most likely and "can't miss" diagnoses - Deferred tests directed towards less likely or less important diagnoses
Demonstrate the ability to think about their own thinking (metacognition)? <i>Consider asking: Is there anything about the way you are thinking or feeling about this case that may lead to error?</i>	Not able to describe the influence of cognitive tendencies or emotional/situational factors that may have influenced decision-making	Can name one cognitive tendency or emotional/situational factor that may have influenced decision-making	
OVERALL ASSESSMENT	NEEDS IMPROVEMENT ☐	MEETS COMPETENCY ☐	EXCELLENCE ☐
Comments:			



Staff development

- What are your experiences?
- Do you have any top tips for staff development?

- Teachers must:
 - Know the curriculum including its assessment
 - Know the relevant ILOs
 - Be content experts*
 - Know **how** to teach effectively
- Longitudinal relationship is beneficial
- Examples ...

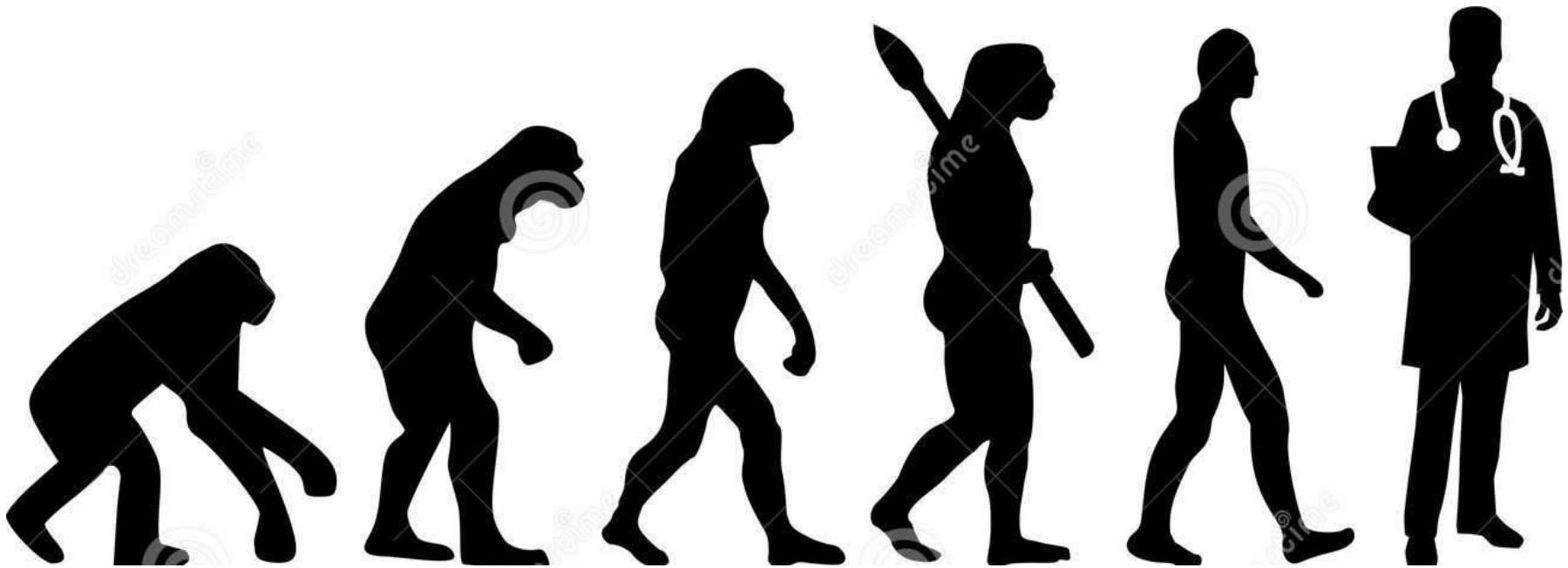
Sutton Trust. (2014). What makes great teaching? <https://www.suttontrust.com/our-research/great-teaching/>



**Putting it all
together**

- Any other experiences or top tips you would like to share?

Implementing a CR curriculum

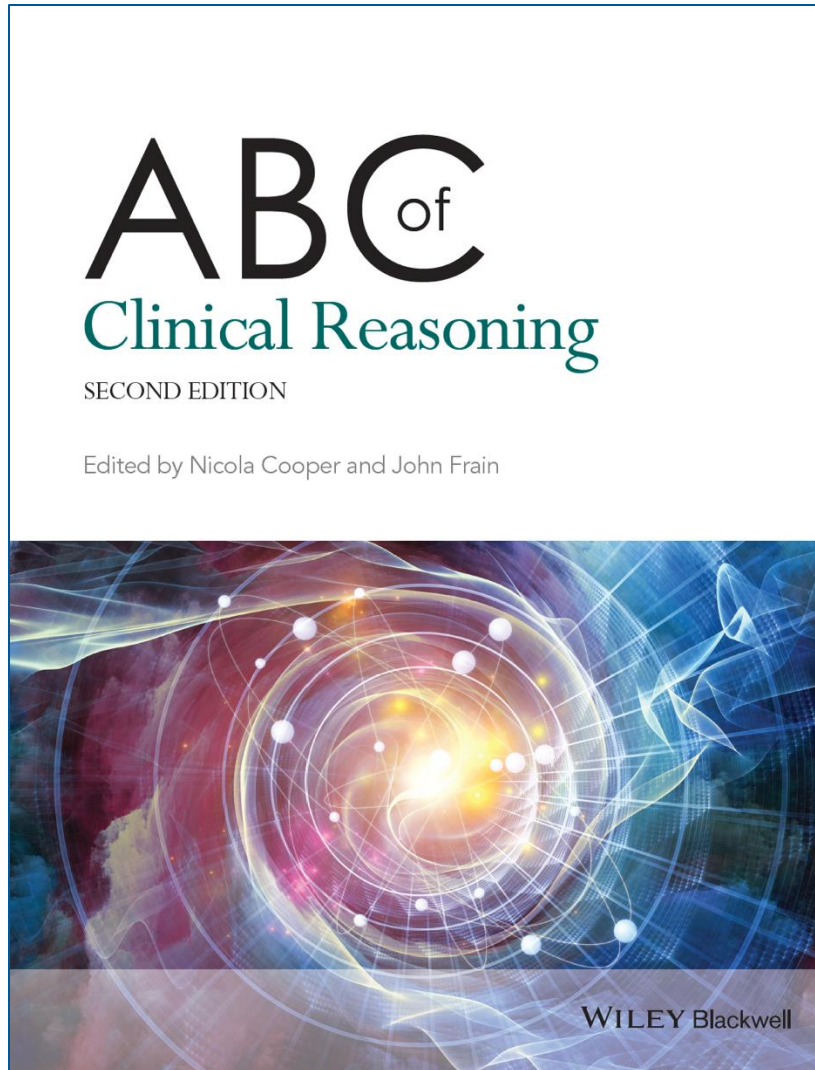


What are the barriers for you?

1. Problem identification and needs assessment
2. Goals and objectives
3. Educational strategies
4. Implementation
5. Evaluation and feedback

CR curriculum map Manchester

Clinical Reasoning Domain	Intended Learning Objectives and Teaching Methods				
	Pre-Clerkship		Clerkship		
	Year 1	Year 2	Year 3	Year 4	Year 5
Theoretical Concepts	Explain the cognitive, scientific, logic and reasoning processes that underlie clinical decision-making		Apply cognitive, scientific, logic and reasoning processes to patient encounters to complete an assessment (history and physical examination)		
	Webinar Short videos Small Group Discussion		Clerkship Experience		
	Identify the factors that contribute to errors in decision-making within individuals and teams		Evaluate factors that contribute to errors in your decision-making following completion of a patient assessment	Evaluate factors that contribute to errors in the team's decision-making during patient care	
	Webinar Short videos Case-Based Classroom Discussion		Clinical Debrief Clinical Reasoning Entrustable Professional Activity	Clinical Reasoning Entrustable Professional Activity	
	Explain how clinical reasoning promotes safe and effective patient care		Illustrate how clinical reasoning promotes safe and effective patient care		
	Webinar Short videos Case-Based Classroom Discussion		Clinical Debrief Personal and Professional Portfolio Written Reflection		
Patient Assessment	Use purposeful interviewing to gather data from simulated patient encounters	Apply clinical reasoning to assess a patient through purposeful history taking and hypothesis-driven physical examination in simulated patient encounters	Apply clinical reasoning to assess a patient through purposeful history taking and hypothesis-driven physical examination in real patient encounters		
	Simulated Patient Encounters Case-Based Classroom Discussion		Clerkship Experience Clinical Reasoning Entrustable Professional Activity		



ABC of Clinical Reasoning **second ed**

Wiley, 2023

podcasts



[www.creme.org.uk/
resources.html](http://www.creme.org.uk/resources.html)