



## Undergraduate Leads in Clinical Reasoning Education Forum 18th June 2021

### Background and objectives

Following a presentation at the Medical Schools' Council, the CReME (UK Clinical Reasoning in Medical Education group) committee organised a morning workshop to share best practice across the UK and discuss challenges faced in delivering clinical reasoning teaching to undergraduates across the country.

55 delegates from 28 of the UK medical schools registered to attend the meeting on 18<sup>th</sup> June 2021 (46 were able to attend)

The objective of the meeting were:

- To set clinical reasoning education in context and share a definition of clinical reasoning
- To introduce CReME's consensus statement on the content of clinical reasoning curricula in undergraduate medical education
- To discuss the 'what' and the 'how' of clinical reasoning education (teaching through a clinical reasoning lens)
- To provide examples and discuss how clinical reasoning education can be integrated into the undergraduate curricula
- To discuss the barriers and challenges to integrating clinical reasoning education in to undergraduate curricula.

### Methods

The morning was a mixture of large group discussion, plenary presentations, breakout room discussions on zoom and a google jamboard where ideas could be shared. The jamboard link (available to view only) is:

[https://jamboard.google.com/d/1142Asvyhu96Quo7RtXEJrBIJ\\_Vj6jaHlsleTNxS1D1g/viewer?f=2](https://jamboard.google.com/d/1142Asvyhu96Quo7RtXEJrBIJ_Vj6jaHlsleTNxS1D1g/viewer?f=2)

Additional information was contributed through the zoom chat and key discussions/links from the chat are shown in the Appendix (pages 7-9)

### CReME Faculty

Nicola Cooper (Chair) – University of Nottingham  
Simon Gay (Treasurer) – University of Leicester  
Anna Hammond (Secretary) – Hull York Medical School  
Mark Lillicrap (CReME committee) – University of Cambridge  
Jo Matthan (CReME committee) – University of Newcastle  
Mini Singh (CReME committee) – University of Manchester



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### Programme for the morning

10:00	Welcome: ML (5 mins)
10:05	Clinical reasoning: what is it, and why does it matter? NC (15 mins)
10:20	<u>Breakout groups (20 mins)</u> Looking through a clinical reasoning lens: do we teach the 'what' in my institution?
10:40	Summary of group discussions: ML (10 mins)
10:50	How small changes in teaching can facilitate clinical reasoning ability more effectively: evidence and experience: AH + SG (15 mins)
11:05	<u>Breakout groups (20 mins)</u> Looking through a clinical reasoning lens: do we teach using the 'how' in my institution? If not, why not?
11:25	Summary of group discussions: ML (10 mins)
11:35	Comfort break (15 mins)
11:50	Implementing an integrated clinical reasoning curriculum: MS + JM (15 mins)
12:05	<u>Breakout groups (20 mins)</u> What are the barriers and facilitators to implementing an integrated clinical reasoning curriculum in my institution?
12:25	Summary of group discussions: ML (10 mins)
12:35	How can we help? ... and other questions: panel discussion chaired by ML Questions from participants in the chat (25 mins)
13:00	End: ML



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### **Session 1 – The ‘What’ of clinical reasoning teaching**

Link to the video of the plenary session – Nicola Cooper

<https://zoom.us/rec/play/wH41Sj3fxFHe9H3S7EAAAtSZ4Vcldqr1vD8oTNKOzaep53ruucUWeXsULVkpA6MskvhjRN2g0HvcuaFmS.oW1JjxrreBIOEni>

The ‘What’ from the CREME consensus statement on the content of clinical reasoning curricula in undergraduate medical education:

- 1) Clinical reasoning concepts
- 2) History and physical examination
- 3) Choosing and interpreting diagnostic tests
- 4) Problem identification and management
- 5) Shared decision making

<https://www.tandfonline.com/doi/full/10.1080/0142159X.2020.1842343?scroll=top&needAccess=true>

### **Summary of some key themes from the breakout room discussions and the jamboard**

How much should the what be implicit or explicit

Pros and cons of a longitudinal integrated approach – evidence from Manchester that it improves student’s synthesis of information

Having a shared language that describes reasoning is important to help in our teaching

Facilitating students moving from symptoms to diagnosis

Being explicit about the importance of problem representation and the use of semantic qualifiers.

Teaching about bias and reasoning – dual process thinking etc.

The ‘4 whats’ (taught in Bristol) -

<https://www.sciencedirect.com/science/article/pii/S0738399120306807?via%3Dihub>

Context is key to what is taught



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### Session 2 – The ‘How’ of clinical reasoning teaching

Link to the video of the plenary session – Anna Hammond and Simon Gay

[https://zoom.us/rec/share/SOuNrHpfcP0XWFgtSoWrjEbaVMXuyYFSi9ic4m784PcyZk5OdAOtNX1FrH8IGShg.SrLmG\\_8WRoYHX3fQ?startTime=1624009958000](https://zoom.us/rec/share/SOuNrHpfcP0XWFgtSoWrjEbaVMXuyYFSi9ic4m784PcyZk5OdAOtNX1FrH8IGShg.SrLmG_8WRoYHX3fQ?startTime=1624009958000)

The ‘How’ from the CReME consensus statement on the content of clinical reasoning curricula in undergraduate medical education suggests:

Strategies that:

- 1) Build understanding
- 2) Employ structured reflection
- 3) Use practice with cases and corrective feedback
- 4) Structure knowledge around problem specific concepts
- 5) Employ retrieval practice
- 6) Differ according to stage of learning

<https://www.tandfonline.com/doi/full/10.1080/0142159X.2020.1842343?scroll=top&needAccess=true>

### Summary of some key themes from the breakout room discussions and the jamboard

Using stop-start approaches when reviewing clinical interactions

Using ‘self-explanation’ to help students reason

Getting students to write patient referral letters and discharge letters to encourage them to articulate their reasoning

Vertical themes which revisit and differ according to the stage of learning

Pro-formas can be helpful, particularly with more junior students to help develop basic frameworks

Virtual/asynchronous case based learning can provide a structure to learning

Ensure that there is uncertainty embedded – particularly for more senior students

Work based assessments can help translate clinical reasoning from lectures to the clinical environment

Use of comparison cases with venn diagrams to illustrate overlaps

Barts – introduction of Odds Ratios and clarifying statements from year 1 of clinical skills to support clinical reasoning learning.

Portfolio cases using tools such as PR, SNAPPS, etc

Videod consultations can help support facilitated stop-start discussions of reasoning.

Patient recording – speaking clinically <https://speakingclinically.co.uk> etc can be a useful resource

Resources like Mentimeter (St Georges) can be helpful in encouraging interactivity in clinical reasoning teaching.

Some schools embed their reasoning within other curriculum strands to support retrieval practice – ethics teaching etc



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### Session 3 – Putting it into practice – developing a clinical reasoning curriculum and identifying barriers

Link to the video of the plenary session – Mini Singh and Jo Matthan

[https://zoom.us/rec/share/SOuNrHpfcP0XWFgtSoWriEbaVMXuyYFSi9ic4m784PcyZk5OdAOtNX1FrH8lGShg.SrLmG\\_8WRoYHX3fQ?startTime=1624013465000](https://zoom.us/rec/share/SOuNrHpfcP0XWFgtSoWriEbaVMXuyYFSi9ic4m784PcyZk5OdAOtNX1FrH8lGShg.SrLmG_8WRoYHX3fQ?startTime=1624013465000)

A slide that can help us to think about how we might implement a clinical reasoning curriculum in our local institutions, also available on the jamboard

[https://jamboard.google.com/d/1142Asvyhu96Quo7RtXEJrBIJ\\_Vj6jaHlslsTNxS1D1g/viewer?f=2](https://jamboard.google.com/d/1142Asvyhu96Quo7RtXEJrBIJ_Vj6jaHlslsTNxS1D1g/viewer?f=2)

Name of Medical School	What do you do ? What works ? What is still a challenge	
Curriculum Review		
Dedicated CR Implementation Group?		
Curriculum Strategy		
What and How to Teach		
Faculty Development		
Impact to date		
Challenges/ Facilitators		

### Summary of some key themes from the breakout room discussions and the jamboard

Faculty development is the key driver and the key challenge

Using junior doctors (Cambridge and UCLan) and near-peer student teaching is a good way to develop a faculty of teachers

Being an expert in CR does not equate to be a good teacher of CR

One potential carrot for teachers is the evidence that faculty who teach CR have better CR skills - <https://doi.org/10.1080/14739879.2015.11494350>

Clinical reasoning can also feed into the sustainability agenda - choosing and interpreting appropriate diagnostic tests is key to sustainability.

Need to engage both primary and secondary care teachers in a vertical strand.

We need to influence the key decision makers in our schools to be able to develop these programmes.



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**Session 4 – where next – an open discussion about how CReme can help us all improve our clinical reasoning teaching and support curriculum development.**

Three key themes emerging from these discussions were:

**1) Mentoring**

There was significant interest in developing a mentoring programme so that leads from different schools could bounce ideas of each other either in a one-one mentoring relationship or in small groups.

**2) Assessment**

There was a lot of discussion as to how assessment drives the learning of clinical reasoning. There were views on both sides as to how effective SBAs are in this context and the group would be keen for a follow-up meeting to specifically address this area. Ideally this could be a combined venture between the MSCAA and CReme

**3) Bounded rationality** – developing reasoning skills in less than ideal contexts (time pressure etc) – see

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0010265> for a useful review of this area.



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### Appendix – edited chat with links that may be of use to delegates

#### CReME resources

The 'What' from the consensus statement –

- 1) Clinical reasoning concepts
- 2) History and physical examination
- 3) Choosing and interpreting diagnostic tests
- 4) Problem identification and management
- 5) Shared decision making

The 'How' from the consensus statement – strategies that:

- 1) Build understanding
- 2) Employ structured reflection
- 3) Use practice with cases and corrective feedback
- 4) Structure knowledge around problem specific concepts
- 5) Employ retrieval practice
- 6) Differ according to stage of learning

Consensus statement on content of clinical reasoning curricula in undergraduate medical education is open access and can be found here:

<https://www.tandfonline.com/doi/full/10.1080/0142159X.2020.1842343?scroll=top&needAccess=true>

If you want to look up resources etc. you can go to the CReME website –

<https://creme.org.uk>

**ART tool** - <https://www.improvediagnosis.org/art/>

Comment on ART tool - I think there is work that could combine the ART tool with other elements of our CEX forms that could lead to a better product for us as educators

#### **Analogies and their use in teaching clinical reasoning**

I like the reading analogy which is similar, we are the experts at 'phonics' in the reading analogy

This is a good analogy - DRIVING. Breaking it down to its constituent parts. Several 'components' of clinical reasoning have been described. (Not all required every time, and not necessarily in any order). CReME brainstormed these and grouped them in to the 5 domains of CR education to be helpful for both learners and teachers.

We use the riding a bike analogy in Cardiff - has the advantage that many people have also tried to teach someone else to do this, which highlights how complex this actually is as a skill and how hard to work out where to start (as in clinical reasoning)



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### **Modelling as an important element in learning**

I also think modelling is important and thinking out loud for students in clinical practice

### **Portfolios to support learning of clinical reasoning**

We created a structured portfolio case that uses PR, SNAPPS, Diagnostic reflection - we have just added IDEA at end - really helped as feedback tool for supervisors and with faculty development

### **The importance of recognising uncertainty in clinical reasoning**

I always talk to students about the need to learn to become comfortable with uncertainty but as novices they want a diagnosis - and this is actually more aligned with what patients want which presents a challenge

Yes, perhaps uncertainty is something for final years ... like how we teach children to cross the road (differently at different ages!)

maybe we should introduce uncertainty earlier though, before they get into bad habits

Good article on uncertainty for teachers: <https://pubmed.ncbi.nlm.nih.gov/30390181/>

### **Teaching clinical reasoning improves your own reasoning**

Teaching and learning clinical reasoning: tutors' perceptions of change in their own clinical practice

<https://doi.org/10.1080/14739879.2015.11494350>

### **Assessment of clinical reasoning**

In terms of assessment, we did a 'think aloud' study looking at students' cognitive processes. Students were more likely to use analytical reasoning methods when answering VSAQs.

<https://pubmed.ncbi.nlm.nih.gov/34126840/>

Multiple assessment approaches the way to go - we are piloting VSAQs and developing their integration into Virtual Patients

to summarise - exam question writing skills need to go hand in hand with any assessment strands. That is really important! I think to have the processes combined!

We discussed in our group how the MLA will impact on our good intentions. My worry is the time of each question in the AKT means very little information will be given. They are talking about to only 2 sentences per question I would love to see the lit review @james Gray.

Really good to hear SBAs are not a problem per se

Newcastle uses short answer papers, Wriske, portfolio (reflection) and verbal reasoning in the OSCEs... perhaps we could have some examples of how to write good SBA questions for CR - that would be really useful!

Also as many contexts as possible!

Context is very interesting. As a sideline in my work I am interested as to whether if we give an identical question where a patient can be admitted or kept at home then have some where its in GP and half ED (but the rest of the question identical) will we see a different response - accepting that this is "place" context alone

I agree yet is not heavily considered in the way we teach - or at least there is a lack of understanding on what constitutes context in its widest sense





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I am doing a PhD looking at how students reason in assessments - specifically SBA and OSCE - as well as looking for sites who may be interested in being part of the core study I was hoping some of this group would be prepared to be involved in a consensus group process to formulate the key questions to ask students as part of a mixed methods approach. Anyone who would be up for being involved please email me at [j.t.gray@sheffield.ac.uk](mailto:j.t.gray@sheffield.ac.uk)

### **Stop-start approaches to clinical reasoning teaching**

I'm not aware of any research on "stop-start" during consultations to teach/facilitate learning of clinical reasoning - has anybody seen any?  
<https://www.sciencedirect.com/science/article/pii/S0738399120306807?via%3Dihub> our paper than describes our approach to the STOP4What? model for teaching clinical reasoning

### **Faculty Development**

If you haven't seen it this Toolkit from SIDM has some useful stuff around faculty development <https://www.improvediagnosis.org/clinicalreasoning/>  
Wondering whether CREME would consider providing a mentoring system to support each other in making this happen?  
I wonder whether small 'mentoring circles' of a 3-4 people might work?  
Is it better to have a core group of expert CR teachers working on faculty dev and assessments, plus wider general faculty with skills as well ..?

### **Future directions**

I wonder if sub groups would work e.g. CR in assessment, CR in case based learning, CR in faculty development --so that people in our med schools who are not here but interested and lead on those/have a particular interest can join

### **Research Opportunities – Edge Hill**

We have a PhD opportunity in clinical reasoning:  
ASME PhD Doctoral Grant studentship opportunity – October 21 entry  
Effectiveness of personalised self-regulated learning enhanced feedback using virtual patients on clinical reasoning among early medical and physician associate students  
<https://www.edgehill.ac.uk/graduateschool/ahrc-collaborative-doctoral-partnership-cdp-phd-studentship-2/>  
Please contact [john.sandars@edgehill.ac.uk](mailto:john.sandars@edgehill.ac.uk) if interested