

Great Evidence in Medical education Summary (GEMeS)

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Educational Question or Problem	Can we identify and characterize clinical reasoning problems amongst residents?
Bottom Line	The six main categories of clinical reasoning difficulties are: 1) difficulties in generating hypotheses, 2) identifying cues and directing data gathering, 3) premature closure, 4) difficulties in prioritizing, 5) difficulties in painting an overall picture of the clinical situation, 6) difficulties in elaborating a management plan.
Why is it relevant to Emergency Medicine Education?	This guide could aid clinical teachers identify and characterize clinical reasoning problems in medical trainees to ensure that appropriate remediation strategies be developed and applied in a timely manner.
Level of Evidence	
Reference	DOI: 10.3109/0142159X.2012.733041
Hyperlink to PubMed link or Journal Link	http://www.ncbi.nlm.nih.gov/pubmed/23228082
Study Design	Participatory Action Research Method
Funding Sources	N/A
Setting	Professors of the Département de médecine familiale et de médecine d'urgence of the Université de Montréal
Level of Learning	Undergrad and Postgrad
Synopsis of Study	<u>Clinical reasoning difficulties: A taxonomy for clinical teachers</u> Clinical reasoning difficulties affect 5-15% of medical students. Although essential, teaching in

the emergency department (ED) can prove to be a daunting task. The ED's hectic setting can limit opportunities to perform high-yield teaching methods such as direct observation of entire cases, rendering the recognition of clinical reasoning problems a challenge.

This study identifies the most common clinical reasoning difficulties as they occur in residents' patient encounters, case summaries, and notes. Overall, through eight iterative engagement cycles, the authors aimed to alleviate the uneasiness often conveyed by clinicians when facing a pedagogical diagnosis by providing a step-by-step approach to its elaboration, highlighting its similarities with a structure they are familiar with and use on a daily basis, i.e. their own clinical reasoning (Figure 1). Although some of the steps outlined in Figure 1 are covered in the ensuing articles of the series, this article focuses on the crucial first step of the process: the recognition and pinpointing of a clinical reasoning difficulty, for which they provide a conceptual framework to help isolate specifically troublesome areas.

Clinical reasoning is separated into three main steps: 1) data collection and hypothesis generation, 2) hypothesis sequencing/refining and, ultimately, 3) establishing final diagnosis and treatment plan.

These steps are then subdivided into five potentially problematic areas. In the case of data collection and hypothesis generation, student may display difficulties in anamnesis organization and in the identification of the key elements of the patient's history, which can limit the comprehensiveness of the generated hypothesis. Difficulties in hypothesis treatment and refinement can stem from premature closure (AKA "Spot Diagnosing") or from struggling to appropriately prioritize possible diagnoses. Finally, difficulties in approaching the clinical situation as a whole and in the development of a relevant treatment plan complete the list of potentially problematic areas that should be considered when evaluating clinical reasoning.

THE CLINICAL REASONING PROCESS		THE EDUCATIONAL REASONING PROCESS	
From the patient's story...		Sensing/spotting difficulties...	
1. Data collection	a) Generating hypotheses	1. Data collection	a) Generating hypotheses
	b) Verifying hypotheses		b) Verifying hypotheses
2. Diagnostic impression		2. Diagnostic impression	
3. Investigation		3. Investigating/looking for explanations	
4. Final diagnosis/comprehensive representation of the situation		4. Final diagnosis/comprehensive representation of the situation	
5. Treatment		5. Treatment: educational intervention plan	

Figure 1. Clinical reasoning process compared to the educational reasoning process

	<p>In summary, the article presents a solid, easy to apply framework to help clinical teachers in the identification and characterization of a clinical reasoning problems in order to pose a solid pedagogical diagnosis for our learners. It represents the first step towards turning what was once viewed as a seemingly insurmountable task into one that is not only accessible, but also highly beneficial for medical students and residents.</p>
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