Supervision of clinical reasoning

Methods and a tool to support and promote clinical reasoning

Marie-Claude Audétat MPs MA(Ed)   Suzanne Laurin MD FCMFC

Simply, clinical reasoning is the sum of the thinking and decision-making processes associated with clinical practice ... and it enables practitioners to take ... the best judged action in a specific context.[1]

Every day, clinician teachers witness the shock experienced by new residents when they realize that a clinic is in a constant state of uncertainty. Undifferentiated complaints, diagnostic doubts, the familial, social, and cultural characteristics of the patient and his or her perspective, and the working environment and its imponderables are among the factors that cause residents to "lose their innocence," as Boshuizen puts it.[2] In this context, the ability to make adequate decisions requires a reflexive practice and excellent clinical reasoning skills. For clinician teachers, supervising clinical reasoning offers both a formidable challenge and a unique opportunity to support and promote the development of these skills.

Supervision strategies to promote the development of clinical reasoning in daily practice

A previous Teaching Moment published in *Canadian Family Physician* emphasized the importance of direct observation in supervision.[3] Although regular clinical supervision keeps our expectations of the time that we actually have to work with residents individually both modest and realistic, the clinical context clearly offers incredible teaching potential. Practical experience plays a determining role in the development of skills, especially if it is accompanied by reflection, during and after, to foster understanding and make room for any necessary adjustments.[4]

From this perspective, the supervision strategies presented in **Table 1** are easy to put into practice, even if you did not observe the consultation, and they do not have to be time-consuming. These strategies will stimulate the development of clinical reasoning skills on a daily basis, calling on both the resident and the supervisor to articulate their thought processes.[5,6]

CFPlus GO *The tool is available at **www.cfp.ca**. Go to the full text of this article on-line, then click on **CFPlus** in the menu at the top right-hand side of the page.*

Identifying and describing common difficulties encountered in clinical reasoning

The supervisor's duties and responsibilities point to 2 specific roles: that of a clinician who is responsible for the medical care of patients and that of a teacher who is responsible for helping residents to develop their clinical skills.[7] In a pedagogic reasoning process that is very similar to the medical reasoning process, the supervisor starts to look for clues that will enable him or her to develop hypotheses on the quality of the resident's reasoning process, so that the supervisor can identify the resident's learning needs. The supervisor can then make a pedagogic diagnosis and choose a specific form of supervision that takes his or her conclusions into account. In this way, supervision becomes a reflective, targeted, dynamic process.[8]

A tool for supervisors that facilitates the collection of clues and the beginning of an intervention with the resident

From our experience of supervision and our discussions with our colleagues who are teachers, we have noted that:

- Physicians who also teach tend to doubt their perceptions of the difficulties encountered by residents. Because of this, there is a risk that opportunities for remedial work will be lost during the residency, which is already short and condensed.
- In general, physicians who are teachers feel inadequate and routinely report that they lack simple and effective tools for quickly identifying and objectifying the various stages of the medical reasoning process.

In order to observe the resident's process and understand it, the supervisor must keep in mind the key steps of the medical reasoning process, as summarized in **Box 1.**

We have developed a tool* to assist clinician teachers in evaluating the clinical reasoning processes of their residents. This tool targets various times in the supervision process, such as the consultation (direct supervision), the presentation of the case by the resident (case discussion), and manifestations of clinical reasoning best observed at these times. This tool can also be used by the supervisor to document the strengths and weaknesses in the resident's clinical reasoning, to

Table 1. Examples of teaching strategies

TEACHING STRATEGY	EXAMPLES	COMMENTS
Have the resident explain his or her thought processes		
• When the resident presents a case, have him or her explain the reasoning for each step in the process (gathering data, coming up with hypotheses, making a diagnosis, etc.)	How are these data important? What led you to make this diagnosis? What supports your first hypothesis? Your second?	This is an interesting strategy for getting a sense of the "quality" of the resident's clinical reasoning. This strategy can also be used simply in support of the reasoning process.
• Have the resident sum up the clinical situation in 2 or 3 sentences.	In a few sentences, summarize the key elements of the situation so that I can understand your thought process.	This is an interesting way to "force" the resident to synthesize the key elements, bit by bit, and to develop his or her ability to articulate the patient's problem.
• Have the resident rank the diagnoses in order of priority and justify his or her choice.	In your estimation, which is the most probable diagnosis? Why? What diagnoses did you rule out during the interview? Why?	This strategy provides access to the hypotheses generated, then excluded, by the resident. This strategy helps the residents to make connections and develop networks of knowledge about various diseases.
Explain		
• Explain your own clinical reasoning process in the case being discussed and how it was developed.	When the patient tells me that … and when I observe that …, this makes me think of … and so then I …	Experts' clinical reasoning tends to be condensed. They do not necessarily remember the steps in the clinical reasoning process and often have difficulty expressing them.
• If necessary, go back to the patient (to role play) and explain the reasoning behind the steps that were followed.	I chose to ask these questions because I was thinking of …. When I saw that … it made me think of … and that is why I took the interview in this direction.	All too often, the model loses its teaching effect when the clinician teacher wrongly assumes that the resident was able to follow the teacher's clinical reasoning process simply by observing him or her.
Read or diagram		
• Encourage the resident to do some reading comparing various diseases and disease courses, based on cases encountered.	Read about gout and septic arthritis, listing the elements of the anamnesis and the physical examination that distinguish these two diseases.	This process will encourage the resident to conceptualize various pathologies instead of merely learning a list of signs and symptoms by heart. This process is even more effective when the supervisor reviews with the resident what he or she understands from the reading.
• Create a diagram of differential diagnoses using the elements obtained during the consultation.	Take a moment to do a diagram of the differential diagnoses that you thought of, based on these symptoms; or draw a diagram that illustrates your overall understanding of this clinical situation.	This will enable the resident to make connections between the various elements gathered from the patient, and will enable the supervisor to have access to these connections, in order to support them, correct them, or suggest other connections.

Box 1. Steps in the medical reasoning process

- Right from the start of the medical consultation, based on the first information obtained from the patient (reason for consultation, age, appearance, context of the consultation, etc), the physician will have a number of possible diagnoses in mind. These hypotheses might appear spontaneously or through pattern recognition, or they might be constructed gradually, as the physician compares the information gathered to the network of knowledge he or she has constructed from theoretical learning and clinical experience.
- As the physician collects data, he or she will try to document these hypotheses and steer the anamnesis in such a way as to confirm them or rule them out. Other hypotheses will emerge as this new data comes to light and the physician will continue this process, referred to as the hypothetical-deductive process, until he or she is able to articulate the patient's problem and whittle the working hypotheses down to 1 or 2.
- The next step is the development of an investigative and treatment plan. With these two final steps, the reasoning process is once again at work. The physician must determine which complementary examinations will yield more information and be acceptable and available within a reasonable period of time. He or she must select a treatment plan based on the available options (for example, in the case of medication, based on cost and the risk of side effects).

share his or her observations with the resident, to determine what is standing in the way of effective clinical reasoning, and to pursue clinical reasoning in daily practice using the strategies proposed in **Table 1**.[9] This tool is available at **CFPlus**.*

Ms Audétat is a psychologist in the family practice unit at Hôpital du Sacré-Cœur de Montréal in Quebec and a Clinical Teacher in the Department of Family and Emergency Medicine at the University of Montreal. **Dr Laurin** is a family physician in the family practice unit at Hôpital du Sacré-Cœur de Montréal and an Assistant Professor in the Department of Family and Emergency Medicine at the University of Montreal. Both teach a number of faculty development workshops.

Competing interests
None declared

Correspondence
Ms Marie-Claude Audétat, Centre de Pédagogie appliquée aux Sciences de la Santé, University of Montreal, Faculty of Medicine, Montreal, QC; e-mail **mcaudetat@sympatico.ca**

References
1. Higgs J, Jones M. Clinical decision-making and multiple problem spaces. In: Higgs J, Jones M, editors. *Clinical reasoning in the health professions*, 3rd ed. Oxford, UK: Butterworth-Heinemann Ltd; 2008.
2. Boshuizen H. The shock of practice: the effects on clinical reasoning. Paper presented at: Annual Meeting of the American Educational Research Association; April 1996; New York, NY.
3. Russell G, Ng A. Taking time to watch: observation and learning in family practice. *Can Fam Physician* 2009;55:948-50 (Eng), CFPlus (Fr).
4. Chamberland M, Hivon R. Les compétences de l'enseignant clinicien et le modèle de rôle en formation clinique. *Pédagogie médicale* 2005;6:98-111.
5. Nendaz M, Charlin B, Leblanc V, Bordage G. Le raisonnement clinique: données issues de la recherche et implications pour l'enseignement. *Pédagogie médicale* 2005;6:235-54.
6. Bowen J. Educational strategies to promote clinical diagnostic reasoning. *New Engl J Med* 2006;355(21):2217-25.
7. Irby D. What clinical teachers need to know. *Acad Med* 1994;69:333-42.
8. Kilminster S, Cottrell D, Grant J, Jolly B. AMEE Guide No. 27: effective educational and clinical supervision. *Med Teach* 2007;29(1):2-19.
9. Ende J. Feedback in clinical medical education. *JAMA* 1983;250(6):777-81.

TEACHING TIPS

- Have the resident explain his clinical reasoning, summing up the clinical situation in 2 or 3 sentences indicating which possible diagnoses he retains or rejects and explaining which elements of the data he gathered enabled him to retain some hypotheses and reject others.
- Explain your own clinical reasoning, verbalizing the process of choosing one hypothesis over another based on the data provided by the resident or on the data you yourself gathered from the patient.
- Support the resident in recognizing factors that assist with making decisions and correlations between clinical factors and diagnoses by encouraging him to read articles comparing the clinical characteristics of various pathologies (e.g., arthritis and osteoarthritis) or by drawing a diagram showing the connections between the clinical situation and the hypotheses he retained or rejected.
- The tool being proposed (which is available at CFPlus*) might help you to assess your resident's clinical reasoning.

CONSEILS AUX ENSEIGNANTS

- Faites expliciter le raisonnement clinique du résident en lui demandant de résumer le cas en deux ou trois phrases et d'indiquer quelles hypothèses diagnostiques il retient et rejette, en expliquant les éléments du recueil des données qui lui permettent de soutenir certaines hypothèses et d'en exclure d'autres.
- Explicitez votre propre raisonnement clinique en verbalisant comment vous en arrivez à choisir une hypothèse plutôt qu'une autre à partir des données que vous soumet le résident ou après avoir revu vous-même le patient.
- Favorisez la reconnaissance des éléments-clés qui aident à la décision et la construction de liens entre les indices cliniques et les diagnostics, en encourageant la lecture d'articles qui comparent les caractéristiques cliniques des pathologies (p. ex. arthrite et arthrose) ou en faisant dessiner une carte conceptuelle qui permet de relier les éléments recueillis dans la situation clinique et les hypothèses soutenues ou exclues par le résident.
- L'outil proposé (et qui est disponible à CFPlus*) peut vous aider à apprécier le raisonnement clinique de vos résidents.

Teaching Moment is a quarterly series in *Canadian Family Physician*, coordinated by the Section of Teachers of the College of Family Physicians of Canada. The focus is on practical topics for all teachers in family medicine, with an emphasis on evidence and best practice. Please send any ideas, requests, or submissions to **Dr Allyn Walsh,** Teaching Moment Coordinator, at walsha@mcmcaster.ca.