

CLINICAL REASONING DIFFICULTIES

A GUIDE TO EDUCATIONAL DIAGNOSIS AND REMEDIATION

FOREWORD

The following guide describes **5 common prototypes of clinical reasoning difficulties** as they present in the context of clinical supervision. These difficulties occur at different points in the clinical reasoning process which we have chosen to break down as follows:

Hypotheses generation and direction of data gathering **DIFFICULTY 1**

Refinement of hypotheses and hypotheses testing
(data collection – interpretation – synthesis – verification) **DIFFICULTIES 2 AND 3**

Diagnosis and development of a management plan **DIFFICULTIES 4 AND 5**

FOR EACH DIFFICULTY, WE SHALL DESCRIBE:

1. **CUES** to help detect them both in clinical supervision and review of medical records
2. **EXAMPLES** of questions to help elicit learners' clinical reasoning
3. **HYPOTHESES** regarding their root causes
4. **SUGGESTIONS** for tailored remediation strategies

This guide does not claim to be exhaustive, rather it seeks to illustrate and support the requisite process of educational reasoning (data gathering, explanatory hypotheses and testing of these hypotheses, educational diagnosis, development of a remediation plan, use of educational methods, and assessment of results) that clinical educators perform when addressing their learners' difficulties. Due to the highly complex nature of clinical reasoning, the categories of difficulties and cues described in this document are not mutually exclusive and have some degree of overlap.

We have opted to address the management phase separately to stress that the process of clinical reasoning continues even after a diagnosis has been reached.

The proposed remediation strategies also illustrate possible approaches which we hope to be practical and realistic. They are based on principles of cognitive psychology, providing very concrete strategies, and of reflective practice. Some of these measures can be used once the clinical encounter has ended in order to avoid holding up patients or delaying treatment. We would like to stress that these educational strategies will be all the more effective if they are repeated and integrated within a remediation plan.

Finally we strongly recommend direct observation (direct supervision) of learners suspected of presenting clinical reasoning difficulties so as to document the problem and gain a deeper understanding of its precise nature. Discussing the case (indirect supervision) after direct supervision allows the supervisor to evaluate the learners' ability to synthesize information and his/her global representation of the case and the various issues involved. The little "bomb" icons are meant to remind readers of this potential pitfall.

A glossary of essential terminology* is included at the end of the guide. We have used up-to-date evidence from the clinical reasoning literature to develop this guide. Those interested in further reading will find suggestions at the end of the guide.

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1

DIFFICULTIES IN GENERATING HYPOTHESES, IDENTIFYING CLUES, AND DIRECTING DATA GATHERING

The learner : 1) fails to detect or appropriately select the key features or cues that should allow him/her to generate diagnostic hypotheses, or
2) fails to generate a certain number of diagnostic hypotheses to guide his/her reasoning
3) fails to direct and focus his/her data gathering.

CUES available in direct supervision

- Learner fails to select the key features.
- Learner fails to ask key questions early.
- Interview can be unduly exhaustive, stereotypical and unconnected to the patient's complaint.
- Physical examination can be unduly exhaustive, stereotypical and unconnected to the patient's complaint.
- Consultation is conducted in a rigid way, failing to take account of new cues or information provided by the patient.
- Interview is disorganized, with no clear direction, occasionally excessively brief but more typically unduly long.
- Learner asks questions with no obvious relevance to the case or persists in an irrelevant line of inquiry.

CUES available in indirect supervision or case discussions

- Case summary is unduly long or brief and fails to bring out the case's key features.
- Case summary is disorganized with no clear direction.
- Learner shows difficulty in formulating and justifying the hypotheses governing his/her line of inquiry.
- Learner shows difficulty in performing a semantic transformation*.

CUES available in medical records

- Key features are mentioned but not in an organized fashion.
- Lack of key features that serve to exclude alternative hypotheses (relevant negatives).
- Profusion of irrelevant details.

EXAMPLES of questions aimed at eliciting learner's clinical reasoning

"What are the cues that you have identified in this situation?"

"At the beginning, when the patient mentioned his symptoms, what were your initial thoughts?"

"When the patient tells you / or you observe x and then y and then z... what should that lead you to think of?"

Explanatory HYPOTHESES

- Lack of knowledge.
- Semantic transformation* problem.
- Inexperience or insecurity, needs to ask questions in a set order to feel more secure or to avoid getting muddled up.
- Unfamiliarity with the hypothetic-deductive model.
- Cognitive biases: availability – representativeness*.

Remediation STRATEGIES

- **Explicitly describe the overall process of clinical reasoning:** *"Lets go through the different steps together"* (explicitly discussing each step in turn)
- **Verbalize and explicitly demonstrate clinical reasoning:** *"When I hear (symptom), I think of (diagnoses), because ..."*. Explicitly demonstrate and illustrate semantic transformation: *"From what you're describing, I'd say that it's a case of postprandial epigastric pain relieved by antacids"*.
- **Foster the systematic and early generation of hypotheses:** Present a few fictitious patients along with their presenting complaint. For each case, the learner is asked to provide the most likely hypothesis together with plausible alternative diagnoses. (For use outside the context of patient care)
- **Foster the early recognition of discriminating cues:** *"Have you already seen a patient with disease x, if so in what way is this case similar, in what way is it different?"* Or while watching a video recording of the encounter, stop the recording repeatedly during the early stages of the consultation as key cues crop up and ask the resident: *"What important cues can you identify?" "What should you be thinking of when the patient tells you that?"*

2

PREMATURE CLOSURE

Definition: The learner quickly focuses on a single diagnostic hypothesis and conducts the interview superficially or directs it exclusively according to that hypothesis. Can be 'passive' when linked to a failure to generate alternative hypotheses, or 'active' when linked to a swift fixation on a single feature of the case.

CUES available in direct supervision

- Learner seeks only those data that confirm his/her single hypothesis.
- Learner fails to explore cues or information that could lead to other diagnostic hypotheses.
- Learner fails to notice new cues.
- Learner fails to clarify or check the patient's complaints.

CUES available in indirect supervision or case discussions

- Scarce elaboration of alternative alternative hypotheses.
- Failure to retain or to identify certain pieces of information that could have evoked other hypotheses.
 - The case summary may appear very well synthesized and lead the supervisor astray because the resident may leave out information that should have evoked new hypotheses.

CUES available in medical records

- No key information serving to exclude alternative hypotheses (relevant negatives).
- No information that could cast doubt upon the main hypothesis.
- No differential diagnosis.

EXAMPLES of questions aimed at eliciting learner's clinical reasoning

"Could you explain how you came to this hypothesis?"

"Apart from your main hypothesis, what are the alternative plausible diagnoses?"

"What data did you look for to confirm or exclude these alternative diagnoses?"

Explanatory HYPOTHESES

- Influencing factors such as a lack of time, feeling awkward or unsure about how to go about things, lack of knowledge, etc...
- Erroneous belief that the patient will spontaneously volunteer all of his/her symptoms without the need for specific enquiry.
- Cognitive biases: Confirmation, Anchoring, Overconfidence.

Remediation STRATEGIES

- **Foster the systematic generation of a differential diagnosis:** systematically ask learner to summarize the case and then to suggest alternative diagnoses. Ask learner to justify and prioritize diagnoses.
- **Encourage the learner to proceed methodically by focusing on the justification of the main hypotheses:** ask learner to justify the most likely diagnosis with positive and negative relevant data as well as a less likely but potentially serious one (red flag).
- **Encourage learner to reflect on why s/he failed to retain other hypotheses.**
- **Ask learner to read up on several diseases and compare and contrast them.** Work together on his/her integration of data (illness scripts) by reviewing readings together.

3

DIFFICULTIES IN PRIORITIZING

- The learner:** 1) prioritizes inadequately the patient's problems: difficulty in focusing the interview on the cases most important aspects, e.g. when there are several complaints.
2) has difficulty in appropriately choosing when to ascribe significance to cues or data obtained in the course of the encounter.

CUES available in direct supervision

- Interview follows a set or inappropriate structure.
- Learner fails to identify which of the patient's complaints is the chief complaint and to direct the interview accordingly.
- Learner spends far too much time exploring a minor point.
- Learner doesn't elicit a detailed picture of the chief complaint elicited.
- Encounter "doesn't go well", poor management, patient dissatisfaction, communication problems.
- Supervisor needs to intervene to shift the focus of the encounter.

CUES available in indirect supervision or case discussions

- Conclusions, diagnosis or management plan that don't match the expectations of the teacher (too much or not enough).
- Sense of losing the thread of what the learner is saying, difficult for the supervisor to picture the situation (resident is unable to integrate or synthesize the data collected).
- Tendency for the supervisor to want to take charge, go back to see the patient etc, in order to get a better picture of the clinical situation.
 - The case summary may appear very well synthesized and lead the supervisor astray.

CUES available in medical records

- Notes lack synthesis.
- Lack of details delineating the chief complaint and/or too many details regarding minor issues.

EXAMPLES of questions aimed at eliciting learner's clinical reasoning

"What makes you say that this problem is the most important one?"

"What made you explore this aspect in so much detail?"

"Explain the situation to me, what did the patient want... and the steps of your reasoning."

Explanatory HYPOTHESES

- Influence of factors linked to the patient (psychosocial issues, personality, etc), the context and the resident.
- Influence of factors linked to the resident him/herself (experience, values and prejudices, preoccupations, counter-transfer, etc).
- Biases: Representativeness - Anchoring*.
- Competencies still in need of practice such as techniques of consultation management, assertiveness, etc.
- Lack of knowledge.

Remediation STRATEGIES

- **Explicitly demonstrate the reasoning involved in prioritizing** (explicit role modeling): the supervisor explains why s/he thinks that this issue is the most important one.
- **Bring the resident to consider an alternative priority:** *"If you prioritized the issues in a different way, how would that change your perspective, your treatment or your management?"*
- **Work on eliciting and weighing the different issues and factors and their influence on the decision:** confront the resident to trigger reflection and make the impact of these factors explicit during discussions.
- **Ask learner to tell the patient's story in a narrative format:** *"Imagine that you had to present this patient's situation to a consultant, what would you say?"* *"Who is this patient?"* and ask him/her to determine priorities.
- **Manage the clinical problem and explain the situation afterwards** (role modeling of process).

4

DIFFICULTIES IN PAINTING AN OVERALL PICTURE* OF THE CLINICAL SITUATION

Definition: The learner fails to make connections between the different pieces of information, fails to integrate the patient's perspective and contextual factors to paint a picture of the clinical situation and adjust his/her investigation or management plan.

CUES available in direct supervision

- Each issue and its management are addressed in isolation.
- Learner uses a set structure of reasoning which leaves little room for the specificities of the patient.
- Treatment or investigation plan become unrealistic when the patient's characteristics are taken into account.
- Learner applies guidelines in an unduly rigid manner.

CUES available in indirect supervision or case discussions

- Stereotypical or simplistic view of the situation.
- Failure to appreciate the patient's situation comprehensively in all of its biopsychosocial complexity.
- Lack of a longitudinal perspective in his/her understanding of the clinical situation.
 - The case summary may appear very well synthesized and lead the supervisor astray.

CUES available in medical records

- No mention of patient's status and perceptions. The notes fail to convey "who" the patient is.

EXAMPLES of questions aimed at eliciting learner's clinical reasoning

"Could you summarize the clinical situation in 2 or 3 sentences?"

"What connections do you make between these different complaints or issues?"

"If we take a step back and look back on the patient's whole story and past history, how can we interpret what's happening today?"

Explanatory HYPOTHESES

- Lack of clinical experience, lack of appreciation of the importance of psychosocial factors.
- Lack of interest, insensitive or overly sensitive (protection mechanisms).
- Difficulty dealing with uncertainty
- Poor grasp of patient-centered care.

Remediation STRATEGIES

- **Encourage the resident to think about the patient with a longitudinal perspective:** before the clinical encounter, the resident should read the patient's notes, summarize them and discuss them with his/her supervisor.
- **Prompt the learner to think about the connections between different aspects of the clinical situation:** *"Do(es) your patient's personality, context, values... affect the management plan?" "Does problem X have an impact on the management of problem Y? In what way?"*
- **Ask resident to draw a diagram or a concept map of the clinical situation and discuss it with him/her.**

5

DIFFICULTIES ELABORATING A MANAGEMENT PLAN*

Definition: The integration and synthesis of the whole reasoning process is unsatisfactory leading to the proposal of inadequate management plans.

CUES available in direct supervision

- Management plan is missing or defective: too extensive, stereotypical, ambiguous, vague, doesn't solve anything or repeatedly defers decision.
- Management plan is unsatisfactory and inappropriate considering the situation or that fails address the patient's issues.
- Learner fails to discuss with the patient how the management plan might be altered depending on the course of the disease or treatment.
- Learner finds it difficult to explain the management plan to the patient.
- Follow-up is Inappropriate.

CUES available in indirect supervision or case discussions

- Unability or difficulty to integrate or synthesize the information gathered.
- Unability to justify his/her management plan.
- Failure to consider availability or cost of resources, prevalence or urgency of problems, or the constraints posed by the patient's issues in his/her management plan.
- Defective management plan: too extensive, stereotypical, ambiguous, vague, doesn't solve anything or repeatedly defers decision.
- Management plan that doesn't include expectations regarding the course of the clinical problem (e.g. restricted to one step at a time).
- Unsatisfactory management plan that is inappropriate considering the situation.
- Inappropriate follow-up.

CUES available in medical records

- Missing management plan
- Defective management plan: too extensive, stereotypical, ambiguous, vague, doesn't solve anything or repeatedly defers decision.
- Lack of consistency between the process of diagnostic reasoning and the proposed management plan.
- Management plan that fails to mention conceivable next steps according to the course of the illness.
- Unsatisfactory management plan that is inappropriate considering the situation.
- Inappropriate follow-up.

EXAMPLES of questions aimed at eliciting learner's clinical reasoning

"Explain how you arrived at this management plan?"

"What pieces of information did you consider when devising this management plan?"

"What are you looking for with this test and what impact will the results have on your main hypothesis?"

"What elements influenced your choice of treatment?"

"What do your plans of the problem doesn't improve?"

Explanatory HYPOTHESES

- Inadequate integration and synthesis.
- Difficulty integrating new cues (response to treatment, test results etc) in his/her reasoning process.
- Difficulty integrating the patient's perspective and/or biopsychosocial context.
- Difficulty developing a longitudinal perspective of the patient's history.
- Lack of knowledge.
- Difficulty dealing with uncertainty.
- Bias: outcome*.

Remediation STRATEGIES

- **Demonstrate proper clinical reasoning (explicit role modeling):** the supervisor explains why s/he favors plan X considering various pieces of clinical information
- **Prompt resident to conclude and settle on a plan:** supervisor nudges resident's thinking a little further and, if necessary, offers possible test results or outcomes to encourage resident to develop a complete and integrated management plan.
- **Go over clinical reasoning and focus on the specifics of the clinical situation which require a departure from the guidelines:** supervisor explains how s/he takes the specificities of the patient into account to modulate his/her application of clinical guidelines in a rational manner.
- **Ask learner to read up on the different investigative and management options available and compare and contrast their advantages and disadvantages.**

GLOSSARY

Diagnostic: In this document, the term diagnosis should be understood in a broad sense to include not only the identification of the nature of an illness (left-sided L4-L5 herniated disc) but also the characterization of a problem (mechanical back pain in a manual laborer in conflict with his employer) that provides meaning to the patient's symptoms and allows clinicians to draw up an appropriate management plan.

Management plan: includes investigations, therapeutic and preventive advice, treatment and follow-up.

Illness script: Organized network of knowledge (containing associations between the pathological entity, its various signs and symptoms, and similar previously encountered cases) geared towards use in clinical problem-solving. These networks integrate knowledge linked to diagnosis, investigations and management.

Semantic transformation: Translation of the information provided by the patient into 'medical concepts': either by a process of abstraction using qualifiers that allow links to be made with diagnostic categories (e.g. acute/chronic, mechanical/inflammatory, young/old, unilateral/bilateral) or by a process of mental representation (e.g. visualizing a joint).

Cognitive biases: Inappropriate tendencies, perceptions, beliefs that affect decision-making and can lead to errors:

Availability: Tendency to be influenced by a recent diagnosis or by a particular diagnostic experience leading to one assigning high priority to that diagnosis in hypotheses generation. For instance: the doctor recently saw a 40 year-old woman with chest pain associated with lymphoma: s/he then tends to envisage lymphoma as a potential diagnosis for all of his/her patients presenting with similar symptoms.

Representativeness: Tendency to focus on the prototypical presentation of a disease: data similar to this category are overemphasized and atypical variants may be overlooked or missed.

Outcome: Tendency to favor a diagnosis associated with effective treatment options or a favorable outcome. The doctor subconsciously seeks to avoid the gloom or sadness associated with a diagnosis that has a less favorable outcome.

Confirmation: Tendency to look only for those cues that confirm a diagnosis rather than those that disconfirm it, even if the latter are more compelling.

Anchoring: Tendency to fixate the reasoning process on features of the clinical presentation that were identified early. The initial clinical presentation remains unaltered by subsequent information.

Overconfidence: Tendency to overestimate one's competence. Decisions are based more on opinion than on carefully collected evidence. Incites the person to act on incomplete information, intuitions or hunches.

Global picture and overall representation of the clinical situation: Image that a clinician conjures up of the problem as a whole, including the various aspects of its biopsychosocial context. Some authors refer to the "diagnostic landscape". The global representation can change over repeated encounters with the patient. The initial representation will be altered and enriched by data obtained and the outcome of the clinical situation leading to a more comprehensive representation at the end of the clinical assessment.

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