Supporting Clinical Reasoning in Your Learners

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Disclaimer

• I, Beverley Karras, have no affiliations, sponsorships, honoraria, monetary support or conflict of interest from any commercial source.

• Material prepared by Peter Kapusta and Bev Karras, last edited 2015
Learning Objectives

By the end of this session, participants will:
- Be able to define clinical reasoning
- Have a framework for assisting learners in developing their clinical reasoning skills
- Have a system for evaluating learner’s competency in clinical reasoning

What Challenges Do You Face in Teaching?

Adapted from: Spencer, J. BMJ 2003, 326: 591
Challenges of clinical teaching

• Competing demands
• Often opportunistic – makes planning more difficult
• Time pressures
• Increasing numbers of students
• Often under-resourced
• Clinical environment may not be teaching friendly
• Rewards and recognition for teachers is poor

Common problems with clinical teaching

• Lack of clear objectives and expectations
• Focus on factual recall rather than on the development of problem solving skills and attitudes
• Teaching pitched at the wrong level
• Passive observation rather than active participation of learners
• Inadequate supervision and provision of feedback
• Little opportunity for reflection and feedback

Common problems with clinical teaching

• “Teaching by humiliation”
• Little opportunity for reflection and feedback
• Informed consent not sought from patients
• Lack of respect for the privacy and dignity of patients
• Lack of congruence and continuity with the rest of the curriculum
Clinical Case

Patient's story:
72 y.o. female who has had a recent onset of SOB and cough which is worse at night. She has had a few episodes over the past year but this one has been the most troublesome.

Clinical clerk's presentation:
My next patient is a 72 y.o. woman who is complaining of shortness of breath and cough at night. She has had this problem before but this time it seems to be worse. She denies having any sick contacts. She quit smoking over 30 years ago. She has no pain in her chest. Her vital signs are normal and she has some crackles in her chest.

Teacher's inquiry:
What do you think is causing the shortness of breath and cough?

Clinical clerk's response:
This could be COPD. She has no fever and no sick contacts and she has had this before. It could also be allergies or asthma; I'm not sure. I suppose it could also be lung cancer. It could also be a pneumonia. I suppose anything is possible at her age.
RIME

- **Reporter:** H/P, HPI, normal vs abnormal- UG
- **Interpreter:** DD, prioritize, review test results-clinical clerk/early residency
- **Manager:** appropriate tests/management – 2nd year residency
- **Educator/Expert:** competent practitioner

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**Learning Context**

Knowledge about the patient
Knowledge about the learners
Knowledge about the subject
Knowledge about learning and teaching

Case-based “teaching scripts”

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**Diagnostic Process**

- Diagnosis Verification
- Diagnosis Refinement
- Differential Diagnosis Generation
- Information Gathering
Commonly Used Heuristics

If it looks like a duck, sounds like a duck, and walks like a duck, it’s a duck.

Common conditions occur commonly: “If you hear hoof beats, don’t think zebras.”

Choose a diagnosis that explains the clinical findings – go where the money is (Sutton’s Law)

Treat the patient, not the numbers.

The best medicine may be to do nothing - first do no harm.

Problems related to information-gathering

Present in all levels of learners!

- Unpacking – failure to elicit all relevant information
- Availability – recent exposure influences diagnosis
- Anchoring – holding onto a diagnosis after receiving contradictory information
- Premature closure – accepting a diagnosis before it is fully verified

Clues to Information-Gathering Problems

- Limited differential diagnosis (unpacking, availability)
- Lack of attention to contradictory information (anchoring)
- Lack of pertinent negatives (premature closure)
Senior resident's presentation:
My next patient is 72 y.o. woman with a complaint of shortness of breath and cough which seems to be worse at night or whenever she lays down. She has had two similar but milder episodes in the past six months. She often sleeps in her chair because she gets a better sleep. She denies chest pain but has noticed that her capacity for housework has declined considerably over the same time and that she needs to rest frequently now. Her legs have been swelling more as well. Her history is remarkable for diabetes, hypertension and hyperlipidemia. She has a very remote smoking history of approximately 30 years. She lives alone and sees her doctor very infrequently as she doesn’t like making the trip. On exam, her vitals are normal but she does have fine basilar rales bilaterally, she exhibits an elevated jugular venous pulse and there is 2+ pitting edema of the lower legs. On auscultation of the heart there is an S3 gallop.
Teacher’s inquiry:
What do you think is causing the shortness of breath and cough?

Senior resident’s response:
This patient is suffering from congestive heart failure. Given her medical history and the onset of shortness of breath and cough going back about six months and associated with a decline in her exercise tolerance, it is very likely that she may have had a silent MI and she should have an ECG to investigate this. Infectious causes and COPD are much less likely, as is malignancy but they need to be kept in mind.

<table>
<thead>
<tr>
<th>Skill</th>
<th>Clue in Case Presentation</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Acquisition and Reporting</td>
<td>Presentation lacking important information</td>
<td>Learner has not identified what is important, obtained important information, or both</td>
</tr>
<tr>
<td>Problem representation</td>
<td>Disorganized presentation, discussion, or both</td>
<td>Learner has no experience with this clinical problem or lacks a conceptual approach to it. Learner has not identified a problem representation.</td>
</tr>
<tr>
<td>Generation of hypothesis: Search for and selection of Illness scripts</td>
<td>Multiple diagnoses generated in a random order with no attempt to prioritize them. Differential not linked to findings of the case</td>
<td>Learner has not identified a problem representation. Unable to compare and contrast relevant illness scripts.</td>
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Bowen, J  NEJM  2006

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<td>Cognitive feedback</td>
<td>Far-fetched diagnoses</td>
<td>Learner has a poor understanding of the case or lacks a sense of relative probability</td>
</tr>
<tr>
<td>Developmental stage</td>
<td>Presentation or reasoning below the expected level for a common problem</td>
<td>Learner has not created an “anchor” prototype in memory, has too little experience with problem to create illness scripts</td>
</tr>
<tr>
<td>Contextual considerations</td>
<td>Disorganized presentation of a complex and ill-defined problem</td>
<td>Risk of premature closure when more than one problem is possible, ie. the learner may be making a lucky guess</td>
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Diagnostic Errors

- **Availability** (Past similar/ a lot of it about/ common conditions)
- **Anchoring** (first diagnosis, ignore new evidence)
- **Representativeness** (Best fit: not making differential diagnosis)
- **Confirmation bias / Attribution bias** (selective listening – make it fit)
- **Premature closure** (before all evidence)
- **Framing effect** (favouring a diagnosis because of context/ Friday afternoon)
- **Momentum** (drawing others into your belief)

Fixing the Patient

Management Errors

- **Commissioning bias** (be seen to be doing something)
- **Omission bias** (less harm/ blame by not doing than doing the wrong thing = status quo)
- **Multiple alternative bias** (not familiar with any other managements)
- **Outcome bias** (value bias, regret bias, wishful thinking)
- **Contextual error** (ignoring difficulties with management options/ converse)
- **Extrapolation** (over generalisation)
- **Inertia** (Not exploring more treatment when it seems too complex)
Implications for Clinical Teachers

Teach around examples
- allows for earlier accumulation of a mental database of cases >> foundation to allow non-analytic processes to contribute

Recognize that traditional 2-stage approach to clinical teaching may be inappropriate ie. mastering basic biomedical sciences before proceeding to consideration of clinical problems.

Implications for Clinical Teachers

Practice with cases should proceed in a way that mimics the eventual use of knowledge
- students should see “mixed practice” vs. blocks of similar cases >> allows for hypothesis testing

Keep context specificity in mind
- because a student can accurately diagnose and manage one clinical problem, don’t assume that that would necessarily apply to the next scenario

Strategies to Promote Clinical Reasoning

1. Articulating appropriate problem representations
   - failure can result in random generation of hypotheses based on isolated facts
   - should be connected to the type of clinical problem which will facilitate the learner’s retrieval from memory

2. Strategies for comparing and contrasting
   - prioritize differential diagnoses
   - novice learners need to create an anchor prototype of a typical presentation, rather than giving equal consideration to a number of undifferentiated possibilities

3. Vary expectations according to the developmental level
   - often related more to the extent of clinical experience with the case at hand rather than the year of training
Strategies to Promote Clinical Reasoning

4. Providing cognitive feedback
   - point out: diagnostically meaningful information redundant or irrelevant findings discriminating features and relative weight and importance

5. Encourage useful reading strategies
   - promote conceptualization, not memorization
   - read at least 2 diagnostic hypotheses at the same time (compare and contrast)

References

11. Crosskerry, P. Clinical Diagnosis and Decision-Making Skills. International Training and Education Center on HIV/AIDS.

Questions?