Teaching Critical Thinking Skills in a Clinical Setting

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CME Credit Opportunities

**DO Physicians:** The West Virginia School of Osteopathic Medicine is accredited by the American Osteopathic Association to sponsor continuing medical education for physicians. WVSOM designates this program for a maximum of .5 AOA Category 1-B credits and will report CME and specialty credits commensurate with the extent of the physician’s participation in this activity pending approval from the AOA CCME.

**MD Physicians:** WVSOM designates this learning module for a maximum of .5 AMA PRA Category 1 Credits. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Please click on the survey link in the home page table to receive .5 CME credit.
Objectives

- Define critical thinking
- Outline the steps for critical thinking in a clinical setting
- Explain at least five strategies for teaching critical thinking in the clinical setting
“Education. . . is not the learning of facts, but the training of the mind to think. . . “

Albert Einstein
What is critical thinking?

Pause video to create a definition.
What is Critical Thinking?

- One definition:
  - “...the ability to identify and analyze problems as well as seek and evaluate relevant information in order to reach an appropriate conclusion...”

Critical Thinking in Medicine

What steps do you use when making a diagnosis?

Pause video to list steps
Steps in Critical Thinking

• Gather information
  ◦ History and physical
  ◦ Observations
  ◦ Lab and test results

• Communicate with others
  ◦ Ask questions
  ◦ Solicit observations
Steps in Critical Thinking

- Define problem
- Examine all evidence
  - Assess relevant information
  - Avoid oversimplification
  - Consider all interpretations
Steps in Critical Thinking

- Analyze assumptions and biases
  - Avoid emotional reasoning
  - Consider implications
- Develop conclusion and course of action
- Test outcomes against standard criteria
Critical Thinking Skills Can Be Taught!

What can you do as a preceptor to teach or improve these skills in your students?

Pause video to list ideas
Five Strategies for Teaching Critical Thinking

1. Make the thinking process explicit
2. Discuss cognitive bias
3. Model and teach inductive reasoning
4. Use questions to stimulate critical thinking
5. Assess learner’s critical thinking

Five Strategies for Teaching Critical Thinking

1. Make the thinking process explicit
   - Have students verbalize their thinking
   - Encourage metacognition

Five Strategies for Teaching Critical Thinking

1. Make the thinking process explicit
2. Discuss cognitive bias
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Five Strategies for Teaching Critical Thinking

2. Discuss cognitive bias

- What is meant by cognitive bias?
  - Pause video to consider
Cognitive Bias

6 common types in acute care

◦ **Availability** – first thought is most likely (often influenced by time constraints)

◦ **Confirmation** – seeking data to support rather than refute

◦ **Anchoring** – focusing on salient aspects first while ignoring or discounting confounding factors
Cognitive Bias

- **Framing effect** – presenting the case to justify differential

- **Diagnostic momentum** – attaching a diagnostic label, but failing to revisit

- **Premature closure** – finalizing diagnosis without confirmation
Five Strategies for Teaching Critical Thinking

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Five Strategies for Teaching Critical Thinking

3. Model and teach inductive reasoning

What is inductive reasoning?
Pause video to consider
Deductive vs Inductive Reasoning

**Deductive Reasoning** – (hypothetics)
a few facts–hypothesis–differential
match characteristics to patient

**Inductive Reasoning** – orderly
deduction of facts to hypothesis
includes all facts and looks at
disease mechanisms
Five Strategies for Teaching Critical Thinking

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Five Strategies for Teaching Critical Thinking

4. Use questions to stimulate critical thinking

Pause video to consider how to question students.
Using Questions to Stimulate Critical Thinking

What types of questions do you ask?
Revised Bloom’s

Using questions to stimulate critical thinking

Minimize recall questions
Ask Why? and How?
Allow wait time for answers
Avoid “pimping”
Encourage risk-taking
Five Strategies for Teaching Critical Thinking

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Five Strategies for Teaching Critical Thinking

5. Assess learner’s critical thinking

How do you assess a student’s critical thinking?
Pause the video to consider
Assessing critical thinking

Levels of critical thinking

- **Challenged Thinker** – pressure forces decisions and premature closure
- **Unreflective Thinker** – narrow differential focusing on salient features only
Assessing critical thinking

• **Beginning thinker** – broader differential, but ignores data that don’t fit

• **Practicing Critical Thinker** – broad differential with mechanistic understanding

• **Advanced Critical Thinker** – broad differential with metacognition – admits uncertainties and solicits feedback
Assessment of Reasoning Tool

Society to Improve Diagnosis in Medicine

https://www.improvediagnosis.org/art/
# Assessment of Reasoning Tool

## ASSESSMENT of REASONING TOOL

<table>
<thead>
<tr>
<th>Learner: __________________</th>
<th>Evaluator: __________________</th>
</tr>
</thead>
</table>

### Did the Learner...

<table>
<thead>
<tr>
<th>Mininal</th>
<th>Partial</th>
<th>Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collect/report history and examination data in a hypothesis-directed manner?</td>
<td>Non-directed in questioning and exam</td>
<td>Questioning and exam generally reflective of potential diagnoses, but some less relevant or tangential questions</td>
</tr>
<tr>
<td>Articulate a complete problem representation using descriptive medical terminology?</td>
<td>Included extraneous information</td>
<td>Generally included key clinical findings (both positive and negative) but either missed some key findings or missed important descriptive medical terminology</td>
</tr>
<tr>
<td>Articulate a prioritized differential diagnosis of most likely, less likely, unlikely, and “can’t miss” diagnoses based on the problem representation?</td>
<td>Missed key elements of differential diagnosis, including likely diagnoses or “can’t miss” diagnoses</td>
<td>Gave differential diagnosis that included likely and “can’t miss” diagnoses but either missed key diagnoses or ranked them inappropriately</td>
</tr>
<tr>
<td>Direct evaluation/treatment towards high priority diagnoses?</td>
<td>Directed evaluation and treatment toward unlikely/unimportant diagnoses</td>
<td>Major focus of evaluation and treatment was included and “can’t miss” diagnoses but included non-essential testing</td>
</tr>
<tr>
<td>Demonstrate the ability to think about their own thinking (metacognition)? Consider asking: Is there anything about the way you are thinking or feeling about this case that may lead to error?</td>
<td>Not able to describe the influence of cognitive tendencies or emotional/situational factors that may have influenced decision-making</td>
<td>Can name one cognitive tendency or emotional/situational factor that may have influenced decision-making</td>
</tr>
</tbody>
</table>

### OVERALL ASSESSMENT

- **NEEDS IMPROVEMENT** □
- **MEETS COMPETENCY** □
- **EXCELLENCE** □

Comments:

www.improvediagnosis.org | info@improvediagnosis.org | @ImproveDx
Resources

- Society to Improve Diagnosis in Medicine https://www.improvediagnosis.org/art/
CME Credit

- Please return to the OAED home page with the link to the webinar. Click on the link to complete the post-test/survey in order to receive CME credit.