University of Pittsburgh School of Medicine - UPMC Clinical Center for Medical Decision Making

Curriculum on Medical Decision Making and Diagnostic Error

The Department of Internal Medicine at the University of Pittsburgh School of Medicine emphasizes and promotes the development of critical thinking skills through use of a multi-modal curriculum. The curriculum has been designed by the UPMC Clinical Center for Medical Decision Making.

Online Modules:

This curriculum includes a set of online modules for introduction and practice of concepts and skills related to clinical reasoning and medical decision-making. These modules were developed by members of the UPMC Clinical Center for Medical Decision Making.

All learners are required to complete a set of 11 interactive multi-media online modules (titles and learning objectives listed below). In completing these modules, students and house officers learn about the incidence and impact of diagnostic error within the healthcare system as well as about the basic tenets of cognitive psychology in the context of medical decision making. Additional modules introduce and discuss concepts surrounding heuristics and cognitive biases and how each can impact the diagnostic process. Finally, the last 5 modules provide an introduction to, and opportunities for practice of, strategies that can be used to support medical decision-making with the goal of reducing diagnostic error. These modules introduce a set of questions (referred to as the “Two Steps Back Checklist”) that a clinician can ask oneself during the diagnostic process to promote analytical reasoning and to “check” automatic/intuitive processes. If you would like to see an example video, below is a link to Module 4 in the UPMC Curriculum on Diagnostic Error and Medical Decision Making. Please note that for questions that require a typed answer before you can continue, you don’t need to take the time to answer it. You can just type a couple of random letters and can continue.

UPMC Curriculum on Diagnostic Error and Medical Decision Making
Module 04 Heuristics: Anchoring and Adjusting
https://pitt.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=74820bd9-cd27-42e4-93a7-ab75014c24a8

The modules are available to other institutions. The modules are available to other institutions by purchasing annual licenses. Previously, the modules carried a cost of $55 per license. However, we are now able to subsidize the cost to $0 for programs who make completion of the modules mandatory for their learners. If you are interested in more information please contact Tom Painter M.D. at paintertd@upmc.edu.
Clinical Reasoning Online Modules

Learning Objectives

Module 01: Diagnostic Error Prevalence and Consequences
1. Define diagnostic error, and summarize current estimates regarding the prevalence of diagnostic error.
2. List 3 specific examples that highlight the impact of diagnostic error on adverse patient outcomes, healthcare costs, and malpractice claims.

Module 02: The Cognitive Psychology of Decision Making
1. Define metacognition, and list one example of a metacognitive strategy that can be applied during the diagnostic process.
2. Define “Dual Processing Theory,” and list 3 defining characteristics of each of the 2 systems that are included in this theory.

Module 03: Diagnostic Medical Decision Making: How Do Doctors Think?
1. Define “key clinical findings,” and describe how identifying key clinical findings can assist the diagnostic reasoning process.
2. Define “semantic qualifier,” and describe how use of semantic qualifiers can influence the diagnostic reasoning process.
3. Define “illness script,” and list 2 methods that can be used to develop and refine illness scripts.
4. List the three essential components of a summary statement/problem representation.

Module 04: Heuristics: A Powerful Cognitive Tool For Efficient Decision Making
1. Define the general term "heuristics" and identify how heuristics can improve the efficiency of the diagnostic process.
2. List 3 specific examples of heuristics, and identify how faulty application of each could lead to diagnostic error.

Module 05: Cognitive Biases: Premature Closure and Confirmation Biases
1. Define premature closure and confirmation bias, and provide 1 specific example for a bias in each category.
2. Correctly identify potential cognitive biases that may have impacted the reasoning in provided example cases.
3. List 3 case characteristics that can increase the risk for premature closure.

Module 06: Cognitive Biases: Overconfidence, Probability Estimation and Emotional Bias
1. Define overconfidence bias, and describe how this cognitive bias can impact the diagnostic reasoning process.
2. List 2 examples of biases in the estimation of probability category, and describe how each can impact the diagnostic reasoning process.

3. List 2 examples of biases in the biases related to emotion category, and describe how each can impact the diagnostic reasoning process.

4. Correctly identify potential cognitive biases that may have impacted the reasoning in provided example cases.

Module 07: Two Steps Back Checklist Part One
1. List the four logical questions to consider when reviewing your patient's medications.
2. Identify how using these questions in a deliberate fashion can help reduce medication errors and potential harm to patients.

Module 08: Two Steps Back Checklist Part Two
1. List three key features of a summary statement. Identify how it facilitates getting to the correct diagnosis.
2. List three questions to consider in making a preliminary diagnosis.
3. Describe the features of diagnostic coherence and adequacy, and list a bias that they help to avoid.
4. Describe base rate neglect.

Module 09: Two Steps Back Checklist Part Three
1. Define causal reasoning and identify how use of physiologic / pathophysiologic based reasoning can aid the diagnostic process.
2. List the logical questions that can be used to prompt causal reasoning and identify how use of these questions can impact the differential diagnosis.

Module 10: Two Steps Back Checklist Part Four
1. List four questions to consider when trying to determine whether a particular diagnostic test is indicated.
2. Identify how use of these questions can impact diagnostic accuracy and efficiency.

Module 11: Two Steps Back Checklist Part Five
1. List three logical questions to consider when ordering a test to help decide if the test will answer the question that you are asking, and identify how application of these questions can improve the efficiency and effectiveness of the diagnostic process.
2. Define sensitivity and specificity as they relate to diagnostic tests and identify how variations in these parameters can influence interpretation of test results.
3. List patient/population characteristics that influence pretest probability of disease, and identify how assessment of these characteristics can influence interpretation of test results.
4. Define likelihood ratios and list the characteristics of positive and negative likelihood ratios that make a given diagnostic test more or less helpful in ruling in or ruling out a disease.