Differential Diagnosis

Foundational Clinical Decision Making

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Note to Participants: There are interactive pop-up questions throughout this lecture. If you choose to pause the lecture and return at a later time, a natural break time would be after answering the interactive questions. (You are able to pause at any time and the presentation will “remember” where you were. It’s just a more natural time to pause after the interactive questions.) For your convenience, this outline reflects where/when within the lecture the interactive questions occur.

This lecture has 100 slides and is 83 minutes in duration.

I. What is differential diagnosis?
   A. Differentiation
   B. Confirmation
   C. Required elements
      1. Defined disease
      2. Gold standard
      3. Multidisciplinary agreement
      4. Meaningful information
   D. Disease or syndrome

II. How do clinicians make decisions?
   A. Clinical gestalt
      1. Similarity
      2. Proximity
      3. Continuation
      4. Symmetry
      5. Periodicity
   B. Deductive reasoning
   C. Pattern recognition
   D. Heurism

III. Errors in decision making
   A. Internal biases
      1. Representative heuristic
      2. The availability heuristic
      3. Confirmatory bias
      4. Illusory correlation
      5. Overconfidence

   Interactive Questions – slide 33 @ 24 minutes

   B. Erroneous tools
      1. Most tests are not reliable
      2. Findings are sub threshold
      3. Fail to capture what you target
IV. The language of clinical decision making (diagnostic accuracy)

A. Reliability
   1. Procedure or test
   2. Clinician
   3. Patient

B. Sensitivity
   1. Rules out a disorder
   2. Measured from 0 to 100
   3. Example

C. Specificity
   1. Rules in a disorder
   2. Measured from 1 to 100
   3. Example

Interactive Questions – slide 55 @ 40 minutes

D. Positive Predictive Value
   1. Accounts for false positives
   2. PPV = TP / (TP + FP)

E. Negative Predictive Value
   1. Accounts for false negatives
   2. NPV = d / (c + d)

F. Positive Likelihood Ratio
   1. Accounts for the test and the population tested
   2. Values higher than $\geq 1$ suggest greater strength
   3. $< 1$ limited

G. Negative Likelihood Ratio
   1. The lower the value, the better

H. Measuring design bias
   1. QUADAS
   2. 14 items
   3. Example

I. SnNouts and ScPins
   1. Wide confidence intervals
   2. Use caution
   3. Examples

Interactive Questions – slide 80 @ 65 minutes

V. Altering pre- and post-test probability
   A. Nomograms
   B. Examples

VI. Altering the order of an examination
   A. Early in the exam – try to rule out
   B. Later in the exam – try to rule in
   C. Example

Interactive Questions – slide 96 @ 79 minutes

VII. Summary