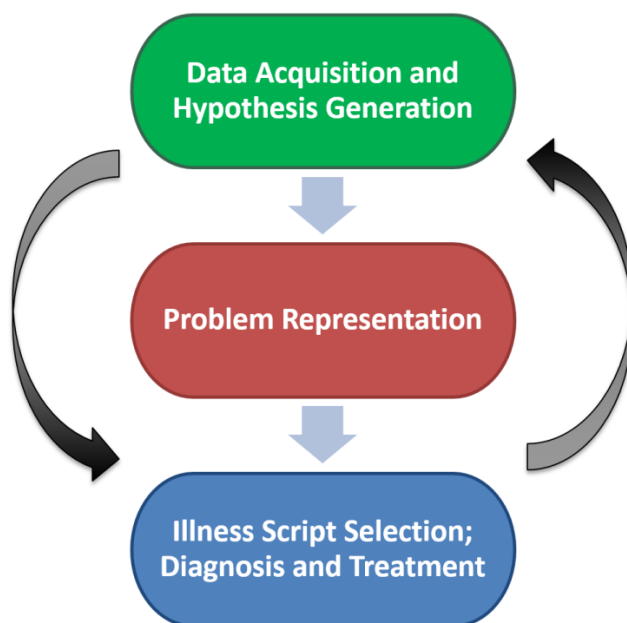# Teaching Fast and Slow: A Framework and Toolkit for Clinical Reasoning Development on the Wards

Understanding Clinical Reasoning Deficits

Diagnosing Clinical Reasoning Deficits

Data Acquisition and Hypothesis Generation

Trainee Clues
- Disorganized HPI; Missing pertinent positives/negatives
- Looks for only confirmatory information; fails to explore information that could alter diagnostic hypothesis

Direct observation
- Interview not hypothesis-driven (disorganized, long, asks irrelevant questions)
- Trainee fails to pick up on patient cues to help guide interview

Problem Representation

Trainee Clues
- Summary statement includes irrelevant information, or does not include information that should be relevant
- Story does not give the team a "sense of the patient"; Notes lack synthesis of information

Direct observation
- Trainee does not gather appropriate longitudinal data from patient, focuses only on current complaint
- Trainee is very rigid when presenting, trying to fit patient presentation into known rules and guidelines

Illness Script Selection and Diagnosis/Treatment

Trainee Clues
- Lack of pertinent positives/negatives showcasing trainee's compare/contrast strategies
- Lack of differential diagnosis or lack of prioritization in differential ("shotgun approach" to differential for symptom)

Direct observation
- Not asking questions that may elicit information confirming or denying alternate hypotheses
- Asking questions that only give confirmatory information

Treating Clinical Reasoning Deficits – General Approach

1. Explicitly describe heuristics and how they affect clinical reasoning
2. Perform a diagnostic "time-out"
3. Promote the practice of 'worst case scenario' medicine
4. Promote use of a systematic approach to common problems
5. Ask the trainee "why?" and "how?"
6. Discuss the pre-test probability of various diagnoses (Bayes' theory)
7. Encourage trainees to find clinical data that doesn't fit
8. Role model how to reason through a patient case
9. Admit when you make diagnostic errors
10. Encourage trainees to slow down

Treating Clinical Reasoning Deficits – Targeted Approach

Data Acquisition and Hypothesis Generation
Scaffolding Questions to prime trainee
- "What were your initial thoughts when the patient gave you the chief complaint?"
- "What should you think about when the patient tells you he was having symptom X?"
- "What alternate diagnoses should you consider?"

Treatment
- **Step 1:** Ask trainee to come up with a general/broad differential based on the patient's chief complaint
- **Step 2:** Ask trainee to refine differential based on receiving additional basic information about patient
- **Step 3:** Ask trainee to come up with questions to ask patient based on the differential they generated
- **Step 4:** Trainee can now ask the patients targeted questions based on the above framework

Problem Representation
Scaffolding Questions to prime trainee
- "Could you summarize the clinical situation in 2 or 3 sentences?"
- "What connections do you make between these different complaints or issues?"
- "How does this patient's current complaint fit into her past history?"

Treatment
- **Step 1:** Ask trainee to circle or list the MOST pertinent items in each major section (HPI, physical exam, data)
- **Step 2:** Ask the trainee to draw connections between the items they highlighted
- **Step 3:** Ask the trainee to revise their summary statement to reflect the connections they have created

Illness Script Selection and Diagnosis/Treatment
Scaffolding Questions to prime trainee
- "Why did you pick this diagnosis as most likely?"
- "What made you explore this one aspect in so much detail?"
- "What other diagnoses did you consider? Why did you decide against them?"

Treatment
- **Step 1:** Ask the trainee to identify the primary problem
- **Step 2:** Ask trainee to list differential diagnosis for the problem:
- **Step 3:** Ask trainee to list supporting/refuting factors based on history, exam and data for each item on differential
- **Step 4:** Ask trainee to rank each item on the differential based on the supporting/refuting evidence
- **Step 5:** Ask trainee to list additional information (studies, tests, questions) to help them confirm their diagnosis

References
- Society to Improve Diagnosis in Medicine (SIDM): http://www.improvediagnosis.org/?ClinicalReasoning
- Trowbridge RL. Twelve Tips for Teaching Avoidance of Diagnostic Errors. Medical Teacher 2008; 30:496 – 500
- Bowen, J. Educational Strategies to Promote Clinical Diagnostic Reasoning. NEJM 2006; 355:2217-25