How Doctors Think: Clinical Problem Solving in Action

Carlos Estrada, MD, MS, Robert M. Centor, MD,
Jason Morris, MD, Ryan Kraemer, MD, Amanda Vick, MD,
Lisa Willett, MD, Starr Steinhilber, MD, MPH
Tinsley Harrison Internal Medicine Residency Program
University of Alabama at Birmingham

Chad Miller, MD, Deepa Bhatnagar, MD
Tulane University

Jeff Kohlwes, MD, MPH
University of California at San Francisco

DOWNLOAD SLIDES NOW:
https://sites.google.com/site/sgimhandouts/

Learning Objectives

• Recognize dual-process decision making (System 1, 2) and heuristics
• Identify educational strategies to promote clinical reasoning
 Agenda

- Introductions ... 5 min
- Clinical reasoning ... 15 min
- Large group exercise ... 20 min
- Small group exercise ... 20 min
- Conclusions ... 10 min
- Evaluation ... 5 min

Clinical Reasoning
Educational Strategies to Promote Clinical Reasoning

Clinical Reasoning

• **Problem representation**: one sentence summary defining the specific case in abstract terms

A middle age man with sudden onset pleuritic chest pain, shortness of breath, and hemoptysis after an orthopedic procedure.

Clinical Reasoning

- **Illness script**: A summary of a diagnosis including predisposing factors, pathophysiology, clinical findings

  *Pulmonary thromboembolism: post-orthopedic procedure, compression/ stasis, LE venous thrombosis, pulmonary infarct, dyspnea, tachypnea,…*


---

How Do Doctors Think?
Fast or Slow?

How Doctors Think
Jerome Groopman, M.D.

Thinking, Fast and Slow
Daniel Kahneman
Dual Process Theory

System 1 - Intuitive
- Implicit
- Experiential
- Automatic
- Pattern recognition
- Matching against illness scripts

System 2 - Analytic
- Analytic
- Deliberate
- Rational
- Careful analysis
- Wide differential

Dual Process Theory

**System 1 - Intuitive**

26-year-old woman, with unilateral LE edema after an 18-hour transcontinental flight. She is on oral contraceptives.

**Differential Diagnosis?**

1. DVT
2. DVT
3. DVT

---

**System 2 - Analytic**

54-year-old man with AIDS, CD4 = 40, presents with fever, pancytopenia, headache, odynophagia, and a maculopapular skin rash. He recently traveled to Southeast Asia, backpacking.

**Differential Diagnosis?**

1. DVT
2. DVT
3. DVT
Dual Process Theory

System 1
Intuitive

System 2
Analytic

Heuristics
“Slowing down when you should”

Naturalistic
Decision Making

Heuristics

• Rules of thumb, mental shortcuts or simple decision making strategies
  – A young man with cachexia, prior Hx of IV drug use, oral thrush → Think HIV/ AIDS

http://en.wikipedia.org/wiki/Heuristics_in_judgment_and_decision_making
Classic Heuristics that may Lead to Errors

- **Anchoring heuristic** – focusing too much on 1 piece of information
- **Availability heuristic** – influenced by the last patient you saw, memorable patient
- **Premature closure** - related to anchoring heuristic

Availability Heuristic

- 30-year-old man, fever, maculopapular rash, camping in the Rockies (early winter)
- “I just saw pictures on a patient with human monocytic anaplasmosis (HMA), ... this could be HMA”
How Do You Teach Clinical Reasoning?

Large Group Exercise
Discussant - Presenter

Audience:
What is the **problem representation**?
Observe any **illness scripts**?
Is **System 1 or 2 used**?
Observe any **heuristics**?
Debrief

**Audience:**

What is the *problem representation*?

Observe any *illness scripts*?

Is *System 1 or 2* used?

Observe any *heuristics*?

---

**Small Group Exercise**

- **Select:**  
  - A: chorea,  
  - B: dyspnea,  
  - C: anxiety

- **Read:**  
  - Presentation, clinical discussion

- **Task:**  
  - Discuss clinical reasoning
    - Problem representation, illness scripts
    - System 1 or 2, heuristics

- **Debrief:** Assign a reporter
Small Group Exercise

A. A 60-Year-Old Woman with Chorea and Weight Loss (Vick. JGIM 2012;27:747-751)

B. A Middle-Age Woman with Sudden Onset Dyspnea (Bhatnagar. JGIM 2011;26:551-4)

C. A 76-year-old woman with diaphoresis and anxiety (Steinhilber et al – under review)

Small Group Exercise - Debrief

• Clinical reasoning
  – Problem representation
  – Illness scripts
  – System 1 or 2
  – Heuristics
Teaching Clinical Reasoning

- **Clinical Problem Solving**
  - Monthly, 3 unknown cases, teaching pearls
- **Tinsley Harrison Morning Report**
  - Weekly, 1 unknown case presented to a group of specialists (internists, others), teaching pearls
- **International Rounds**
  - Monthly, 2 unknown cases presented by one site, discussed by other site (Peru, UAB)
Metacognition Strategies

# 1: What else could this be?
# 2: Is there something that does not fit?
# 3: Is there more than one diagnosis?


Take Home Points

• Dual-process decision making
  – System 1: intuitive
  – System 2: analytic

• Promote clinical reasoning
  – Use framework
  – “Think out loud”
• **VA Chief Medical Resident in Quality and Safety (CMRQS).** One-year position (PGY4). Integration of quality and safety concepts into the fabric of residency training programs as well as developing expertise in milestones development for System Based Practice and Problem Based Learning and Improvement.

• **VA Quality Scholars Fellowship (VAQS).** A two-year position for residents, fellows, or practicing clinicians from any medical or surgical specialty (MD). Time to obtain MSPH or equivalent degree provided. Positions for pre and post doctoral nursing are also available.

Carlos Estrada MD, MS, cestrada@uab.edu, VAQS Director
Gustavo Heudebert, MD, gustavo@uab.edu, VA CMRQS Director

http://www.uab.edu/medicine/gim/fellowship

References

10. Coursera – Clinical Problem solving https://www.coursera.org/course/clinprobsov

DOWNLOAD SLIDES NOW:
https://sites.google.com/site/sgimhandouts/
DOWNLOAD SLIDES NOW:
https://sites.google.com/site/sgimhandouts/

Tinsley Harrison Internal Medicine Residency Program
Birmingham Veterans Affairs Medical Center

THE UNIVERSITY OF ALABAMA AT BIRMINGHAM
How Doctors Think: Clinical Problem Solving in Action

Carlos Estrada, MD, MS
Jason Morris, MD
Ryan Kraemer, MD
Starr Steinhilber, MD, MPH
Amanda Vick, MD
Tinsley Harrison Internal Medicine Residency Program

Chad Miller, MD
Deepa Bhatnagar, MD
Tulane University

DOWNLOAD SLIDES NOW:
https://sites.google.com/site/sgimhandouts/