Expert Decision Making

What is it?

- Appears intuitive
- Recognition primed
- Hard for experts to explain
- Difficult for novices to follow

Dual Cognition Theory

- We use two systems to make decisions
  - System 1
    - Fast, intuitive, heuristic, **SILENT**
  - System 2
    - Slow, deliberate, deductive, **ALOUD**
  - Must have **EXPERIENCE** to develop System 1
    - About 5 years or “10,000 hours”
- EM physicians use System 1 about 90% of the time
  - Decisions in as little as 150ms
  - Must use to function in our environment

The Problem in Education

- Novices (students, residents) have no or immature System 1
  - Therefore we must learn to communicate
- We don’t teach decision making deliberately
- Experts don’t generally like to discuss their thought process

Clinical Decision Making Model

Several steps, but roughly:

- Gather information
- Process information
- Use Illness Scripts to develop differential diagnosis
- Verify Illness Scripts with testing, etc and arrive at diagnosis

- This model is easily understood by novices and experts alike

Bringing it all together

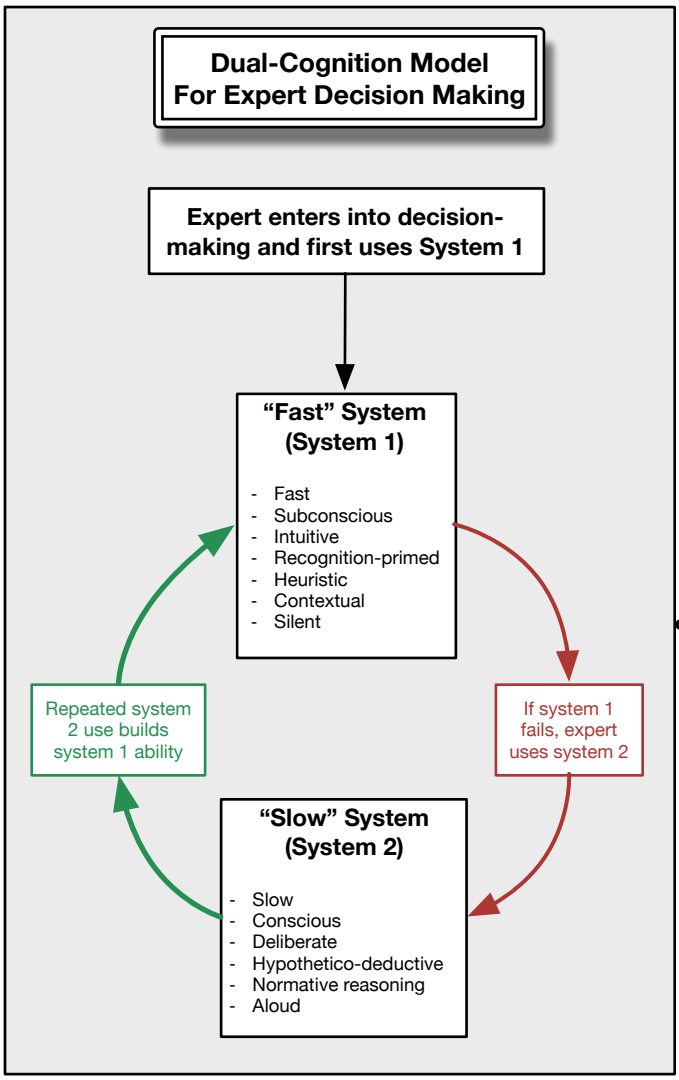
Teach medical decision making to all: faculty, residents, students

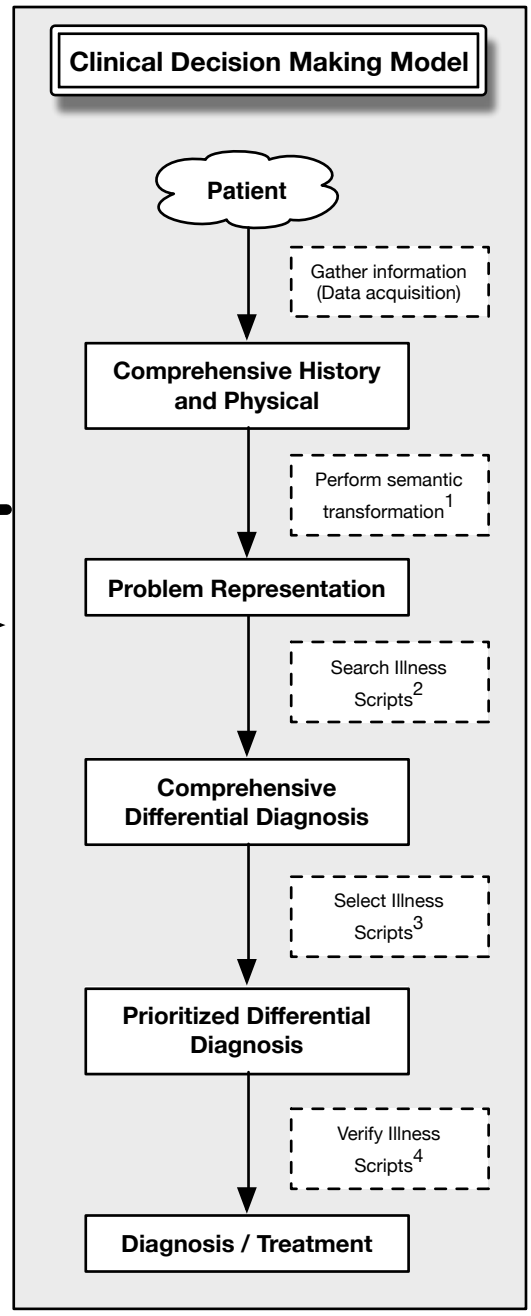
- Allows all participants to understand where the others are coming from
- Empowers novices to ask questions about the **WHY** of a decision
- Reminds experts that they need to focus on the **WHY** of a decision.
  - We are really good at teaching explicit knowledge (RBCs transport oxygen) but poor at teaching implicit knowledge (**WHY** I'm more suspicious of ACS over a PE)

Using the Medical Decision Making Worksheet

- Allows learners to organize their thoguths
- Allows teachers to sequence and time manage their learning time
- Teacher can very rapidly assess where the learner is at
- Teacher can very rapidly develop a teaching point
- Worksheet can save time and frustration for everyone

Clinical Decision Making





[1] Semantic transformation is the application of semantic qualifiers (clinically relevant words with opposite meanings such as acute v. chronic, localized v. generalized) to product a 2 sentence, clinically meaningful summary of the patient's data. Example: This is a 16yo *otherwise healthy* male with *acute* onset of *right lower quadrant* pain, *anorexia*. Exam reveals *rebound tenderness* over *McBurney's point*.

[2] Illness scripts are cognitive representations within the clinician's mind that represent an illness. An illness script for appendicitis might be: acute, RLQ, rebound, anorexia, +/- fever, etc. Ectopic pregnancy would add + HCG and vaginal bleeding to the appendicitis script. The clinician will select a large number of scripts to ensure proper breadth of differential diagnosis.

[3] Considering the patient data, usually in the form of the problem representation, the clinician will prioritize the differential, eliminating some diagnosis (in this case diverticulitis) while elevating others higher on the list (appendicitis).

[4] Using labs, imaging, medications and repeat examinations, the clinician will narrow their differential to a diagnosis and treatment plan.

Student Clinical Decision Making Worksheet:

History and Physical Exam: Include: HPI, PMH, PSH, SH, FH, Allergies, Medications, (names only), Review of Systems, and Physical Exam.

57yo ♂ with chief complaint of chest pain. Noted it first this morning while he was working (stocks the shelves @ HEB). Describes it as sharp, tearing and radiates to his back. Waxes & wanes but has never completely resolved. Has shortness of breath, N/V.

ROS: ΦF/C/HA/Neck pain, abd pain. No HA, Φfocal neuro complaints.

PMH:	PSH:	SH:	FH:	Meds	All
HTN	appy	@Hob	Dad ↓	lisinopril	NKDA
DM	R TH	occ. Etoh	"heart attack" @ 59yo	insulin	

PE: 184/97 $97 18 14% 98%

WDWN ♂ in mod distress d/t pain, anxious,
HENT: NC/AT EOMI, PERL, MMM
Neck: ΦACLA, ΦJVD
lungs: mild diffuse wheeze, good AM. d/w CTA
heart: RRR, 3/6 SEM @ RSB, Φg.
abd: NABS, ND, NT, Φmass
back: ΦCVAT
ext. = pulses throughout, FROM

Write a Problem Representation using the semantic qualifiers (it must encapsulate the history and physical and not exceed three sentences)

57yo ♂ ↑ hx HTN, smoker presents ↑ sharp CP radiating to back + assc. N/V. Is hypotensive and has systolic murmur. Pulses are equal, EKG unremarkable

Complete the illness script table using your three top differential diagnoses. Select differentiating features (either from your problem representation or illness scripts) and compare the three diagnoses.

	ACS	PE	Ao Dissect
acute CP	+	+	+
sharp	−	+	+
radiates to back	−	−	+
HTN	+	−	+
smoker	+	−	+
MW murmur	+	−	+
SOB	+	+	+/−
Labs	enzymes	D-DIMER	D-DIMER ?
Rads	CXR	CT PE	CT Ao

Describe, in detail, your proposed treatment and disposition:

NTG, IV access. Concerned for Ao Dissect so will ↓ HR/BP → β-block ↑ esmolol. Hold anticoagulation for now.

If CT is ok, admit for ACS.

Goal BP = ≈ systolic 100-110 ↑ HR ≈ 60