“The good physician treats the disease; the great physician treats the patient who has the disease.”

- Sir William Osler
Data vs Knowledge differences

Great Med Student/Average Intern

- knows more facts/book knowledge, i.e., physiology, basic biomedicine
- more up-to-date, e.g., on literature, subspecialty approaches
- often knows detailed facts about each patient (e.g., their heart ejection fraction)

Experienced doc (e.g., me)

- can’t pass med school Boards anymore
- can’t keep up, can’t pronounce the latest drug names
- knows clinical states of patients and their trajectories (e.g., what kind of pump their heart is and how it got to this state)
Doctor-patient communication differences

Great Med Student/Average Intern
- Just as empathetic, caring
- More fact-based questions
- Asks mostly about currently active diseases/problems

Experienced doc
- Just as empathetic, caring
- More affective questions
- More clinical-context questions
- More life-context questions
Cognitive differences

Great Med Student/Average Intern

• Thinks in chapters –cliffs of knowledge
• Pattern recognition is basic
• Rule-based thinking, more deterministic
• Patient values and preferences are secondary to the “right” thing to do

Experienced doc

• Thinks in whole people
• Deep rich patterns and pattern matching (but not always)
• Multiple decision points and comfortable with uncertainty
• Dominant decision factors are often patient values and preferences
Beyond “med student” computing….

• Open Research Challenge
  – building and reasoning on individualized integrated models of biology, physiology, behavior, psychology, socioeconomic and social contexts

• What innovative applications can provide a paradigm shift to smarter care?
  – “Big data” enhanced decision-theoretic approaches
    • Diagnosis: treat as a process, trade-offs in sequencing of tests, Value of information
    • Treatment: explicit handling of uncertainty, probability, value-based outcomes; explicit handling of multiple disease conditions

• What domains might be opportunistic for the community to explore?
  – find an easy version of the right problem: treating the whole patient over time
  – concierge primary care: holistic yet technically savvy doctors taking care of educated, insured patients with multiple chronic diseases in a less pressured reimbursement environment
“The good physician treats the disease; the great physician treats the patient who has the disease.”
- Sir William Osler

“The good computer provides data about the disease; the great computer guides the physician whose patient has the disease”