Diagnostic Error: Overview, Challenges and Recommendations

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Why Be Interested in Diagnostic Error?

- Diagnostic errors are the leading cause of medical malpractice suits: 45% of cases
- Physicians profoundly underestimate their rates of diagnostic errors
- Health systems unappreciative of the problem and do not invest in or champion improvements
Common DE Scenarios

• Dr. Banja examines a patient but:
  – Does not perform an adequate H&P
  – Fails to order a diagnostic test that 99 out of 100 physicians would say he should have ordered (or he orders a wrong/irrelevant test)
  – Orders a correct diagnostic test but the test is never performed (or it is performed but the results are lost)
  – Orders a diagnostic test, the test is performed, but Banja never reads the results (or learns the results too late because the findings are lost or delayed)
  – Orders the diagnostic test, it is performed, Banja reads the results, but fails to appreciate their implications; because of that he fails to develop an appropriate treatment plan, saying instead, “You’re fine, Mrs. Smith. Nothing to worry about.”
  – Months and months go by....................
The Magnitude of the Problem is Unappreciated

• Error rates:
  – Internal medicine: 10 – 15 percent
  – Emergency medicine: 20 – 30 percent
  – Radiology: 10 – 20 percent (plain radiographs)
  – Pathology: 1 – 30 percent (Gupta, 2000); most likely ~10 percent

• Frequently missed diagnoses: But are they errors?
  – Pulmonary embolism: 4.5 percent
  – Drug reaction or overdose: 4.5 percent
  – Lung and colorectal cancer: 3.3 – 3.9 percent
  – Various cancers most often missed diagnosis at index visit: 20.2 percent (Schiff, 2009)
    • What’s the most commonly missed fracture in the ER?
    • But are these honest to goodness “errors”?
CRICO study (Siegal and Ruoff, 2015)

• Breakdowns in the diagnostic process:
  – H&P: 61% of cases
  – Test ordering: 79%
  – Interpretation: 37%

• Emergency Dept. data analysis:
  – Missing info from referring MD or medical record
  – Patient discharged without MD adequately addressing an abnormal vital sign
  – Poor communication of lab or X-ray findings
  – Poor MD-RN communication
  – Poor patient handoffs
Error **feedback** systems are informal, haphazard, and unreliable

“In the absence of ... clear feedback, physicians feel little need to update their current Diagnostic Schema. Thus a felt need for Updating declines and Confidence increases. As confidence increases the felt need for updating decreases further in a reinforcing cycle.” (Rudolph, 2008)
Errors, mistakes and failures arouse anxious feelings

• “Do you remember....?”
• Discomfort in contacting the index physician and informing him or her of diagnostic error
• Fear that identifying an error will entail a professional obligation to disclose it to the patient or family
Many physicians don’t use available strategies to reduce DEs

- Metacognitive training/failed heuristics
- Computer based decision supports
- Autopsies
- Improving systems (test ordering, specimen processing, test performance, interpretation, follow-up, poor standardization of processes)
- Better feedback processes
- More patient involvement
- Better medical education
- Better history and physical examination
Human cognition is remarkably fallible: slips, lapses, mistakes, unintentional as well as intentional variations of standard processes, faulty reasoning, prone to implementing biases (e.g., availability, confirmation, anchoring, etc.) leading to error, etc.
Systems promote diagnostic errors

- The physician has very limited time to spend with the patient;
- The patient has no or very limited insurance;
- The diagnosis involves multiple systems in the hospital such that weaknesses in any of them may compromise a timely or accurate diagnosis.
- Fast and frugal decisionmaking “succeed so reliably that physicians can become complacent; the failure rate is minimal and errors may not come to their attention for a variety of reasons.” (Berner, 2008)

All complex systems run in a degraded mode.
LAB TESTS

1. Doctor orders the lab test.
2. Specimen is collected from patient.
3. Specimen sent over to in-office laboratory.
4. Tests are performed on the specimen as ordered.
5. Results and analysis are given to the physician.
6. Physician discusses results and options with the patient.
Hostile, difficult or enigmatic patients...

- “Do you people really know what you’re doing here?”
- “I’ve got WHAT??????”
- “Are you licensed?”
- “Let me tell you something....”
- “Oh God, this can’t be happening to me....”
- “Oh, I hurt so much...why can’t you do something?”
- “How much time do I have?”
Uncertainty

The diagnostic pieces don’t fit together
Antidote: Overconfidence

• “Overconfidence results at times from a desire to see the self as a competent or accurate perceiver...undue confidence often arises when uncertainty would challenge valued beliefs about the self as knowledgeable and competent...the motive to see the self as competent leads to less critical analyses of the true ability levels during confidence assessments...our participants were motivated to protect themselves from the implications of feeling uncertain.” (Blanton, 2001)

• “Most efforts to reduce overconfidence have failed.” (Arkes, 1987)
Improving Diagnostic Accuracy and Clinical Reasoning

“Fallibility is the human condition.”

Robert Miles, MD
What probably doesn’t work

- **Generic CME courses:** These lectures probably don’t change behavior (which presumably is what characterizes learning); however, focused, disease/diagnostic specific courses or lectures probably do;

- Urging practitioners to be more careful
Metacognition (Bounded rationality) challenges and strategies

• “The first step is to overcome the bias against overcoming bias.” (Croskerry)
• Biases can only be offset with System 2 reasoning
• Capacity for self-critique:
  – Recognition of memory limitations
  – Recognizing biases
    • Search satisficing
    • Availability and confirmation
    • Prototype and assumption
    • Appreciating my perspectivalism
  – Force consideration of alternatives (e.g., insist on the acquisition of more data)
More

• Teaching a course in clinical reasoning
• Simulations
• Deliberate disengagement from System 1 approaches, which is very difficult to do: you have to train yourself to do it
• Seeking others’ opinions
• Lower the threat in admitting a lack of knowledge
Better Feedback

• Must not be judgmental
• Have accurate data and evidence
• Contains concrete information—performance—orientation
• Focused on behavior
• Demonstrates correct behavior
• Respectful of recipient’s self-esteem
• Negative feedback is “sandwiched” between positive information
• Allow for response and interaction
• No inflammatory or threatening language

• Solicit learner’s response often
• Focus on behavior and insure learner understands the point
• Establish mutually agreed upon goals
• Remember sandwich technique!
Reducing Overconfidence:
“Most efforts to reduce overconfidence have failed.”

- “You should only be as confident as you are accurate.”
- Pay more attention to disconfirming evidence
- Accept the discomfort of uncertainty
- Make errors more visible (which can be humiliating)
- Make cognitive support more accessible, e.g., technology, consults, etc.
- (Gamblers become more confident after they place their bets.)
Sibinga and WU on Mindfulness
(JAMA, Dec. 8, 2010)
Being Mindful

- Care based on clinician blaming patient or patient behavior
- Physician’s affect influences interpretation
- Focus on most typical features of the symptom presentation (representative bias)
- Makes judgment that most easily comes to mind (Availability)
- Focuses on limited aspects of the patient’s symptoms (representativeness)
- Only admits information that fits the favored conclusion (confirmatory)

- TRUST
- NONJUDGING
- ACCEPTANCE
- LETTING GO
- NONSTRIVING – PATIENCE
- OPENNESS
- HUMILITY
- LISTENING
- COMPASSION
Production Pressures

• Can clinicians take back the authority to say to administrators “What you want me to do/How you want me to work isn’t safe”?

• Import more technology—replace humans with machines
Humility Strategies

• “…openness toward reflection that would allow for better toleration of uncertainty... making error visible...provide expert consultations.” (Berner, 2008)

• “[T]he motive to boost confidence may be attenuated if a person is first given opportunities to lower the importance of feeling knowledgeable.” (Blanton, 2001)

• “[O]ur participants were motivated to protect themselves from the implications of feeling uncertain...one of the best ways to decrease overconfidence may be to decrease the threat inherent in admitting ignorance.” (Blanton, 2001)
The problem with the last slide is it contradicts the biographical histories of most physicians

- You didn’t get into medical school by making mistakes
- Mistakes were the bad guys; you stopped making them in high school.
- You grew pathologically averse to error
- You became compulsive and loathed error
Might technology save us?
The Electronic Health Record?

- Technology might organize and “trend” a patient’s medical history better; the problem now is that you have too much data;
- List differential diagnoses
- Collect records
- Maintain patient history
- Maintains problem lists and tracks medications and tests
- Provides feedback to upstream clinicians
- Provides prompts (diagnostic thoroughness)
- Calculates Bayesian probabilities
- Offers second opinion or consultation through telephone access to consultants (Shiff and Bates, NEJM, March 25, 2010)
Including the patient/family in the diagnostic process

- Frame diagnosis as hypothesis
- Encourage access to medical record
- Greater transparency
- Develop familial communication skill set
Thank you...
References
References

References continued