IMPROVING DIAGNOSIS: TIME TO RETHINK ASSESSMENT AND CERTIFICATION

HARDEEP SINGH, MD, MPH
HOUSTON VA CENTER FOR INNOVATIONS IN QUALITY, EFFECTIVENESS & SAFETY
MICHAEL E. DEBAKEY VA MEDICAL CENTER
BAYLOR COLLEGE OF MEDICINE
Twitter: @HardeepSinghMD
Most Americans will get a wrong or late diagnosis at least once in their lives, according to a report released Tuesday by an independent panel of medical experts.

Most Americans who go to the doctor will get a diagnosis that is wrong or late at least once in their lives, sometimes with terrible consequences, according to a report released Tuesday by an independent panel of medical experts.

This critical type of health-care error is far more common than medication mistakes or surgery on the wrong patient or body part. But until now, diagnostic errors have been a relatively understudied and unmeasured area of patient safety. Much of patient safety is focused on errors in hospitals, not mistakes in diagnoses that take place in doctors’ offices, surgical and other outpatient facilities.
An Infection, Unnoticed, Turns Unstoppable

By JIM DWYER  Published: July 11, 2012

For a moment, an emergency room doctor stepped away from the scrum of people working and spoke to his parents.

“Your son is seriously ill,” the doctor said.

“How seriously?” Rory’s mother, Orlaith Staunton, asked.

The doctor paused.

“Gravely ill,” he said.

How could that be?
Most Common Missed

- Emerging data - malpractice claims
- Cardiovascular conditions
  - Coronary syndromes/PE/CVA
- Cancer
  - Colon, lung, prostate, cervix etc
- Infections
  - Sepsis, pneumonia
- No specialty is immune

Singh & Graber NEJM 2015
Defining Preventable Diagnostic Harm

A. Missed opportunities in diagnosis due to system and/or cognitive factors
B. Preventable diagnostic harm
C. Delayed/wrong diagnosis associated with patient harm but no clear evidence of missed opportunities
D. Delayed/wrong diagnosis but no clear evidence of missed opportunities

Adapted from Singh Jt Comm J Qual Patient Saf 2014
The Diagnostic Process

Patient Experiences a Health Problem
Patient Engages with Health Care System

INFORMATION GATHERING

INFORMATION INTEGRATION & INTERPRETATION
Has sufficient information been collected?

Clinical History and Interview
Referral and Consultation

Physical Exam
Diagnostic Testing

WORKING DIAGNOSIS

COMMUNICATION OF THE DIAGNOSIS
The explanation of the health problem that is communicated to the patient

TREATMENT
The planned path of care based on the diagnosis

OUTCOMES
Patient and System Outcomes
Learning from diagnostic errors, near misses, and accurate, timely diagnoses

TIME
Our Research Shows Emerging Risks

- Outpatient misdiagnosis: 5% US adults annually
- Half of pediatricians report diagnostic errors that harmed patients at least once or twice per year
- Common diseases missed despite clear evidence
- Doctor-patient interaction high risk
  - Failure to elicit or act upon key history/exam finding or ‘red flags’
  - Disappearing differential diagnosis

Singh et al BMJQS 2014; Singh et al JAMA IM 2013; Singh et al JCO 2012
Contributing Factors

- Premature closure
- Overconfidence
- Faulty data gathering
- Unintended consequence of policy
- Faulty synthesis
- Process failure
- Affective bias
- Sample mix-up
- Failure to detect physical finding
- Perception error
- Wrong estimate of pretest probability
- Failure to follow-up abnormal test
- Misinterpretation of test
- Inadequate follow-up
- Failed heuristic
- Knowledge deficit
- Communication failure
- Limited access
- Language barrier
- Uninformed patient
- Faulty triggering

Thanks to Karen Cosby, MD
Diagnosis is a Team Sport
Diagnostic Accuracy and Confidence

Original Investigation

Physicians’ Diagnostic Accuracy, Confidence, and Resource Requests
A Vignette Study

Ashley N. D. Meyer, PhD; Velma L. Payne, PhD, MBA; Derek W. Meeks, MD; Radha Rao, MD; Hardeep Singh, MD, MPH

IMPORTANCE Little is known about the relationship between physicians’ diagnostic accuracy and their confidence in that accuracy.

OBJECTIVE To evaluate how physicians’ diagnostic calibration, defined as the relationship between diagnostic accuracy and confidence in that accuracy, changes with evolution of the diagnostic process and with increasing diagnostic difficulty of clinical case vignettes.
Diagnostic Accuracy and Confidence

- Goal to assess how diagnostic accuracy is aligned with perception of confidence in that accuracy

- 118 Physicians assessed 4 clinical vignettes (2 easy & 2 difficult) based on real-world cases
Diagnostic Accuracy and Confidence
Diagnostic Accuracy vs. Confidence

Case Difficulty

A) Easier

B) More Difficult

Mean Proportion of Cases Diagnosed Correctly or Mean Confidence Level

Phase: History, Physical, General Lab and Imaging, Definitive Lab and Imaging

Accuracy (circles) and Confidence (squares) are shown in the graphs.
Significance

- Physicians’ diagnostic accuracy and confidence not aligned
- Higher confidence related to decreased requests for additional diagnostic tests
- Physicians did not seek help when they most needed it
What Next?

- Step 1: Next Generation Assessment (more questions than answers)

- Step 2: Improvement of Diagnostic Outcomes based on changes in Step 1
Reinvigorating MOC

- Needs to support real-world diagnostic accuracy
  - Time vs. Listening Skills
- Better feedback systems to enhance learning
  - Peers looking at high-risk records that get flagged
  - Leveraging OPPE like activities and blend those with MOC
- How to engage docs for MOC changes in midst of other competing priorities?
  - Credit or integrate with value based reimbursement, MIPS
Assessment 2.0

Things to consider when reinvigorating exams in relation to diagnostic accuracy
- Longitudinal assessments
- Measuring confidence and using that for meaningful feedback
- Asking for help
- Open book tests
How to evaluate critical skills for all docs:
• Information gathering
• Curiosity
• Calibration
Tolerating Uncertainty — The Next Medical Revolution?
Arabella L. Simpkin, B.M., B.Ch., M.M.Sc, and Richard M. Schwartzstein, M.D.

Defining and Measuring Diagnostic Uncertainty in Medicine: A Systematic Review

Viraj Bhise, MD, MPH\textsuperscript{1,2}, Suja S. Rajan, PhD\textsuperscript{2}, Dean F. Sittig, PhD\textsuperscript{3,4}, Robert O. Morgan, PhD\textsuperscript{2}, Pooja Chaudhary, MD\textsuperscript{2}, and Hardeep Singh, MD, MPH\textsuperscript{1}

\textsuperscript{1}Center for Innovations in Quality, Effectiveness and Safety, Michael E. DeBakey Veterans Affairs Medical Center and Baylor College of Medicine, Houston, TX, USA; \textsuperscript{2}School of Public Health, University of Texas Health Science Center, Houston, TX, USA; \textsuperscript{3}School of Biomedical Informatics, University of Texas Health Science Center, Houston, TX, USA; \textsuperscript{4}UT-Memorial Hermann Center for Health Care Quality and Safety, Houston, TX, USA.

\textbf{BACKGROUND:} Physicians routinely encounter diagnostic uncertainty in practice. Despite its impact on health defined as a “subjective perception of an inability to provide an accurate explanation of the patient’s health prob-
Assessing Diagnosis in the EHR Era

Too many electronic health record alerts may be leading doctors to skip them

Your doctor may be more likely to ignore your test results if they come electronically.

A new study published in the JAMA Internal Medicine on Mar. 4 revealed that doctors

When doctors share visit notes with patients: a study of patient and doctor perceptions of documentation errors, safety opportunities and the patient–doctor relationship

Bell, Sigall, K. et al., BMJ Qual Saf doi:10.1136/bmjqs-2015-004697
Thank you and Acknowledgements

- **Funding Agencies:**
  - Department of Veterans Affairs
  - National Institute of Health
  - Agency for Health Care Research & Quality

- **Multidisciplinary team at VA Health Services Research Center for Innovation**

Email: [Hardeeps@bcm.edu](mailto:Hardeeps@bcm.edu)
Web: [http://www.houston.hsrp.research.va.gov/bios/singh.asp](http://www.houston.hsrp.research.va.gov/bios/singh.asp)
Twitter: [@HardeepSinghMD](https://twitter.com/HardeepSinghMD)
Assessment: New Competencies

- New era of “EHR-enabled Diagnosis”: Docs need new skills & support beyond traditional specialty expertise (ALL specialties)

- Beyond reasoning, diagnostic competencies also relate to system issues and personal responsibility/accountability

- How to measure clinical acumen or diagnostic performance within chaotic clinical settings
Competencies for Improvement

- How to engage physicians in diagnostic performance improvement that includes (non-punitive) feedback and culture of error acceptance
- Diagnostic performance improvement requires rapid push/adoptions of innovations, tools & best practice strategies in the frontlines
- Engagement in improvement activities will require new approaches to address & reduce burnout
- How do we prioritize or focus improvement activities: what do we want to change in 3 years?