

DEER (Diagnostic Error Evaluation Research) Study



Pilot Study Preliminary Data

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Diagnosis Errors and Delay



Common

- NPSF Harris poll- 1/6 personally experienced
- Selected diagnoses/examples

■ Important

- If Dx in error...best delivered rx is still wrong
- Cascade effects
- Patient dismay when becomes apparent

■ Under-emphasized


- Only 1 of 93 AHRQ 2002 Safety Grants

Dx Error & Delay is Frequent



- Leading causes malpractice suits
 - Delayed breast Ca; Missed AMI
- Appendicitis “misdiagnosis” rate up to 40%
 - Flum JAMA 2001
- 18% pts w/ ↑ glucoses never dxed DM
 - Duke Edelman Effective Clin Practices 2002
- 14/23 w/ ruptured abdom aortic aneurysm initially misdiagnosed
 - Lederle Am J Med 1994
- 41/69 pyogenic spinal infection delayed dx
 - Stirling reported in Lancet 1998

Errors in Test Interpretation

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- 59% cervical smears read as negative in women with cervical cancer
 - 25% CXR's w/ tuberculosis or pneumoconiosis missed;
2% films misread as positive
 - Fowkes Lancet 1986
 - ED residents and attendings:
20-40% failure recognize cerebral infarction
9% missed intracranial hemorrhages
17% cranial or facial fractures missed
 - AHRQ/UCSF Evidence-based practice center report Ch 35



Error Producing Conditions

- Unfamiliarity w/ task (x17)
- Time shortage (x11)
- Poor signal-noise ratio (x10)
- Poor human-system interface (x8)
- Information overload (x6)
- Negative transfer between tasks (x5)
- Misperception of risk (x4)
- Poor feedback from system (x4)
- Inexperience (not lack of training) (x3)
- Poor instructions (x3)
- Education mismatch of person w/ task (x2)
- Hostile environment (x1.2)
- Monotony & boredom (x1.1)



Potential Collaborative Study

- among several institutions:
 1. Rush-Presbyterian St. Luke's Hospital,
 2. Northwestern Memorial Hospital,
 3. Johns Hopkins Hospital,
 4. University of Chicago,
 5. Mount Sinai Hospital, NY,
 6. Beth Israel-Harvard Hospital,
 7. UCSF and
 8. Surf*Net/SDCPS



Principal Investigator

- Gordon Schiff, MD
 - Cook County Hospital, Chicago
 - Grant # AHRQ-HS-11552

Purpose



- better understand medical error, particularly diagnostic error
- improve patient care at our institutions
- understand diagnostic issues across the institutions



Surf*Net and SDCPS Contribution

- primary care aspects of diagnostic errors in outpatient/ambulatory care.
- contribute to taxonomy of errors in primary care
- (create opportunities for intervention and improving the cognitive aspect of diagnosis)



Definition of “Error”¹: Primary Care

- “failure of planned action to be completed as intended”
- “use of wrong plan to achieve an aim”

1. IOM- “To err is Human”. 1999



Taxonomy of Errors²: Primary Care

- 1) process errors (75-80%),
- 2) errors of knowledge/skills (20-25%).

².Makeham & Dovey. MJA. 2002;177



Process Errors³

- 1) Clinician,
- 2) Communication,
- 3) Administration, and
- 4) “Blunt end”.

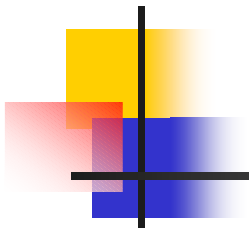
³Elder & Dovey. JFP 2002; 51:927



Errors of Knowledge/Skills

- 1) Diagnosis,
- 2) Treatment, and
- 3) Preventive Services

Harder than Medication Errors

- 
-
- Not single point in time
 - Often spread over series of encounters
 - Moving target
 - Illness evolving over time
 - Hard to know what knew/apparent when
 - Tough calls: riddled w/ disagreement
 - Both in real time and retrospectively
 - Inherent limitations of technology to diagnose
 - Lacking gold standards for dx
 - Entanglement w/ treatment issues

Importance of Dx Error Taxonomy



- Conceptual Framework
 - For organizing, clarifying discussions
- Tool for Analyzing Cases
 - For contributing cause(s) analysis
- Aggregating/Learning Across Cases
- Guide Organizing/Prioritizing Interventions
- Basis for Research



DEER Study

- falls under errors of skills and knowledge



Pilot - Preliminary Report

- Purpose:
 - test pilot the survey instrument in primary ambulatory care
 - solicit critique and suggestions for improving the survey



Pilot - Preliminary Report

- Methods:
 - sixteen Family Medicine faculty members
 - during their monthly faculty meeting in November 2002
 - complete survey within 5 – 10 minutes



Pilot – Prelim. Report (cont.)

- Methods (cont.):
 - modified survey by asking 1 error instead of 3 errors
 - comment on the instrument
 - report one error within 4 weeks



Other Comments

- “Difficult to remember personal errors”
- “May not be able to realize errors made
by myself “



Other Comments

- “I thought of errors made in last 6 months - very difficult to pinpoint an error in the last 4 wks.”
- “How do we know if the incorrect dx. was really incorrect?”



The Survey Instrument

- “This is a reasonable tool.”
- comments generally positive in favor to leave current protocol as such



Preliminary Results (Cont.)

- 16 faculty, 16 different errors
- clustered in 3 areas:
 - 1) wrong diagnosis,
 - 2) misdiagnosis/failure to diagnose
 - 3) delay in diagnosis



Results (Cont.)

- majority of participants observed errors committed by others
- most errors reported had minor to moderate impact on clinical outcome



Results (Cont.)

- junior faculty (less than five to 7 years in practice) seems to find more errors made by others
- senior faculty more aware of errors committed by themselves



Results (Cont.)

- all faculty were able to describe what went wrong but unable to describe why it happened



Discussion/Comments⁴

- Errors of knowledge and skills reflect:
 - misdiagnosis from faulty data collection or data interpretation,
 - flawed clinical reasoning,
 - or incomplete knowledge

⁴.Graber et al. Acad Med 2002;77:981



Discussion/Comments (Cont.)

- Opportunities exist for improving the cognitive aspect of diagnosis by:
 - adopting system level changes and
 - by a training designed to improve cognitive awareness

⁴.Graber et al. Acad Med 2002;77:981

Diagnosis Error Perspectives



- Diagnosis as part of a system
 - Diagnostic accuracy as a system property rather than what happens between MD's ears
- Rely less on human memory
 - For triggering, weighing, f/up
- Removing individual adversarial/blame
 - Open “breathing space” to honestly reflect & discuss



Limitations

- selected group of academic clinicians
- question implies that study is looking or skewed to look mainly for wrong diagnoses
- “misdiagnoses”, maybe
- not directly delayed diagnoses



Next Steps?

- data collection in community practices including managed care groups?
- diagnoses made in the outpatient setting only?
- Family Practice vs. Internal Medicine vs. Pediatrics? vs. Residents