Why Is Improving Diagnosis Important?
Physician and Patient Perspectives

AHRQ Diagnosis Safety Summit 9/28/16

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Disclosure: No Relevant Conflicts
What is a “Diagnosis”? 

Preliminary diagnosis
Working diagnosis
Differential diagnosis
Syndrome diagnosis
Etiologic diagnosis
Possible diagnosis
Problem on Problem List
Self limited diagnosis
Ruled-out diagnosis
Computer diagnosis (EKG read)
Deferred diagnosis
Multiple/dual diagnoses
Preclinical diagnosis
Incidental finding

Over-diagnosis
Diagnosis complication
Billing diagnosis
Telephone diagnosis
Postmortem diagnosis
Prenatal diagnosis
Rare diagnosis
Difficult/challenging diagnosis
Undiagnosed disease
Contested diagnosis
Novel diagnosis
Refractory (to Rx) diagnosis
Futile diagnosis (e.g., hospice pt)
Delayed diagnosis
MA Residents Involved in a Medical Error Situation

% saying personally involved in a situation where a preventable medical error was made in their own care or in the care of someone close to them

- Yes: 23%
- No: 75%
- Don’t Know: 2%
Most Common Types of Medical Error Experienced by MA Residents

% saying...

(Among the 23% who said they or a person close to them experienced a medical error)

Your/their medical problem was misdiagnosed

51%

You/they were given the wrong test, surgery, or treatment

38%

You were given wrong or unclear instructions about your follow-up care

34%

You/they were given an incorrect medication, meaning the wrong dose or wrong drug

32%

You/they got an infection as a result of your/their test, surgery, or treatment

32%
Safer practice can only come about from acknowledging the potential for error and building in error reduction strategies at each stage of clinical practice

Lucian Leape
### DEER Taxonomy

#### Localizing What Went Wrong

<table>
<thead>
<tr>
<th>Where in diagnostic process</th>
<th>What went wrong</th>
</tr>
</thead>
</table>
| 1. Access/Presentation | A Failure/delay in presentation  
B Failure/delay in care access |
| 2. History | A Failure/delay in eliciting critical piece of history data  
B Inaccurate/misinterpretation  
C Failure in weighing  
D Failure/delay to follow-up |
| 3. Physical Exam | A Failure/delay in eliciting critical physical exam finding  
B Inaccurate/misinterpreted  
C Failure in weighing  
D Failure/delay to follow-up  
Ordering |
| 4. Tests (Lab/Radiology) | Ordering |
| | Performance |
| | F Sample mixup/mislabeled (eg wrong patient/test)  
G Technical errors/poor processing of specimen/test  
H Erroneous lab/radiology reading of test  
I Failed/delayed reporting of result to clinician  
J Failed/delayed follow-up of (abnl) test result  
K Error in clinician interpretation of test |

#### Frequency in 583 cases

- A Failure/delay in presentation  
- B Failure/delay in care access  
- C Failure in weighing  
- D Failure/delay to follow-up  
- E Inaccurate/misinterpreted  
- F Sample mixup/mislabeled (eg wrong patient/test)  
- G Technical errors/poor processing of specimen/test  
- H Erroneous lab/radiology reading of test  
- I Failed/delayed reporting of result to clinician  
- J Failed/delayed follow-up of (abnl) test result  
- K Error in clinician interpretation of test
DEER Taxonomy (continued)

Localizing What Went Wrong

Frequency in 583 cases

5. Assessment
- **Hypothesis Generation**
  - A. Failure/delay in considering the diagnosis
  - B. Too little consideration/weight given to the diagnosis
  - C. Too much weight on competing/coexisting diagnosis

- **Recognizing Urgency/Complications**
  - D. Failure/delay to recognize/weight urgency
  - E. Failure/delay to recognize/weight complication(s)

6. Referral/Consultation
- A. Failure/delay in ordering referral
- B. Failure/delay obtaining/scheduling ordered referral
- C. Error in diagnostic consultation performance
- D. Failed/delayed communication/follow-up of consultation

7. Follow-up
- A. Failure to refer patient to close/safe setting/monitoring
- B. Failure/delay in timely follow-up/rechecking of patient

Schiff Arch Intern Med 2009
What went wrong: DEER Taxonomy Localization

- Failure/delay considering dx
- Failure/delay ordering needed test(s)
- Erroneous lab/rad test reading
- Too much weight competing dx
- Failed/death f/up of test result
- Failure eliciting history data
- Failure eliciting P.Exam data
- Failure/delay reporting result
- Error clinician test interpretation
- Technical error processing specimen/test
- Inaccurate interpretation history data
- Inaccurate interpretation P Exam
- Failure in performing ordered test
- To little weight give to dx
- Failure to recognize urgency
- Failure to recognize complication
Art Elstein
Cognitive Psychologist

Bob Wachter
Safety Systems Guru

Surprise at 1st Dx Error in Med (DEM) Conference 2008
Box 1 Condensed set of categories describing different steps in diagnosis targeted by diagnostic health information technology (HIT) tools

- Tools that assist in information gathering
- Cognition facilitation by enhanced organisation and display of information
- Aids to generation of a differential diagnosis
- Tools and calculators to assist in weighing diagnoses
- Support for intelligent selection of diagnostic tests/plan
- Enhanced access to diagnostic reference information and guidelines
- Tools to facilitate reliable follow-up, assessment of patient course and response
- Tools/alerts that support screening for early detection of disease in asymptomatic patients
- Tools that facilitate diagnostic collaboration, particularly with specialists
- Systems that facilitate feedback and insight into diagnostic performance
Clinical Documentation – C.Y.A?

_Canvass for Your_Assessment_

Van Gogh: Self-Portrait in Front of the Easel
Canvass for Your Assessment

- Differential Diagnosis
- Weighing Likelihoods
- Etiology
- Urgency
- Degree of certainty
What is a Diagnostic Pitfall?

Clinical situations where patterns of, or vulnerabilities to errors leading to missed, delayed or wrong diagnosis
GENERIC TYPES of PITFALLS

- Disease A repeatedly mistaken for Disease B
  - Bipolar disease mistaken for depression
- Failure to appreciate test/exam limitations
  - Pt w/ breast lump and negative mammogram and/or ultrasound
- Atypical presentation
  - Addison’s disease presenting with cognitive difficulties
- Presuming chronic disease accounts for new symptoms
  - Lung cancer: failure to pursue new/unresolving pulmonary sx in patient with pre-existing COPD
- Overlooking drug, other environmental cause
  - Pancreatitis from drug; carbon monoxide toxicity fail to consider
- Failure to monitor evolving symptom
  - Normal imagining shortly after head injury, but chronic subdural hematoma later develops
IOM (NAM) Estimate Wrong??

• Main headline grabber- Every person 1/lifetime
  – Least evidence-based figure in report
• Suspect ........underestimate

• 4 Serious Diagnostic Errors Personally
  – DIARRHEA, LOWER ABDOM PAIN → APPENDICITIS
    • SALMONELLA FOOD POISONING
  – CHESTPAIN, SOB→ MED STUDENT ANXIETY SYNDROME
    • 40% LEFT LUNG PNEUMOTHORAX
  – FEVER, SOB, ABNL CHEST X-RAY→ BACT PNEUMONIA
    • CRYPTOGENIC ORGANIZING PNEUMONIA (COP)
  – POST EXERCISE FAINTNESS→ OVER EXERTION
    • PSVT (PAROXYSMAL SUPRA-VENTRICULAR TACHYCARDIA)
YOUR EXPERIENCES
SUPPLEMENTAL SLIDES
# Cases Closed: Allegations by Close Year

<table>
<thead>
<tr>
<th>Case Type</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis-related</td>
<td>72</td>
<td>82</td>
<td>79</td>
<td>83</td>
<td>81</td>
<td>397</td>
</tr>
<tr>
<td>Medication-related</td>
<td>11</td>
<td>13</td>
<td>14</td>
<td>14</td>
<td>16</td>
<td>68</td>
</tr>
<tr>
<td>Medical Treatment</td>
<td>14</td>
<td>4</td>
<td>10</td>
<td>8</td>
<td>5</td>
<td>41</td>
</tr>
<tr>
<td>Communication</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Violation of Rights</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Safety &amp; Security</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>OB-related Treatment</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Surgical Treatment</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Breach of Confidentiality</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total Number of Cases</strong></td>
<td><strong>108</strong></td>
<td><strong>109</strong></td>
<td><strong>107</strong></td>
<td><strong>116</strong></td>
<td><strong>111</strong></td>
<td><strong>551</strong></td>
</tr>
</tbody>
</table>

N=551 CRICO and Coverys outpatient PL cases closed 2005–2009 naming General Medicine staff/fellow physicians (excl. Hospitalists) and excluding ED locations.

Schiff et al  JAMA Intern Med 2013
# Cases Closed: Top Final Diagnoses

<table>
<thead>
<tr>
<th>Final Diagnoses</th>
<th>Number of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer</td>
<td>190</td>
</tr>
<tr>
<td>Diseases of the heart</td>
<td>43</td>
</tr>
<tr>
<td>Diseases of blood vessels</td>
<td>27</td>
</tr>
<tr>
<td>Infection</td>
<td>22</td>
</tr>
<tr>
<td>Cerebrovascular disease</td>
<td>16</td>
</tr>
<tr>
<td>Lower gastrointestinal disorders</td>
<td>9</td>
</tr>
<tr>
<td>Orthopedic injuries</td>
<td>7</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Top Cancers</th>
<th>Number of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorectal</td>
<td>56</td>
</tr>
<tr>
<td>Lung</td>
<td>29</td>
</tr>
<tr>
<td>Prostate</td>
<td>26</td>
</tr>
<tr>
<td>Breast</td>
<td>18</td>
</tr>
<tr>
<td>Other GI</td>
<td>10</td>
</tr>
<tr>
<td>Benign neoplasm</td>
<td>8</td>
</tr>
<tr>
<td>Urinary organs</td>
<td>8</td>
</tr>
<tr>
<td>Lymphatic and hematopoietic tissue</td>
<td>8</td>
</tr>
<tr>
<td>Head and neck</td>
<td>6</td>
</tr>
<tr>
<td>Uterus and cervix</td>
<td>5</td>
</tr>
</tbody>
</table>

N=551 CRICO and Coverys outpatient PL cases closed 2005–2009 naming General Medicine staff/fellow physicians (excl. Hospitalists) and excluding ED locations.
Diagnostic Situational Awareness Model

- Red Flag Sx
- Don’t Miss Dx
- Dxic Pitfalls