Focus on Diagnostic Errors: Understanding and Prevention

Tejal Gandhi, MD MPH CPPS
President, National Patient Safety Foundation
Associate Professor, Harvard Medical School

Thanks to Dr. Mark Graber for the use of several slides.
What works and doesn’t work in patient safety and how do we apply it to diagnostic error?
Patient Safety “Tactical Initiatives”

Culture Change
• Walkrounds, M&M
• Policies
• Educational Efforts
  - Multiple forums/media
• Visible leadership support

Event Identification & Analysis
• Web-based Safety Reporting System
• Increase and improve RCA process

Proactive Assessments
• Alerts
  - TJC, BRM, ISMP, etc
• FMEA
  - Correct patient/site/side
  - Barcoding process

Specific Projects
• Bar coding/eMAR project
• ADE Monitor
• Abnormal result f/u
Diagnostic errors are just rare enough that no one knows they are there, but just common enough to cause 40,000 – 80,000 deaths annually in the US.
Where do they happen?

- **ER** The petri dish for diagnostic errors

- **Inpatients** One in ten diagnoses is probably wrong. 36,000 deaths in the ICU alone

- **Ambulatory care clinics** Its NOT just rare conditions. Dx errors are COMMON in patients with anemia, asthma, COPD, ....
Culture of Safety

- First, need to create a culture of safety, similar to the aviation industry
  - Even highly trained people make mistakes... or diagnostic errors
  - Move beyond blaming and punishing and towards improving the system
  - Reduce fear of reporting
Culture Change for Diagnostic Error

- Inpatient and outpatient focus
- Leadership
- Training and education
  - For leaders and front line clinicians
- Walkrounds
- M&M conferences
Leadership’s Role In Reducing Diagnostic Errors

- Acknowledge the Magnitude of the Problem

- Culture Change
  - Safety culture is an environment where it is not just safe to report and discuss as a first step; it’s the norm
  - Model sound diagnostic practices for others

- Appreciate the role of systems improvements in directly reducing errors AND promoting better thinking
Event Identification and Analysis

- Measurement
  - Reporting systems (providers, patients)
    - Requires culture change
    - Also appropriate systems for reporting
  - EHRs
    - Trigger tools
    - Data mining
Event Identification and Analysis

- Analysis
  - Systems approach
    - Develop local expertise to better understand cognitive error as well as systems approaches to these
    - Create ambulatory infrastructure
  - RCAs
    - Modified approach
- Follow-up and feedback
  - Ensure providers receive feedback on reported cases as well as those they don’t know about
What is Different About Ambulatory Care?

- Long feedback loops
- Episodic (from provider perspective)
- Signal to noise ratio is low
- Widely distributed
- Limited resources, redundancy
- Patients and providers have many degrees of freedom
While cognitive and system issues appear similar for in-pt and out-pt cases, misinterpretation of test results, communication, and behavior related issues impact in-pt and out-pt cases differently.

<table>
<thead>
<tr>
<th>IN-PATIENT</th>
<th>% CASES*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Judgment</td>
<td>72%</td>
</tr>
<tr>
<td>Communication</td>
<td>31%</td>
</tr>
<tr>
<td>Clinical Systems</td>
<td>19%</td>
</tr>
<tr>
<td>Documentation</td>
<td>16%</td>
</tr>
<tr>
<td>Behavior-related</td>
<td>12%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AMBULATORY</th>
<th>% CASES*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Judgment</td>
<td>71%</td>
</tr>
<tr>
<td>Communication</td>
<td>24%</td>
</tr>
<tr>
<td>Clinical Systems</td>
<td>19%</td>
</tr>
<tr>
<td>Documentation</td>
<td>16%</td>
</tr>
<tr>
<td>Behavior-related</td>
<td>21%</td>
</tr>
</tbody>
</table>

- Narrow diagnostic focus: 27%
- Failure / delay in obtaining consult: 17%
- Communication among providers: 20%
- Communication / patient/family: 3%
- Misinterpretation of studies: 15%

- Communication among providers: 10%
- Communication / patient/family: 9%
- Failure / delay in ordering a test: 31%
- Failure / delay in obtaining consult: 19%
Proactive Analysis

- Don’t wait for the bad thing to happen
- Understand areas of high risk
  - Office practice assessments
  - Emergency Department
  - Patient engagement
- Better sharing across organizations
  - Patient Safety Organizations
Specific Projects

- Closed loop test results
- Closed loop referrals
- Algorithms for high risk chief complaints
  - Hi tech vs low tech
- Improving patient engagement
  - Health literacy
Preventing Cognitive Errors

Possible Systems Solutions

- Effective Practices/Interventions for consideration:
  - Reduce reliance on memory
    - Chart audits for certain complaints
  - Forcing consideration of alternative diagnostic plans or second opinions
  - Clinical decision support systems
    - Make sure guidelines are available at point of care, within workflow
    - Automatic rather than optional
Education: Think Better to “De-Bias”

- **Metacognition (Thinking about Your Thinking)**
  - Understanding Strengths and Limitations
    - Promote decreased reliance on memory
    - Willingness to adopt systematic approaches to common problems
  - Reflect on one’s own biases and consider cognitive “forcing” strategies
    - Trust your gut but know when it can fail you

- **Developing Intuition**
  - Perfect Practice Makes Perfect
    - Develop a better Personal System I
  - Progressive Problem Solving
    - Thinking one step ahead: Chess, not checkers
  - Feedback
    - Ask your colleagues about outcomes after you are off duty
  - Simulation
    - High fidelity clinical simulation and team training has potential

Recommendations: Testing

- Need to develop fail-safe mechanisms of communication and explicit criteria for communication
  - Testing areas (Radiology, Cardiology, Laboratory) should create explicit definitions of which results are considered abnormal and need direct communication.
  - Document this explicit direct communication
  - Clear escalation strategies (if pages aren’t answered)
Recommendations:
Role of ordering physician

- Ordering physician needs to document reason underlying ordered test and their contact information
- Ordering physician needs back-up systems to follow up if they are unavailable
- Ordering physicians should have mechanisms to track results ordered and ensure results are reviewed in a timely way
Improving Result Management and Referral Systems

- Required tracking and acknowledgment of test results (closed loop)
- Required documented action
- Ability to escalate
- Standardized procedures rather than every physician doing it his/her own way
Potential of Health IT

- Better Data Gathering and Organization
  - Less energy used while creating the database leaves more for critical thinking
  - Ability to re-present data in multiple formats may assist in differential diagnosis generation

- Differential Diagnosis Generators
  - ISABEL
  - Dxplain

- Clinical Decision Support and Order Sets
  - More efficient, reliable sources for medical knowledge
  - Directly incorporate learning into the workflow

- Tools that Facilitate Followup and Feedback

- Watson Technology May Help Accomplish All of the Above!

Patient Engagement

“Nearly 9 out of 10 US adults have difficulty using the everyday health information that is routinely available in our health care facilities, retail outlets, media and communities.”

Prevalence of limited health literacy

Data from the only population-level study of health literacy skills conducted to date show the prevalence of LHL

Recommendations to improve diagnosis and reduce diagnostic error

- Leadership/culture change
- Measurement
- Training of quality/safety personnel on analysis
- Research to identify tools and strategies to minimize cognitive and systems error
- Implementation of known best practices around diagnostic systems (test results and referrals)
  - Engagement with EHR vendors
- Patient engagement strategies
Most important places to start

- Leadership/culture
- Measurement
- Low hanging fruit- implementation of known best practices around test results and referrals