Reducing Diagnostic Errors

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November 16, 2016
Learning Objectives

- Upon completion of the session, the participant will:
  1) Demonstrate understanding of the types of diagnostic errors.
  2) Be able to describe why diagnostic errors happen.
  3) Apply daily principles to help improve the diagnostic process.
Consider this patient

- 32-year-old F admitted for routine gynecological procedure
- During induction of anesthesia, developed unusual reaction
  - Systemic blood pressure (BP) undetectable
  - Cardiopulmonary resuscitation initiated
- After 5 min of intensive IV pressors, normal BP returned
- Troponin moderately elevated at 12 and 24 hr following episode of hypotension
- ECG: transient shallow T wave inversions
Consider this patient

- Third day
  - Cardiac catheterization, including coronary arteriography, normal
- Patient monitored for several days in SICU
- Discharge summary signed by attending physician
  - One of the diagnoses listed: “acute myocardial infarction (AMI)”
Several years later

- Life insurance denied because of “infarction”
- Multiple physician letters and phone conversations with insurance company required before patient granted life insurance
- Insurance company physician eventually agreed she suffered myocardial injury secondary to reaction to anesthesia
  - Not “acute myocardial infarction”!!!
Chapter 119: ST-Segment Elevation Myocardial Infarction

INTRODUCTION

Early recognition and immediate treatment of acute ST-segment elevation myocardial infarction (STEMI) are essential; diagnosis is based on characteristic history, ECG, and serum cardiac markers.

Symptoms
Chest pain similar to angina (Chap. 31) but more intense and persistent; not fully relieved by rest or nitroglycerin, often accompanied by nausea, sweating, apprehension. However, ~25% of MIs are clinically silent.

Physical Examination
Pallor, diaphoresis, tachycardia, S₄, dyskinetic cardiac impulse may be present. If CHF exists, rales and S₃ are present. Jugular venous distention is common in right ventricular infarction.

ECG
ST elevation, followed (if acute reperfusion is not achieved) by T-wave inversion, then Q-wave development over several hours.
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**ECG**

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**Cardiac Biomarkers**

Cardiac-specific troponins T and I are highly specific for myocardial injury and are the preferred biochemical markers for diagnosis of acute MI.
Has the right test been ordered?  Error between result receipt and action?

Diagnostic Error is an Error that Occurs in Any one of the Steps Shown in This Diagram

The nine steps in the performance of any laboratory test. The brain-to-brain turnaround time loop.

Lundberg, 1981
Mistakes diagnosing patients are the most common, costly and dangerous errors made by doctors in the U.S. and result in permanent injury or death for as many as 160,000 patients annually, a new study found.
Researchers at Johns Hopkins University looked at more than 350,000 malpractice claims over 25 years. They found that diagnostic errors—defined as missed, wrong, or delayed diagnosis—accounted for nearly 29% of claims, more than other categories such as treatment, surgery or medication. Diagnostic errors made up the biggest share of claim payments at 35.2% of total payments, or $38.8 billion, adjusted for inflation, from 1986 to 2010. They resulted in death in more than 40% of claims.

- Missed, wrong, or delayed diagnosis – 29% of claims
  - $38.8 billion – more than 40% died
Improving the diagnostic process is not only possible, but also represents a moral, professional, and public health imperative.

“The committee concluded that most people will experience at least one diagnostic error in their lifetime, sometimes with devastating consequences. Urgent change is warranted to address this challenge.”
WHAT IS DIAGNOSTIC ERROR?

Committee defined diagnostic error as “the failure to

- (a) establish an accurate and timely explanation of
  the patient’s health problem(s) or

- (b) communicate that explanation to the patient.”

The definition frames diagnostic error from the patient’s perspective, because a patient bears the ultimate risk of harm from diagnostic errors.

It also reflects the iterative and complex nature of the diagnostic process, as well as the need for a diagnosis to convey more than simply a label of a disease.
Why diagnostic errors happen

- Diagnostic errors stem from many causes
  - Inadequate collaboration and communication among clinicians, patients, and families
  - Health care work system not well designed to support the diagnostic process
  - Limited feedback to clinicians about diagnostic performance
  - Culture that discourages transparency and disclosure of diagnostic errors (may impede attempts to learn from these events and improve diagnosis)
Consequently

- Diagnostic errors may cause harm to patients by
  - Preventing or delaying appropriate treatment
  - Providing unnecessary or harmful treatment
  - Resulting in psychological or financial repercussions
Some numbers...

- About 5% of U.S. adults who seek outpatient care each year experience a diagnostic error.
- Postmortem examination research shows diagnostic errors contribute to about 10% of deaths, and medical record reviews suggest they account for 6 - 17% of adverse events in hospitals.
Committee’s conclusion

- Sole focus on reducing diagnostic errors will **not** achieve the extensive change necessary
- Broader focus on improving diagnosis warranted
- Developed conceptual model to
  - Articulate diagnostic process
  - Describe work system factors that influence process
  - Identify opportunities to improve diagnostic process
The Diagnostic Process

**FIGURE** The committee’s conceptual model of the diagnostic process.
GOAL 1

- Facilitate more effective teamwork in the diagnostic process among health care professionals, patients, and their families.

GOAL 2

- Enhance health care professional education and training in the diagnostic process
GOAL 3

- Ensure that health information technologies support patients and health care professionals in the diagnostic process.

GOAL 4

- Develop and deploy approaches to identify, learn from, and reduce diagnostic errors and near misses in clinical practice.
GOAL 5

- Establish a work system and culture that supports the diagnostic process and improvements in diagnostic performance.

GOAL 6

- Develop a reporting environment and medical liability system that facilitates improved diagnosis by learning from diagnostic errors and near misses.
GOAL 7

- Design a payment and care delivery environment that supports the diagnostic process.

GOAL 8

- Provide dedicated funding for research on the diagnostic process and diagnostic errors.
GOAL 1 Facilitate more effective teamwork in the diagnostic process among health care professionals, patients, and their families

- RECOMMENDATION 1A

- Diagnostic process is dynamic team-based activity
  - Thus, health care organizations should ensure that health care professionals have the appropriate knowledge, skills, resources, and support to engage in teamwork in the diagnostic process.
  - To accomplish this, they should facilitate and support:
    - Inter- and intra-professional teamwork in the diagnostic process.
    - Collaboration among pathologists, radiologists, other diagnosticians, and treating health care professionals to improve diagnostic testing processes.
GOAL 1 Facilitate more effective teamwork in the diagnostic process among health care professionals, patients, and their families

- RECOMMENDATION 1B

- Health care professionals and organizations should partner with patients and their families as diagnostic team members and facilitate patient and family engagement in the diagnostic process, aligned with their needs, values, and preferences.

- To accomplish this, they should:
  - Provide patients with opportunities to learn about the diagnostic process.
  - Create environments in which patients and their families are comfortable engaging in the diagnostic process and sharing feedback and concerns about diagnostic errors and near misses.
GOAL 1 Facilitate more effective teamwork in the diagnostic process among health care professionals, patients, and their families

- Ensure patient access to electronic health records (EHRs), including clinical notes and diagnostic testing results, to facilitate patient engagement in the diagnostic process and patient review of health records for accuracy.

- Identify opportunities to include patients and their families in efforts to improve the diagnostic process by learning from diagnostic errors and near misses.
GOAL 2 Enhance health care professional education and training in the diagnostic process

- RECOMMENDATION 2A

- Educators should ensure that curricula and training programs across the career trajectory:

  - Address performance in the diagnostic process, including areas such as clinical reasoning; teamwork; communication with patients, their families, and other health care professionals; appropriate use of diagnostic tests and the application of these results on subsequent decision making; and use of health information technology (IT).

  - Employ educational approaches that are aligned with evidence from the learning sciences.
GOAL 4 Develop and deploy approaches to identify, learn from, and reduce diagnostic errors and near misses in clinical practice

- **RECOMMENDATION 4B**

- Health care organizations should:
  - Monitor the diagnostic process and identify, learn from, and reduce diagnostic errors and near misses as a component of their research, quality improvement, and patient safety programs.
  - Implement procedures and practices to provide systematic feedback on diagnostic performance to individual health care professionals, care teams, and clinical and organizational leaders.
GOAL 5 Establish a work system and culture that supports the diagnostic process and improvements in diagnostic performance

• RECOMMENDATION 5

• Health care organizations should:

  ✷ Adopt policies and practices that promote a non-punitive culture that values open discussion and feedback on diagnostic performance.

  ✷ Design the work system in which the diagnostic process occurs to support the work and activities of patients, their families, and health care professionals and to facilitate accurate and timely diagnoses.

  ✷ Develop and implement processes to ensure effective and timely communication between health care professionals across all health care delivery settings.
“Laboratory professionals naturally wish to provide the most accurate and sensitive tests that the technology allows, but they must also accept the obligation to partner with clinicians to determine the relevance of the results obtained with regard to diagnostic, treatment, or monitoring decisions. This involves meaningful communication of factors such as predictive value and the significance of changes in results.”
What you can do

- Stay vigilant
- Observe
- Analyze
- Communicate
The 7 Cs of Communication

According to the 7 Cs, communication needs to be:

1. Clear
2. Concise
3. Concrete
4. Correct
5. Coherent
6. Complete
7. Courteous

1. Clear

- When (writing or) speaking to someone, be clear about your goal or message. What is your purpose in communicating with this person?

- To be clear, try to minimize the number of ideas in each sentence. Make sure that it's easy for your reader to understand your meaning.

  - “I am Marisa Marques and I work in the Chemistry laboratory. I am calling about an order we received on one of your patients.”
2. Concise

- When you're concise in your communication, you stick to the point and keep it brief.

- Are there any adjectives or "filler words" that you can delete?
  - You can often eliminate words like "for instance," "you see," "definitely," "kind of," "literally," "basically," or "I mean."
  - Are there any unnecessary sentences?
  - Have you repeated the point several times, in different ways?
3. Concrete

- When your message is concrete, then your audience (the other person) has a clear picture of what you're telling them.

- There are details (but not too many!) and vivid facts, and there's laser-like focus. Your message is solid.
  
  "Mr. X has sickle cell disease and we cannot perform a HbA1C. Would you mind ordering a fructosamine? We do not need another blood sample because we can send the same plasma leftover from the metabolic profile order."
4. Correct

- When your communication is correct, it fits your audience. And correct communication is also error-free communication.

- Do the technical terms you use fit your audience's level of education or knowledge?

- Are all names (and titles) spelled correctly?

5. Coherent

- When your communication is coherent, it's logical.

- All points are connected and relevant to the main topic, and the tone and flow of the text is consistent.
In a complete message, the audience has everything they need to be informed and, if applicable, take action.

Does your message include a "call to action," so that your audience clearly knows what you want them to do?

Have you included all relevant information – contact names, dates, times, locations, and so on?

“Since fructosamine is a sendout test, the result will take a few days to return. If you have any questions, my number is 934-5990.”
7. Courteous

- Courteous communication is friendly, open, and honest.
- There are no hidden insults or passive-aggressive tones.
- You keep your reader's viewpoint in mind, and you're empathetic to their needs.
A few variations of the 7 Cs of Communication

- **Credible** – Does your message improve or highlight your credibility?
  - This is especially important when communicating with someone that doesn't know much about you.

- **Creative** – Does your message communicate creatively?
  - Creative communication helps keep your audience engaged.
  - *(maybe this does not apply here!)*
The percentage of physicians who reported that they “never” contact laboratory professionals ranged from 47.5% (to ask about “the medical significance of results”) to 9.7% (for “status of missing results”).

Almost half of the respondents chose “too difficult to contact person who can answer my questions” or “do not know who to contact” as “very” and “extremely” important reasons for not consulting with the laboratory.
What you can do

- Stay vigilant
- Observe
- Analyze
- Communicate
- EDUCATE, SHARE your knowledge, get involved
Test Selection Challenges

Patient presents with symptoms

MD reviews testing options based on patient symptoms

Clinician orders incorrect test from test names*

LIS system menu contains names and abbreviations for tests

Laboratory Director approves names and abbreviations for tests

Expert Group collaborates with LIS vendor directives to identify test names and abbreviations

Patient outcome - Dependent upon correct test

MD treats patient based on results

*What are chances MD will order right test if there are multiple possibilities or the correct test is not in the system?
Facing (and Thriving in) the Future: A Top Ten List

10. Be smart about your human resources.
9. Get LEAN.
8. Take charge of test utilization.
7. Take up permanent residence in the patient-centered medical home.
6. Create true value.
5. Locate your inner informatician.
4. Get out of the lab.
3. Quality is NOT optional.
2. Never, EVER forget who our final customers are.
1. Don’t fight the future.
   Embrace it!

By Steven H. Kroft, MD, FASCP
"The ultimate measure of a man is not where he stands in moments of convenience and comfort, but where he stands at times of challenge and controversy."

**Strength to Love**, 1963.
MUITO OBRIGADA