The Fundamentals of Diagnostic Errors in Hospitals

Diagnostic Safety and Quality Webinar Series: Overview and Implications for Hospitals

September 12, 2023

THE LEAPFROG GROUP

Introductions

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Society to Improve Diagnosis in Medicine (SIDM)

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Program Manager
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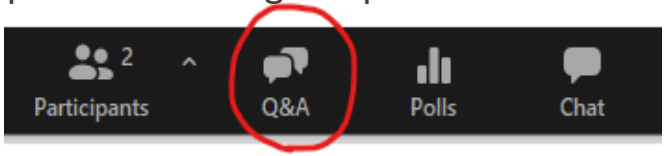

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Learning Objectives

1. What are diagnostic errors, and how do they affect U.S. hospitals?
2. What are the root causes of diagnostic errors?
3. How can quality measurement and public reporting of performance promote value-based care that advance accurate and timely diagnoses?

Incidence and Impact of Diagnostic Errors

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Defining Diagnostic Error

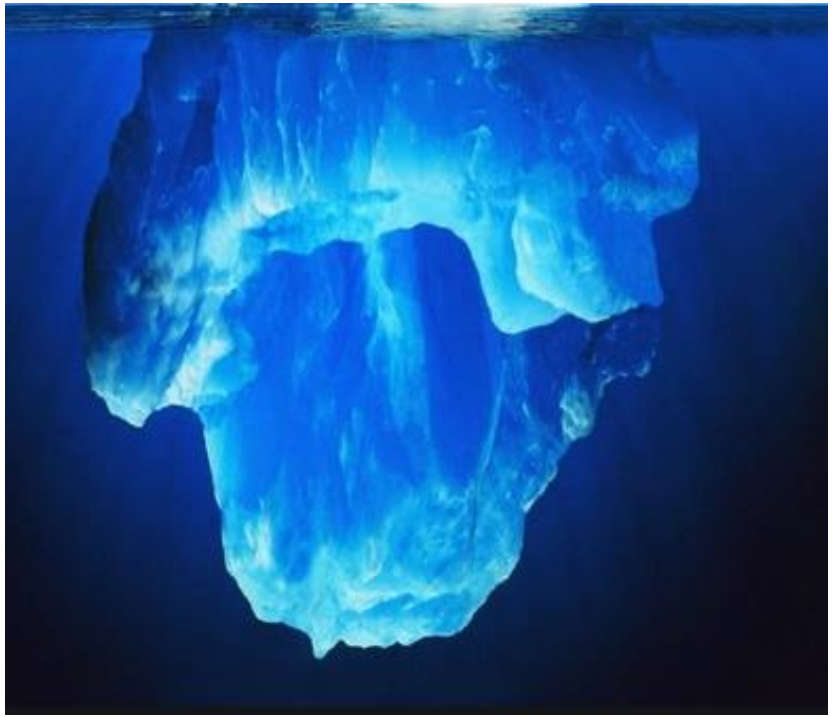
An event where one or both of the following occurred, with harm or high potential of harm to the patient:

- Delayed, wrong, or missed diagnosis: At least one missed opportunity to pursue or identify an accurate and timely diagnosis based on the information that existed at that time.
- Accurate diagnosis was available but was not effectively communicated to the patient or family.

Adapted from:

2021 AHRQ Common Formats for Event Reporting – Diagnostic Safety

Lessons Learned about Dx Error from Malpractice Claims



Most Common: > 12 Million dx errors/year.

The #1 cause of adverse events causing serious harm.

Most Catastrophic: 64% of claims involve death or permanent disability (Rank #1).

Most Costly: Estimated national costs in excess of $100B/year.

Newman-Toker, D. et al Diagnosis 2019
Newman-Toker, D. Johns Hopins Armstrong Institute for Patient Safety and Quality

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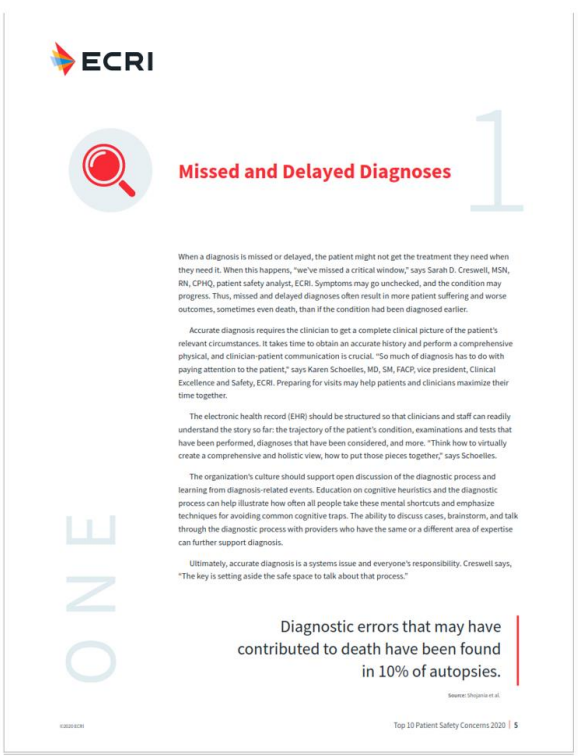
ECRI Reports that Diagnostic Error is #1 Patient Safety Concern


ECRI

ONE

Missed and Delayed Diagnoses

1

When a diagnosis is missed or delayed, the patient might not get the treatment they need when they need it. When this happens, "we've missed a critical window," says Sarah D. Creswell, MSN, RN, CPHQ, patient safety analyst, ECRI. Symptoms may go unchecked, and the condition may progress. Thus, missed and delayed diagnoses often result in more patient suffering and worse outcomes, sometimes even death, than if the condition had been diagnosed earlier.

Accurate diagnosis requires the clinician to get a complete clinical picture of the patient's relevant circumstances. It takes time to obtain an accurate history and perform a comprehensive physical, and clinician-patient communication is crucial. "So much of diagnosis has to do with paying attention to the patient," says Karen Schoelles, MD, SM, FACP, vice president, Clinical Excellence and Safety, ECRI. Preparing for visits may help patients and clinicians maximize their time together.

The electronic health record (EHR) should be structured so that clinicians and staff can readily understand the story so far: the trajectory of the patient's condition, examinations and tests that have been performed, diagnoses that have been considered, and more. "Think how to virtually create a comprehensive and holistic view, how to put those pieces together," says Schoelles.

The organization's culture should support open discussion of the diagnostic process and learning from diagnosis-related events. Education on cognitive heuristics and the diagnostic process can help illustrate how often all people take these mental shortcuts and emphasize techniques for avoiding common cognitive traps. The ability to discuss cases, brainstorm, and talk through the diagnostic process with providers who have the same or a different area of expertise can further support diagnosis.

Ultimately, accurate diagnosis is a systems issue and everyone's responsibility. Creswell says, "The key is setting aside the safe space to talk about that process."

Diagnostic errors that may have contributed to death have been found in 10% of autopsies.

Source: Shojania et al.

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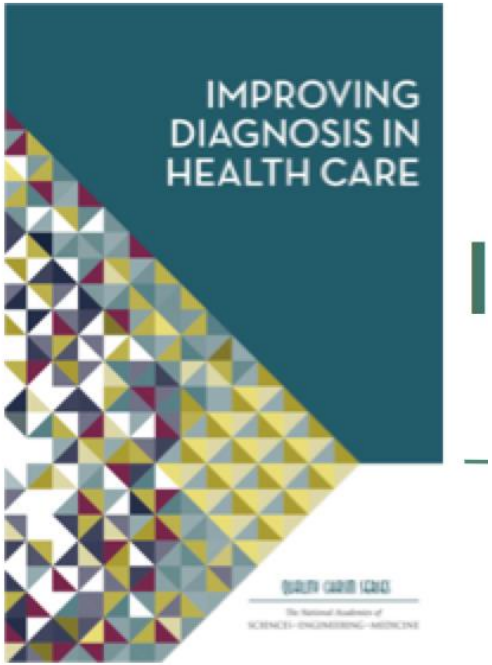
Improving Diagnosis in Health Care

SOCIETY to IMPROVE DIAGNOSIS in MEDICINE

"It is likely that most of us will experience at least one diagnostic error in our lifetime, sometimes with devastating consequences."

National Academy of Medicine, 2015



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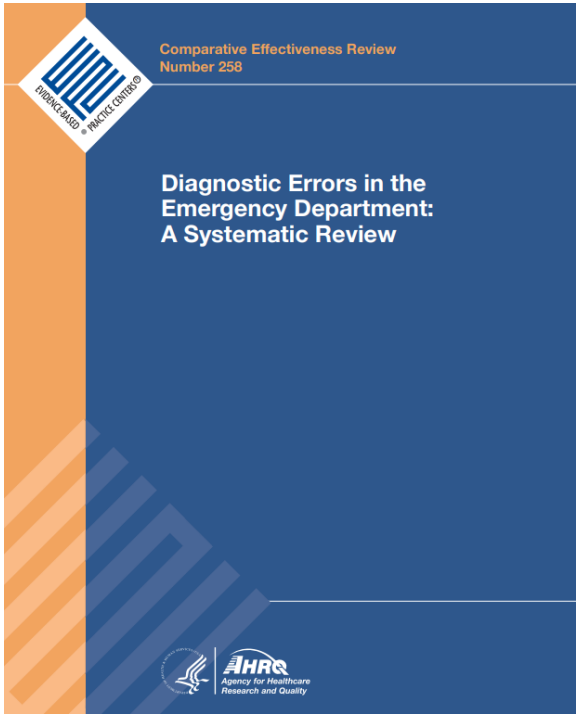
The Emergency Department: Key Area for Improvement

With 130 million U.S. ED visits, estimated rates for diagnostic error (5.7%), misdiagnosis-related harms (2.0%), and serious misdiagnosis-related harms (0.3%) could translate to more than…

7 million harms, and 350,000 patients suffering potentially preventable permanent disability or death.

Newman-Toker DE, Peterson SM, Badihian S, et al. Diagnostic Errors in the Emergency Department: A Systematic Review [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2022 Dec. (Comparative Effectiveness Review, No. 258.)



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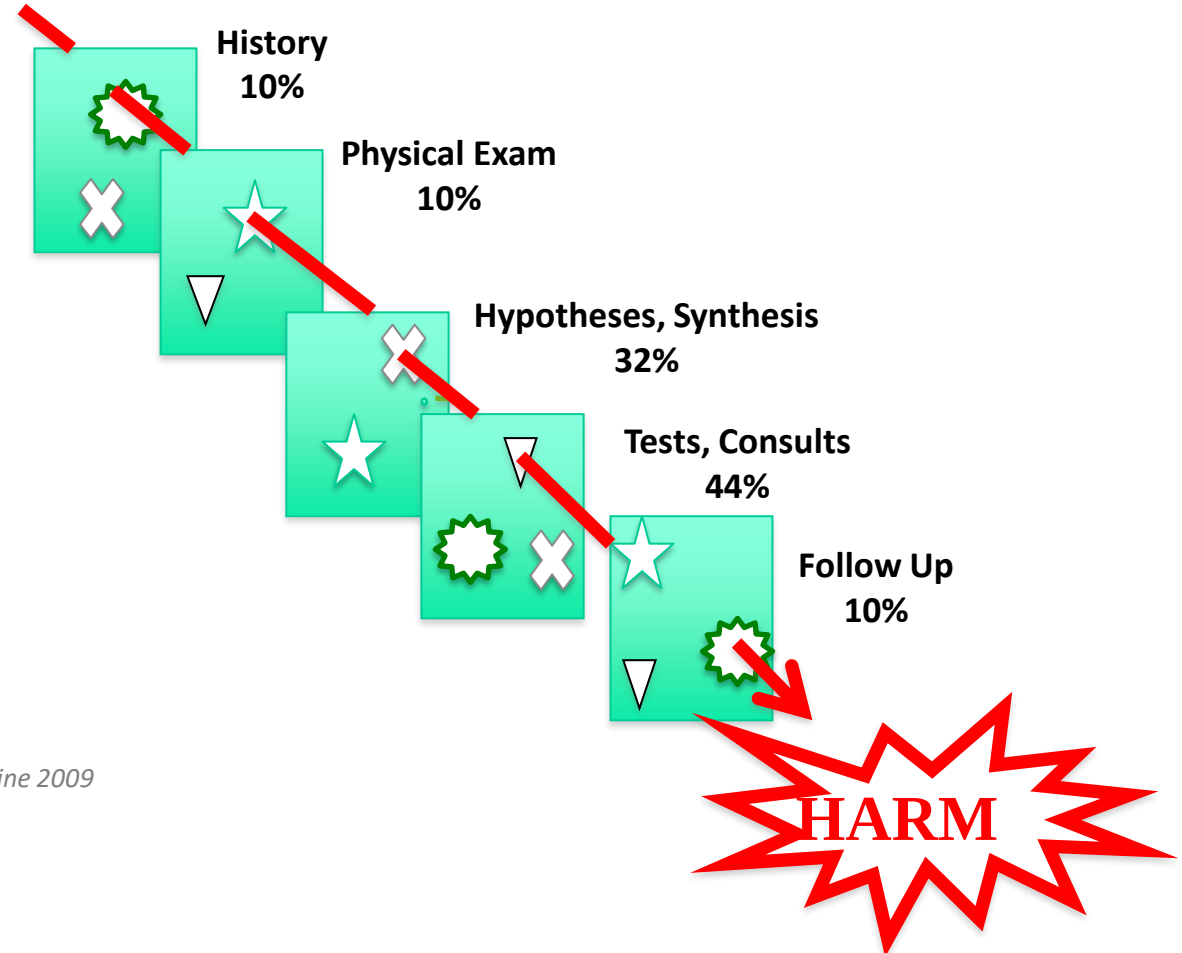
Causes of Diagnostic Error

Where Harm Occurs in the Diagnostic Process



Schiff et al. Archives Internal Medicine 2009

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Diagnosis is HARD!

10,000 diseases but only 200 symptoms

PATIENT VARIABLES

- Stage of disease
- How it manifests
- How it is perceived
- How it is described
- When help is sought

SYSTEM COMPLEXITY

- Disjointed care
- Communication barriers
- Production pressure
- Tight coupling
- Access to care & expertise

PHYSICIAN VARIABLES

- Knowledge and experience
- Access to patient data, tests, consults
- Skill in clinical reasoning
- Stress, distractions, mood, time to think

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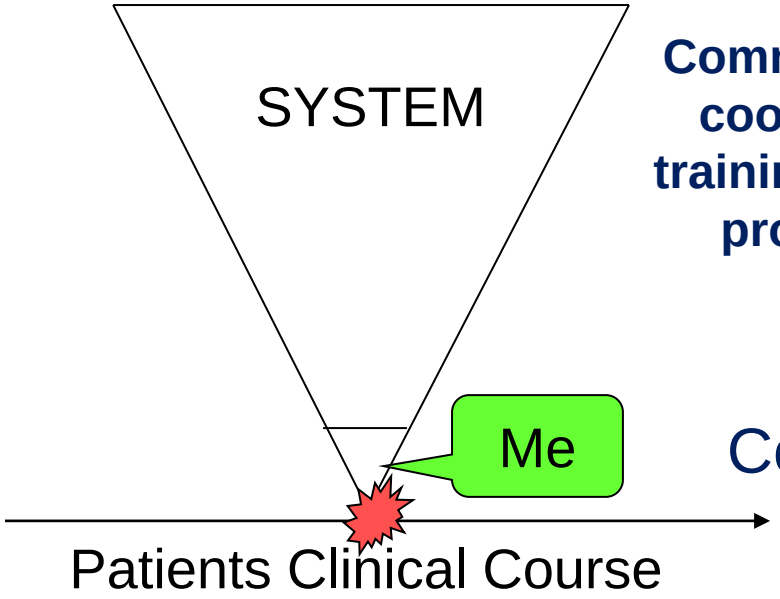
Origins of Diagnostic Error

BLUNT end

SHARP end



Communication, coordination, training, policies, procedures

Cognitive

Patient Stories of Diagnostic Errors

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Julia Berg – The Missed Test

Society to Improve Diagnosis in Medicine – The Missed Test

Julia Berg was a 15-year-old who was feeling lethargic, with a sore throat and fever. After a long diagnostic odyssey culminating in a CT scan, the doctors concluded that it was a gallbladder infection. She was admitted and surgery to remove the gallbladder proceeded normally. Soon after returning to her hospital room, Julia's blood pressure dropped, her heart rate increased dramatically, and she had pain radiating from her chest—far from the surgical point.

"I tried to point out the monitors to a nurse, but the nurse dismissed me and said that it's not my business to check the monitors," her mother said. "So I just kept reassuring Julia that everything would be okay."

Nearly immediately, Julia began to code. Welcome was pulled out of the room. Dan, who had left to pick up their other daughter, was called back and found a crowd outside Julia's room.

Four hours after surgery, Julia died.

An autopsy revealed that she had been subject to a raging Epstein-Barr infection, or mononucleosis. Although the urgent care clinic recommended a follow-up test for mononucleosis to rule out a false negative, the test was never done.

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Alex James – Running Against the Clock

Society to Improve Diagnosis in Medicine – Running Against the Clock

Alex, a 19 year old college student, collapsed on a training run.

"I suggested that we compare his initial EKG results to a baseline EKG he had done with the Air Force ROTC a few months before, but his cardiologist didn't do the assessment," John remembers. If the hospital had done the comparison; they would've seen that his EKG had changed.

"The other thing I noticed was that he had low potassium, but it was just barely below the threshold and his doctors weren't concerned." Alex's initial potassium level was 3.4, just 0.2 points below the normal level of 3.6.

Following the study, Alex was sent home with no further instructions—including not to keep running, even though such instructions appeared in his medical records. During his follow-up visit five days later, he was given a clean bill of health by a doctor in training…Two weeks after that, Alex collapsed during a solo run and died.

The cause of death was sudden cardiac death due to long QT syndrome, a disorder of the heart's electrical activity that causes life-threatening arrhythmias that has been discussed in medical literature since the 1980s. Alex had the acquired form, due to potassium depletion, which is not uncommon in young men in hot, stressful exercise environments.

The Problem with Diagnostic Safety and Quality

Everyone is At Risk

Hospitals Are Not Taking Action

- Slow progress in improving diagnostic safety and quality
- Key barriers:
  - Where to start?
  - Lack of measures and clear goals for improvement

How can healthcare organizations begin improving diagnosis?

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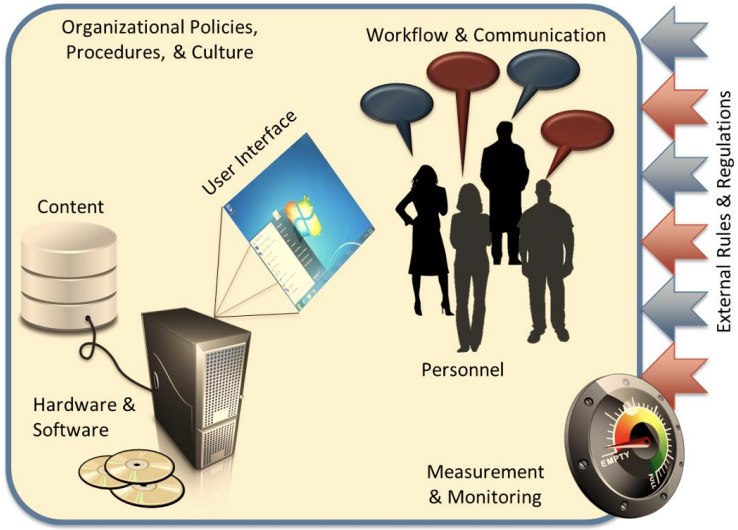
What is Diagnostic Excellence

- Use **fewest** resources
- Maximize **patient experiences**
- Manage and communicate **uncertainty** to patients
- Tolerate **watchful waiting** when unfocused treatment may be harmful

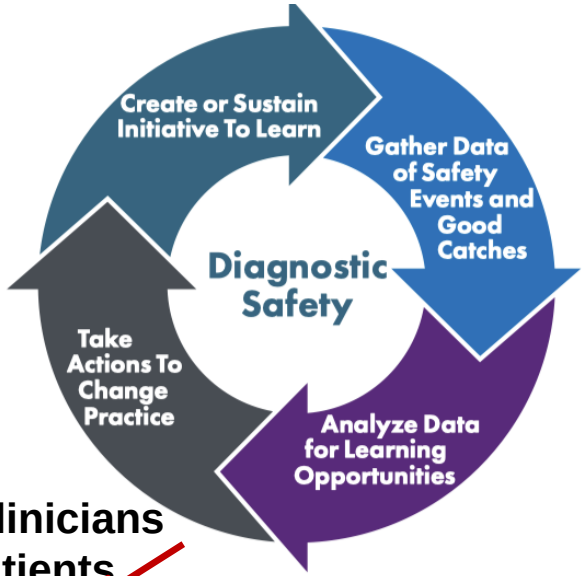
Meyer A and Singh H. JAMA. 2019


Second opinions
Metacognition
Feedback
Teamwork!
Reflection
RCA's
Follow-up
Close the Loop
Champions
Decision Support
Critical thinking
Checklists
Patient engagement
Measurement
Second opinions
Champions
Patient engagement

New Care Model – "LEDE" Organizations
(LEDE = Learning & Exploration of Diagnostic Excellence)



Sittig, Singh, *Qual Saf Health Care. 2010 Oct; 19(Suppl 3): i68–i74.*



Engage clinicians and patients

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Quality measurement to advance accurate and timely diagnoses

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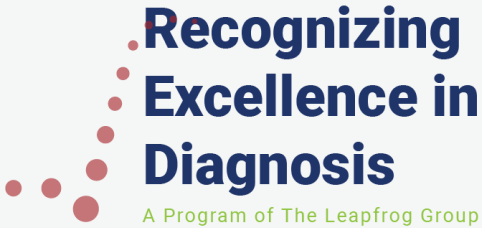
A New National Initiative for Hospitals



A national initiative to publicly report and recognize hospitals for preventing patient harm due to diagnostic errors.

Progress:

- Published Recommended Practices Report describing 29 options for hospitals looking to reduce diagnostic errors
- Measured implementation progress in pilot survey of 95 hospitals across the country

This fall:

- Introducing a new measurement framework and process/structural measures for inclusion in the 2024 Leapfrog Hospital Survey

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Practice Sources: Environmental Scan & Advisory Group Input

100+

Interventions

narrowed down to

29 **Recommended Practices**

Practices derived from four sources:

- Existing measure and intervention
- Review of literature
- Key informant interviews
- Advisory Group members

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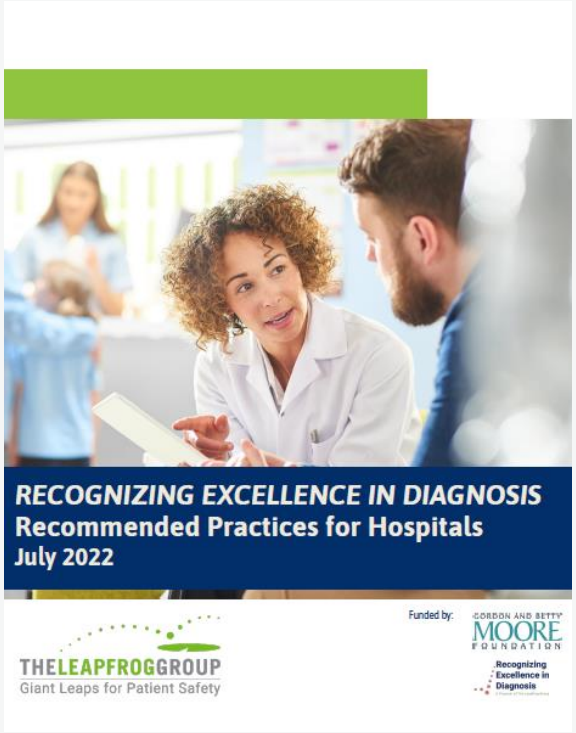
The Recommended Practices Report

Recommended Practices include:

- Practice statement
- Rationale
- Resources and Strategies for Implementation
- Citations



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Excerpt from Report

Practice 1.2B – Promote teamwork

Senior administrative leaders continuously promote effective teamwork in diagnosis by putting policies or protocols in place to ensure:

- Diagnostic input and second opinions from clinician peers.
- Diagnostic input from nurses, pharmacists, and other clinical staff who touch the patient.
- Communication among clinicians and others involved in the diagnostic process and staff in radiology and the clinical lab regarding test selection and test result interpretation.

Rationale

Examples abound where breakdowns in teamwork led to diagnostic errors. In the case of Thomas E. Duncan, the first patient in the U.S. diagnosed with the Ebola Virus disease, the nurse who triaged the patient obtained and documented his history of recent travel to an endemic region in West Africa. However, the physician who saw the patient did not obtain this history, read the nurse's note, nor communicate with her, resulting in a delayed diagnosis and unnecessarily exposing many people to Ebola.[48]

Second opinions change the diagnosis in at least 10% of cases,[49] and increasing evidence suggests that groups considering a diagnosis more quickly and accurately arrive at a diagnosis compared to an individual.[50] [51]

Resources and Strategies

- The hospital designates individuals to be trained as facilitators using AHRQ's *Facilitator's Implementation Roadmap*. Trained facilitators then teach the *TeamSTEPPS for Diagnosis Improvement* course to small teams of clinicians and others involved in the diagnostic process.
- The hospital practices interdisciplinary patient rounding in inpatient and critical care units. As part of the practice of interdisciplinary rounding, nurses, pharmacists, and allied health professionals engage in the discussions and contribute to decisions about the patient's diagnosis. Broadening the practice of interdisciplinary rounds to occur across all settings and be inclusive of all care team members can promote diagnostic excellence as each member offers insight relevant to their discipline. For example, including a pharmacist adds a lens for possible drug interactions or side effects contributing to new symptoms and a physical therapist can explain unexpected changes in mobility.

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Practices for Hospital Leadership and Systems - Examples

COMMIT TO EXCELLENCE

COMMUNICATION WITH PATIENTS

IDENTIFY, ANALYZE, AND LEARN FROM ERROR

Practices for the Diagnostic Process - Examples

ENSURE EXPERTS ARE AVAILABLE WHEN NEEDED

ENSURE INTERPRETERS ARE AVAILABLE WHEN NEEDED

ADDRESS COGNITIVE ERRORS:

SECOND OPINIONS

DECISION SUPPORT

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New Resources and Tools

SOCIETY to IMPROVE DIAGNOSIS in MEDICINE

PFAC Playbook – SIDM

- Background info about diagnosis and diagnostic errors
- How PFACs can partner with hospital leadership to reduce errors in diagnosis

AHRQ Resources

- 15 White papers on dx error and how to address it
- Tools and resources for measurement

AHRQ Agency for Healthcare Research and Quality

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RCA Handbook– Coming Soon !

An authoritative handbook on how to find, study, and address cases involving diagnostic error.

Q & A

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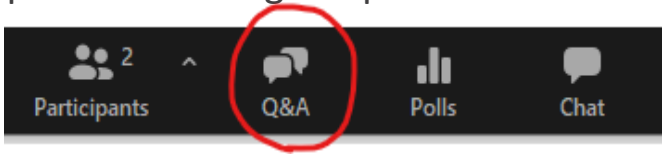

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Discussion Questions

Have you had an opportunity to engage with The Leapfrog Group, AHRQ, or the Society to Improve Diagnosis in Medicine's prior publications on the subject of improving diagnostic safety and quality?

What other information do you need to help launch your hospital on a path to diagnostic excellence?

The Webinar Series

Webinar #2: Resources and Strategies to Improve the Safety and Quality of Diagnosis in Hospitals

October 18, 3:00-4:00 PM ET

Dr. Hardeep Singh, MD, MPH, a patient safety researcher at Center for Innovations in Quality, Effectiveness and Safety (IQuESt) based at the Michael E. DeBakey VA Medical Center and Baylor College of Medicine, Houston, will describe two new and compelling resources for hospitals looking to get started on the path towards diagnosis: Measure Dx: A Resource To Identify, Analyze, and Learn From Diagnostic Safety Events, and the Safer Dx Checklist, an organizational self-assessment tool with 10 recommended practices to achieve diagnostic excellence. The session will include 20 minutes of discussion and Q&A.

The Webinar Series

Webinar #3: Case Study in Improving the Safety and Quality of Diagnosis in Hospitals

November 28, 3:00-4:00 PM ET

Dr. Divvy Upadhyay, MD, MPH, the Researcher-in-Residence at the Safer Dx Learning Lab and scientist in the Division of Quality, Safety and Patient Experience at Geisinger, will present his organization's approach to driving improved diagnostic safety and quality by sharing lessons learned across the Geisinger's health system. The session will include an open and frank conversation about how participants can leverage learnings from the webinar series to kickstart improvement at their institutions.

Thank you for joining us today.

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