



Healthcare

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Diagnostic Error: Common Causes, Effective Countermeasures

“Diagnostic error” refers to the failure to establish an accurate and timely explanation of the patient’s health problem, and/or communicate that explanation to the patient.¹ These errors typically involve failure to diagnose, misdiagnosis or delayed diagnosis. (See “Error Types” on [page 2](#).) The [most common patient safety occurrence in outpatient settings](#), diagnostic errors affect, by conservative estimate, [approximately 5 percent of adult outpatients every year](#). According to the Data Sharing Project of the Medical Professional Liability Association, associated claims resulted in [an average indemnity payment of \\$407,000](#).²

Due to the [multifaceted nature of the patient assessment and diagnostic process](#), errors rarely occur at a single point in time. Lapses are more often attributed to the cumulative impact of a wide range of risk factors, including the episodic and sometimes fragmented nature of ambulatory care, breakdowns in provider-patient communication, overlapping workflow processes and cognitive biases on the part of providers.

To help facilities and providers prevent incidents related to diagnostic inaccuracies and minimize consequent liability, this issue of *inBrief*® examines common sources of error and presents strategies designed to enhance diagnostic accuracy. Suggestions range from the use of diagnostic teams and provider timeouts to improved documentation of clinical reasoning and automated test ordering and reporting systems.

¹ In 2015, the National Academies of Science, Engineering, and Medicine proposed this patient-centered, communication-focused definition of diagnostic error in the landmark report, “[Improving Diagnosis in Healthcare](#).” The definition has been endorsed by the [Patient Safety Network](#) of the Agency for Healthcare Research and Quality, as well as other patient safety organizations.

² Reprinted with permission from *Inside Medical Liability Magazine*. Data Sharing Project Highlight – Diagnostic Error. Third Quarter. Copyright, 2021. MPL Association. The information provided may be used for personal use only. Any other use requires prior permission of the MPL Association.

An Important Note About Patient Re-engagement Post-pandemic

According to the Centers for Disease Control and Prevention, [four in 10 adults report that they have postponed medical care](#) during the COVID-19 pandemic, endangering themselves and potentially increasing exposure to claims of delayed diagnosis. The following tips can help healthcare facilities and providers re-establish preexisting connections with patients and strengthen their own risk posture:

- **Initiate a public outreach campaign** that emphasizes the importance of regular screenings.
- **Include disease-specific FAQs or chat rooms** on the facility website addressing common patient concerns.
- **Communicate electronically with high risk patients**, such as those with cancer or a chronic disease, explaining why follow-up exams are necessary.
- **Increase virtual care options**, including telemedicine visits and patient portal access.
- **Send at least three documented reminders to non-responsive patients** before terminating the patient-physician relationship.

According to the “2022 Health Care Insights Survey” issued by CVS Health, there are signs that patient engagement may be increasing. This study found that [17 percent of surveyed adults are more likely to schedule their annual checkup now than before the pandemic](#).

Diagnostic Error

Error Types

Failure to diagnose, i.e., when an underlying condition – such as colon cancer in a patient who presents with rectal bleeding, bowel irritability and a positive family history – is not detected or thoroughly assessed.

Wrong diagnosis, i.e., when a diagnosis is rendered incorrectly, such as prematurely diagnosing acid indigestion in a patient who later suffers a myocardial infarction.

Delayed diagnosis, i.e., when the initial workup is timely, but subsequent intervention is not, as with a patient whose test results suggest a chronic and degenerative condition, but who is not notified of the findings and does not receive necessary treatment.

Commonly Misdiagnosed Conditions



Cancer, including breast, colon and lung, as well as lymphoma.



Infection, including sepsis, meningitis, encephalitis, epidural abscess, appendicitis and urinary tract infection.



Cardiovascular events, including myocardial infarction, aortic dissection and hemorrhage.



Neural conditions, including multiple sclerosis, epilepsy, stroke and dementia.

Major Causal Factors



Facility- or practice-related:
Improper framing of the diagnostic process as an individual, rather than team activity.

Lack of provider education and training on the diagnostic process and clinical reasoning.

Flawed protocols, leading to outdated problem lists and medication reconciliation lapses.

Loss of test results, inaccessible health records and other information transfer problems.

Poor transitions of care due to fragmented workflow and handoff procedures.

No consistent auditing of post-mortem examinations and patient records for diagnostic accuracy.

Failure to monitor provider performance regarding diagnostic accuracy and establish ongoing peer review activities.



Provider-related:
Cognitive bias, leading to errors in clinical judgment. (See [page 3](#).)

Insufficient time allocated for patient history and fact-finding.

Inadequate physical exam and description of morbidity factors, potentially concealing high risk conditions.

Incomplete ordering of diagnostic tests following initial patient assessment.

Misinterpretation or limited interpretation of tests, including failure to note reported incidental findings.

Reluctance to consult with relevant specialists.

Rushed diagnostic process, including failure to employ “diagnostic timeouts.” (See [page 3](#).)

Fatigue and lack of focus due to overwork or clinical burnout.

Insufficient documentation, especially with respect to historical data.

Not utilizing “teach-back” methods when discussing diagnosis and treatment with the patient.

Lack of follow-up, including ongoing monitoring of patient’s clinical status.



Patient-related:
Noncompliance with treatment instructions, including return visits.

Failure to follow up on referrals and consultations.

Linguistic, cognitive or health literacy obstacles hindering communication and comprehension.

Lack of support network and/or stable living arrangements.

Provider Strategies

The following suggestions are intended to help providers improve their diagnosis-related practices and minimize errors:

Be aware of potential bias and erroneous logic. Misdiagnosis is often due to errors in judgment, which, in turn, are frequently associated with various types of cognitive bias.³ [Common biases affecting clinical decision-making](#) include the following:

- **Confirmation bias**, i.e., absorbing only information that confirms one's assumptions and ignoring contradictory facts.
- **Anchoring bias**, i.e., over-focusing on findings that support an initial impression or hypothesis and discounting others.
- **Affect heuristic**, i.e., allowing an emotional response to a person or situation override reasoned judgment.
- **Outcomes bias**, i.e., making present decisions based entirely on what has worked in the past.

(For more suggestions concerning diagnostic decision-making and documentation, see "Sound Clinical Reasoning: Five Documentation 'Must-haves'" on [page 4](#).)

Engage with patients and families. To the extent possible, [include patients and their significant others in the diagnostic process](#), soliciting their cooperation and input. Through the use of online portals, offer patients prompt access to test results, clinical notes and ongoing workup. And when informing patients of diagnoses and related follow-up, employ the teach-back method and provide written post-visit summaries delineating necessary future actions.

Utilize diagnostic timeouts. Periodic pauses in the diagnostic process encourage wider consultation and more comprehensive analysis of findings, thereby reducing the likelihood of error. Timeouts also may be used to ensure that remote diagnoses have been considered, and that the reasons for ruling them out are included on the patient healthcare information record.

Comprehensively document tests and results. The patient healthcare information record should include answers to the following test-related questions, among others:

- **What is the rationale** for the ordered test?
- **What are the results of the test**, and are they conclusive?
- **If inconclusive, what additional steps have been taken**, such as requesting a second review or an alternative test?
- **Do the results raise questions about the working diagnosis** or suggest an alternative hypothesis?
- **Have test findings been shared** with the patient and treatment team?
- **What are the next steps** regarding treatment?

System/Process Improvement Strategies

The following suggestions are intended to aid administrators in giving providers the tools they need to enhance diagnostic methods and outcomes:

Educate providers about understanding and preventing cognitive bias. Because bias is a major cause of diagnostic error, the problem should be addressed in orientation and educational programs. The following anti-bias teaching strategies, among others, can help providers enhance diagnostic accuracy:

- **Focus on the most meaningful clinical data**, rather than every aspect of a patient assessment.
- **Repeat diagnostic tests** when clinical findings diverge.
- **Avoid making diagnostic assumptions** based upon past situations.
- **Look at cases from different perspectives**, and consult colleagues when deciding among educated guesses.

Treat diagnosis as a team activity. Encourage treatment team members – including physicians, nurse practitioners and registered nurses, as well as radiologists, pathologists and other ancillary service diagnosticians – to collaborate on such key tasks as compiling data, scrutinizing test results and integrating information. Stress the need to share incidental findings and critical test results from imaging reports, as well as significant pathology results that may result in misdiagnosis if not communicated personally, using [a structured reporting/categorization system](#).

Enhance referrals and other patient transitions. Sound selection of IT systems and related tools can help clarify expectations and timelines related to diagnostic consultation. For optimal results, develop a standard digital referral form that conveys, at a minimum, why the referral is necessary, when reports are due, how additional test results will be reported and who is responsible for delivering medical advice to the patient.

Reduce paperwork demands. By deploying medical assistants and scribes to relieve providers of time-consuming administrative tasks, providers can focus more intently on performing the diagnostic workup and interpreting test results and other findings.

Digitize the diagnostic process. Up-to-date healthcare IT systems can streamline the flow of information across care settings, while helping to ensure that clinical data are presented in user-friendly formats. When selecting or upgrading IT systems, check that the new or updated system includes decision-support tools, diagnostic testing order sets, embedded checklists, preset alerts for critical test values, a tracking function for tests and referrals, and other useful diagnosis-related features.

³ The Johns Hopkins Armstrong Institute for Patient Safety and Quality examined 55,377 medical malpractice claims in which misdiagnosis led to death or disability and found that **86 percent of these claims involved judgment errors** on the part of the provider, primarily attributable to gaps or problems of knowledge, attention and interpretation, as well as implicit bias.

Monitor diagnostic performance. Peer review and other forms of professional feedback – offered in a constructive, collaborative spirit – have been demonstrated to influence the accuracy of diagnosis. In addition, as part of the organization's quality improvement program, monitor diagnostic practices by tracking these performance indicators, among others: rates of misdiagnosis, extent of consultation with treatment team members, timeliness of response to test result reports, promptness of referral to specialists when indicated and comprehensiveness of documentation.

Accurate, timely diagnosis is fundamental to safe and effective healthcare. The strategies described in this resource are designed to help organizational administrators and providers review their diagnostic practices, strengthen relevant systems and processes, and foster team-based, patient-focused care.

Quick Links

- Busby, L. et al. "Bias in Radiology: The How and Why of Misses and Misinterpretations." *Radiographics*, January/February 2018, volume 38:1, pages 236-247.
- Giannini, R. "Diagnosing Communication Gaps in Diagnostic Test Reporting." *ECRI Blog*, November 25, 2019.
- Kennedy Hall, M. et al. "Recognising Bias in Studies of Diagnostic Tests Part 1: Patient Selection." *Emergency Medicine Journal*, July 2019, volume 36:7, pages 431-434.
- Overview of Diagnostic Error in Health Care, Chapter Three, "Improving Diagnosis in Health Care." Published by the National Academies Press, 2015.
- "Quick Safety Issue 28: Cognitive Biases in Health Care." The Joint Commission, October 20, 2016.

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Sound Clinical Reasoning: Five Documentation "Must-haves"

1. **A complete history**, including findings from past records and family input.
2. **A focused physical examination**, including notation of comorbidities that may obscure diagnosis.
3. **Explanation of how the clinical picture supports the working diagnosis**, as well as any contrary or suspicious findings calling for further testing or follow-up.
4. **Personal reflections**, as suggested by the following inquiries:
 - *Do I have sufficient information to make a final diagnosis, or is more data and/or consultation needed?*
 - *What is my clinical impression of the diagnosis, e.g., "possible," "probable" or "rule out"?*
 - *Are there alternative diagnoses that I should consider?*
 - *How serious is the diagnosed disease, and should I proceed with urgency?*
5. **Additional diagnostic measures taken or pending**, including follow-up reassessment and consultations.

(See also the Society to Improve Diagnosis in Medicine's "Clinician Checklists," which focus on helping providers with diagnostic decision-making.)

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