Quick Safety
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Advancing safety with closed-loop communication of test results

This Quick Safety includes information and a patient story provided by the Society to Improve Diagnosis in Medicine (SIDM). The Joint Commission appreciates the sharing of this important information to improve medical diagnosis in our accredited and certified organizations.

Issue:

A 47-year-old school teacher underwent screening mammography and the radiologist identified a suspicious area of calcifications, which required follow up. The patient's primary care physician was not on the same electronic medical record (EMR) as the imaging center and, because of front office changes, missed the notification to follow up. The patient was told that the radiologist would contact her if the results were abnormal; otherwise, it was safe to assume that things were normal. Since the patient never received a follow-up call, she thought she was okay. The radiologist responsible for making follow-up calls worked from a printed list and had received only Page 1 of the month's list; Page 2, which included the patient's name, did not get transmitted to the radiologist.

It wasn't until an appointment a year later with her primary care physician that the patient learned she needed follow-up testing and that she had stage 3 cancer. Her lesion had grown significantly, and she now required surgery, chemotherapy and radiation for advanced breast cancer. The consequences of this missed test result were delayed care, compromised patient safety, and patient distress and dissatisfaction.

Diagnostic error involves diagnoses that are missed, wrong or delayed, as detected by some subsequent definitive test or finding. The National Academy of Medicine (formerly the Institute of Medicine) developed a patient centered definition of 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.

Closed-loop communication — when every test result is sent, received, acknowledged, and acted upon without failure — is essential to reduce diagnostic error.[1] This requires multiple parties within the health care system working together to hand off tests, interpret the results, and communicate them in language the patient can understand. If abnormal test results are not communicated in a timely manner, it can lead to patient harm.

Rather than an isolated incident, the example above illustrates several system-wide issues. A systematic review reported the magnitude of test results that are not followed up: 6.8% to 62% for laboratory tests and 1.0% to 35.7% for radiology.[2] The impact on patient outcomes includes missed cancer diagnoses. Lack of follow up could result from failures of communicating newly significant findings to clinicians or patients,[3,4] and occurs despite patient preferences to have all test results, abnormal or normal, communicated.[5] At times, this results from ambiguity in who is responsible for follow up[6] and at other times from workflow factors.[7] Failure to close the communication loop also is among the contributing factors in many high-severity malpractice claims.[8]

Diagnostic error is one of the most important safety problems in health care today. It is among the most common, catastrophic, and costly of serious medical errors and one study estimates that approximately 1 in 20 U.S. adults will have a diagnostic error annually in the outpatient setting.[9]

As with other areas of health care, providers increasingly have turned to technology to address the issue, with mixed results.[10] Almost 8% of abnormal outpatient test results transmitted as electronic health record (EHR)-based asynchronous notifications lacked follow-up at 4 weeks.[11] Closing the follow-up loop is affected by several non-technical factors, including user behaviors, EHR usage practices, policies, training, organizational factors and workflow.[12] Furthermore, while online patient portals allow patients easy access to their test results, a recent study suggests they are "not currently designed to present test results to patients in a meaningful way."[13] Fewer than one-third of patients access their portals. Of those who did, half received no explanatory information or assistance with interpreting the results, leaving patients scrambling to research the results on their own.[13]

The Joint Commission identified the timely reporting of results of critical tests and diagnostic procedures as a National Patient Safety Goal in 2005 (NPSG.02.03.01). However, the implementation has been inconsistent to date and this goal does not necessarily address the risks related to communicating 'sub-critical' test results that are not immediately life-threatening and are often communicated through nonverbal channels, such as in the scenario above.

Safety actions to consider:

Closed-loop communication requires attention on multiple fronts, from reimagining processes and improving patient engagement to establishing structural measures and evaluating patient outcomes. The following safety actions can be taken to help organizations improve communication of test results. These actions aim to get the correct patient information to the right individuals — including the patient — and allow for a timely response to close the loop.

1. Identify workflows that are particularly vulnerable to mishandling of test results, and develop back-up procedures to ensure test results are received by someone responsible for the affected patient's care. These procedures should address handoffs between clinicians and care transitions between clinical settings.[14]
2. Establish consistent processes to ensure that test results are communicated to a clinician responsible for follow-up care.[14]
3. Notify patients of life-threatening test results through verbal means and ensure positive confirmation of receipt.[14]
4. Forward or escalate to an alternate responsible provider any abnormal test result that remains unacknowledged after a pre-specified time period.[14]
5. Ensure that test results are communicated to a back-up provider in a timely fashion in the event that the ordering provider is not available. The necessary timeliness is dependent on the significance of the test result.[14]
6. Optimize your organization's health information technology (IT) capabilities to communicate test results. Health IT can be used to automate the abovementioned actions and help measure effectiveness.[15]
7. Improve your organization's patient portal(s) to help patients access test results and better track their medical histories. While many patients find the portals confusing and lacking important context for test results, there are some ways to improve them, including:[13]
    - Ensure the portal is accessible on both large-format computers and hand-held devices.
    - Provide and promote patient access to EHRs, optimally including real time clinical notes and diagnostic testing results.
    - Explain the test results directly in the portal.
    - Provide patients easy access to support services as needed for action and follow up.
    - Give patients personalized or contextual information to help them understand what to do with the results.
    - Create consensus and standards on timing and best practices for the portal's release of normal and abnormal test results.

    Clinicians should not assume their patients will make use of online portals. Some patients may be uncomfortable or unversed in online portals and would prefer direct person-to-person communication. Clinicians should not rely solely on the portals to communicate abnormal test results and contact their patients directly when action is necessary.

Resources:

1. Kwan JL & Singh H. Assigning responsibility to close the loop on radiology test results. *Diagnosis*, 2017;4(3)173-177. doi:10.1515/dx-2017-0019.
2. Callen JL, et al. Failure to follow-up test results for ambulatory patients: A systematic review. *Journal of General Internal Medicine*, 2012;27(10):1334-49.
3. Singh H, et al. Notification of abnormal lab test results in an electronic medical record: Do any safety concerns remain? *The American Journal of Medicine*, 2010;123(3):238-44. doi: 10.1016/j.amjmed.2009.07.027.
4. Casalino, LP, et al. Frequency of failure to inform patients of clinically significant outpatient test results. *Archives of Internal Medicine*, 2009;169(12):1123-29. doi:10.1001/archinternmed.2009.130.
5. Kwan JL & Cram P. Do not assume that no news is good news: Test result management and communication in primary care. *BMJ Quality & Safety*, 2015;24(11)664-666. doi:10.1136/bmjqs-2015-004645.

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6. Singh H & Vij MS. Eight recommendations for policies for communicating abnormal test results. *The Joint Commission Journal on Quality and Patient Safety*, 2010;36(5):226-32.
7. Singh H, et al. Primary care practitioners' views on test result management in EHR-enabled health systems: A national survey. *Journal of the American Medical Informatics Association*, 2013;20(4):727-35. doi:10.1136/amiajnl-2012-001267.
8. Newman-Toker, DE, et al. Serious misdiagnosis-related harms in malpractice claims: The "Big Three" – vascular events, infections, and cancers. *Diagnosis*, 2019;6(3)227-240. doi: 10.1515/dx-2019-0019.
9. Singh H, et al. The frequency of diagnostic errors in outpatient care: Estimations from three large observational studies involving U.S. adult populations. *BMJ Quality & Safety*, 2014;23:727-731.
10. Georgiou A, et al. The impact of health information technology on the management and follow-up of test results — a systematic review. *Journal of the American Medical Informatics Association*, 2019;26(7):678-88. doi:10.1093/jamia/ocz032.
11. Singh H, et al. Timely follow-up of abnormal diagnostic imaging test results in an outpatient setting: Are electronic medical records achieving their potential? *Archives of Internal Medicine*; 2009;169(17):1578-86. doi: 10.1001/archinternmed.2009.263.
12. Murphy DR, et al. Barriers and facilitators impacting reliability of the electronic health record-facilitated total testing process. *International Journal of Medical Informatics*; 2019;127:102-8. doi:10.1016/j.ijmedinf.2019.04.004.
13. Giardina TD, et al. Patient perceptions of receiving test results via online portals: A mixed-methods study. *Journal of the American Medical Informatics Association*, 2017;25(4)440-446. doi: 10.1093/jamia/ocx140.
14. Ash J, et al. Test Results Reporting and Follow-Up. November 2016. The Office of the National Coordinator for Health Information Technology.
15. Partnership for Health IT Patient Safety workgroup. Using Health IT Safe Practices for Closing the Loop: Mitigating Delayed, Missed, and Incorrect Diagnoses Related to Diagnostic Testing and Medication Changes Using Health IT. 2018, ECRI Institute.

Additional resources:

Using Health IT Safe Practices for Closing the Loop: Mitigating Delayed, Missed, and Incorrect Diagnoses Related to Diagnostic Testing and Medication Changes Using Health IT — Developed by the Partnership for Health IT Patient Safety workgroup, this toolkit offers recommendations to ensure that all patient data and information that may require an action are delivered and communicated to the right individuals, at the right time, through the right mode to allow interpretation, critical review, reconciliation, initiation of action, acknowledgment, and appropriate documentation.

Test Results Reporting and Follow-Up SAFER Guide — Developed by researchers and sponsored by the Office of the National Coordinator for Health Information Technology, this guide identifies recommended safety practices for making communication of test results and follow-up processes more reliable. The self-assessment is intended to evaluate the vulnerability of processes and minimize the potential for errors and patient harms.[5]

Improving Diagnosis in Medicine Change Package — The result of a collaboration between the Health Research & Educational Trust (HRET) Hospital Improvement Innovation Network (HIIN) and the Society to Improve Diagnosis in Medicine (SIDM), with contributions by patients and their families, is a tool to help reduce patient safety incidences during the diagnostic process.

Note: This is not an all-inclusive list.

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