

Title: Delays Among Laboratory Results Delivered Via EHR Notification Messages

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Background:

Although clinical laboratories alert clinicians to “critical” test results for their patients via telephone or other rapid means, such critical callback procedures typically apply only to the most immediately life-threatening results. Results that are clinically time-sensitive but not critical are typically not called and only reported using electronic health record (EHR) functionality, risking delayed result review. In addition to posting the result in the patient’s electronic chart, our EHR sends clinicians e-mail-like “In basket” messages with new test results on their patients. To enable the development of an improved result communication process, we analytically assessed current reporting protocols using creatinine testing as an example.

Methods:

We evaluated meta-data from 6,025 outpatient In basket messages reporting high creatinine results sent through our hospital’s EHR (Epic Systems, Verona WI). Meta-data included recipient, result value, creation timestamp, message interaction timestamp, and message status at the time of query. We excluded patients with a history of renal failure. We calculated the time from result release until results were seen by providers.

Results:

Among the 6,025 abnormal creatinine results, there was wide variation in notification time. The median time between from result reporting to review was 46.1 hours (Nephrology: 48.3 hours; Transplant: 28.7 hours; Other: 47.8 hours). By contrast, the 90th percentile was 20.0 days (Nephrology: 29.3 days; Transplant: 8.1 days; Other: 22.25 days). These findings were not limited to a subset of providers: when evaluated as individuals, the median provider 90th percentile “time to notification” was 6.1 days. Notifications of abnormal results remaining unread > 3 days represented 2,429 out of 6,025 (40.3%) of messages.

Conclusions:

There is wide variation in the time to complete delivery of non-critical creatinine results to ordering providers. Some of these results likely represent sudden changes in patient status not seen promptly by providers and may have clinical consequences. One important caveat is that in some cases, providers may have seen the results by another method than the In basket message. We are developing an EHR-based intervention to follow up on high-risk results not reviewed in a timely fashion and will present this strategy.