

Life After Go-Live

Part 1: 'So Good It's Bad' Information Management

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This column is the second in a four-part series providing observations and insights from the author's experiences with ambulatory electronic medical record (EMR) implementation. It is intended to provide a glimpse "behind the veil" of an EMR-based care environment, with a particular focus on issues that have hitherto received little attention in the literature.

EMRs enable medical practices to manage information in ways that would be difficult or impossible with paper medical records. This holds immense promise to improve quality of care and prevent medical errors. However, since EMRs frequently produce new information that has to be dealt with, they can increase work for clinical personnel. This column will explore some examples of this phenomenon from the author's experience managing a comprehensive EMR in an ambulatory care environment.

'Results Overdue' Messages

Our EMR can generate alerts when a diagnostic test or clinical consultation is ordered but no results are entered into the system within a specified amount of time. This provides an important safeguard against results "falling through the cracks" and never reaching the ordering provider. Nevertheless, the volume of these alerts is quite high, and investigating them is a time-consuming task.

We have developed some approaches to mitigate this problem. One was to configure certain types of orders not to generate "results overdue" messages. This required an organizational consensus as to when it is safe not to follow up on the results of a diagnostic test or a

request for a specialty consultation. As might be expected, the final list of such orders was quite limited, primarily consisting of specialty consultations for which we usually receive no written reports, such as referrals to a massage therapist.

Another solution was to take advantage of our EMR's capability to route "results overdue" messages to specific non-provider clinical staff based on the type of order in question. For instance, messages regarding lab test results go to our lab staff who, with their familiarity with laboratory procedures and processes, are able to handle these more efficiently than other clinical staff.

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'Open Telephone Message' Reports

Our EMR enables us to document contact by telephone with or regarding a patient. The document that's created must be designated "closed" by a user to indicate that the issues raised by the telephone contact have been resolved and no further action is needed. The telephone message might be left "open" for a time if, for instance, a staff member leaves a message for a patient and is awaiting a call back, or electronically sends the message to a provider for

consultation. If a telephone message is not closed within a specified amount of time (three days as we have configured our system), it is automatically routed to the electronic "in-basket" of the provider in whose name it was created, with the label "open telephone message."

As with "results overdue" messages, "open telephone message" notification is an important failsafe mechanism in a busy medical practice. It helps to ensure that, if clinic personnel fail to act appropriately or the patient does not respond to our attempts to contact him or her, someone is reminded about the situation before too much time has elapsed.

Unfortunately, the "signal-to-noise ratio" of these reminders is low. Most of the "open telephone message" alerts are for telephone messages of which someone is diligently keeping track and which have been left open for more than three days with good reason (for instance, a patient has called to request the results of laboratory tests which haven't yet been received). This is usually easy to determine by reading through the message itself, but this takes time, and the alerts can pile up. If we were to lengthen the amount of time it takes for the messages to bounce back to the provider, we might improve the number of meaningful warnings, but we would increase the chance that those rare situations where appropriate follow-up has *not* occurred would not be caught soon enough.

Drug-Drug Interaction Warnings

Physician order-entry is a critical component of EMR functionality. It increases efficiency, improves documentation, and enables automated decision support to prevent medical errors and improve

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quality of care. One of the most useful decision support features in our EMR is the drug-drug interaction warning system. This system uses a regularly updated third-party database to warn providers, as they are prescribing a medication, about ways in which it may interact with other medications the patient is taking.

There are literally tens of thousands of such interactions, far more than any provider could otherwise remember. Some are potentially serious, and there is little doubt that dangerous problems are averted by the drug-drug interaction alerts that our EMR provides. However, many of these interactions are minor and would never put the patient at any risk. Interrupting the provider's workflow with an alert for the more trivial interactions makes more work for the provider without any benefit for the patient.

Our EMR enables each user to adjust the "sensitivity" of the drug-drug interaction alerts to only present alerts for interactions of a certain level of potential seriousness. However, many of our providers have been hesitant to make that adjustment because they're concerned that a "minor" interaction might actually be clinically significant in certain contexts.

Cross-Coverage for Results Review

Like most EMRs, our system enables electronic review of results for referrals and diagnostic tests. When one provider is absent from the office (the "covered provider"), it is possible for him or her to designate another provider (the "covering provider") to be electronically "copied" on any results that come in during his or her absence. This functionality enables prompt action, when warranted, in response to abnormal results. However, it also duplicates the work of reviewing results, because the results are electronically routed to both the covered and the covering provider. In addition, if the results require action, the covered provider, when reviewing the results upon his or her return, has to review other sections of the patient

record to confirm that appropriate action was taken.

The latest version of our software enables the covering provider, after reviewing a result, to delete it from the covered provider's electronic in-basket. This is analogous to the common custom, in paper-based

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medical practices, for the covering provider to review results on paper and then have them filed in the patient's paper chart, without the covered provider ever seeing them. But so far, our providers have expressed reservations about using that approach, indicating that they prefer to see all results on tests they've ordered even if another provider has reviewed them.

Conclusion

Paper-based systems are incapable of addressing certain information management tasks. Thus, when systems that automate information management (like EMRs) replace paper-based systems, new information

management tasks, in which humans must play some role, become possible. The net effect can be an increase in work — information management that is "so good it's bad."

The solution, of course, is not to abandon these advanced features of EMRs. All the examples described above, despite the burden placed upon EMR users, confer some benefit to the care process. Our goal should be to pursue innovation in EMR design and implementation to minimize the burden without lessening the benefit. For instance, using one of the examples above, the difficulty with "open telephone message" alerts might be ameliorated by enabling users to override the default interval after which the message would "bounce back." In that way, for example, if they knew that a result about which a patient was calling would not be back for seven days, the message would bounce back after seven days, not three.

One curious phenomenon, which also deserves attention, is the hesitancy of providers to restrict in any way the information presented to them in the EMR. As mentioned above, we have seen this come into play with both the drug-drug interaction warnings and the duplication of results review during providers' absences. In both instances, providers seem hesitant to restrict this information stream, even when the information imposes a substantial burden with little benefit.

I believe that, over time, as EMR use becomes the norm, medical personnel will become more comfortable acknowledging that the potential information volume an EMR can provide is overwhelming and that some prioritization must occur in what types of information can be attended to.

About the Author

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