

THE PHYSICIAN PERSPECTIVE

Life After Go-Live

Part 1: Paper in the Paperless Practice

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This column is the first 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.

One morning recently, I was leaving the maternity ward of my local hospital. I had just delivered a healthy baby boy, mother and baby were doing fine, and it seemed I would make it to the office in time to see my first patient. Life was good.

As I rounded a corner, I met the nurse manager for the maternity unit. After we exchanged pleasantries, her eyes narrowed.

"You're the doc responsible for that computer system you've got over there, aren't you?"

"Well, yes, I'm involved..." I wasn't sure I liked where this was heading.

"You know, those prenatal records you send us, they're really hard to read. Our nurses hate them."

"Well, I know it's a different format than what they're used to. But all the information is there, you just have to read through it."

"All the other docs around here use the same paper forms for prenatal records, and it's been that way for 20 years! Our nurses are used to those forms. They know where everything is, and they can find a piece of information like that," she said snapping her fingers. "Why can't you just use those forms?"

"Well, it's complicated," I mumbled. "Let me look into it, I'll see what I can do to make our output easier to get through."

My insouciance ruffled but intact, I made my way to the office just a few minutes late. I was surprised to see my usually unflappable nurse looking harried.

"The transfer of information, usually on paper, has created one of the greatest challenges we have faced in our EMR implementation."

"Mr. Jones is your first patient. He's here for a follow-up from his consultation with the gastroenterologist you sent him to. It took me forever to find the consultation report, and the procedure report, and the report from the biopsy he had," she said. "We had received them, they were just in the scan pile," she said, referring to the queue of paper documents awaiting scanning into our EMR. "It's such a pain having all that paper to go through all the time. Why can't everyone use computers like we do and then we could all be connected?"

"Well, it's complicated," I muttered, as I took the paper reports from her and steered myself towards the coffeepot. I was going to need fortification.

In my organization, we like to refer to our medical offices as "paperless" practices. It's true that we keep no

permanent patient records on paper — our EMR serves as a comprehensive record of providers' and nurses' notes, diagnostic studies, medications prescribed, and any other information generated in the course of patient care. However, our patients' care extends beyond our offices. They visit specialists outside our system; they receive care in hospital emergency departments or inpatient wards; they occasionally transfer care from other physicians to us and vice versa. All of this requires the transfer of information to and from our system, usually on paper, and has created one of the greatest challenges we have faced in our EMR implementation.

Incoming Documents Related to Past Care

When a patient establishes care with a new physician, it is common to arrange for a transfer of records from their previous physician. These records are nearly always delivered on paper, even if they originate from an EMR system. There are no standards that allow complete electronic transfer of a patient record between EMR systems from two different vendors, and even if the EMR systems are from the same vendor, such transfer is often impossible.

Our approach to the EMR has been to make it the sole repository of clinical information for our patients, so we have striven to avoid the accumulation of information on paper, even records of past care. When our providers receive records of past care from another physician, they read through it and if necessary type a summary of its contents in the EMR record for that patient. Any parts of the paper record that are felt to be important to incorporate fully into the

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EMR (for instance, ECG tracings or information-rich laboratory reports) are scanned, and the scanned images are entered into the EMR record for that patient. Then the paper record is either returned to the patient or sent to an off-site secure storage facility.

This approach, of course, requires substantial “up front” work from the provider when the outside records are received. This is in contrast to the common approach in paper-based practices, which is to scan the outside records briefly to identify any critical issues that need attention, then to append it to the practice’s own paper record for that patient, for future reference should circumstances require. This would be impossible in an EMR-based practice without either abandoning the goal of an all-electronic patient record or scanning the entirety of outside records received, a labor- and storage-intensive undertaking.

Incoming Documents Related to Ongoing Care

The volume of patient-related documents that continually flows into a primary care practice is truly astounding. In my own practice it usually exceeds 40 pages per day. There are reports of consultations with specialists, of visits to emergency departments, of diagnostic studies performed outside our system, and a host of other information.

Paper documents are also generated in the care process itself when providers complete forms for school physicals, workers’ compensation claims, disability applications, etc. These need to be incorporated into the medical record for future retrieval if necessary.

In an EMR-based practice, incoming paper documents are generally electronically scanned and then destroyed, and the scanned image linked to the patient’s EMR record. Most EMRs allow any patient-related data to be “tagged” with metadata that tells what type of information it contains. This metadata allows the EMR to display the patient record in different “sections,”

segregated according to data type, analogous to the sections of a paper patient record (e.g., sections for notes from patient visits, laboratory test results, imaging test results, specialty consultations, etc.). In order for a scanned document to be easily retrieved in the future, it needs to be tagged with appropriate metadata by the clerical staff who add it to the EMR. This requires not only knowledge of the EMR’s data entry functions, but also knowledge sufficient to recognize what kind of information a patient-related document contains (e.g., being able to tell an MRI report from a chest x-ray report).

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This former task is not trivial. Incorporation of metadata-tagged information into an EMR often requires use of order entry or scheduling functions, which create a “placeholder” for the data. The EMR may not be designed with the need in mind of incorporating and tagging scanned images of paper documents; as a result, some convoluted “workarounds” can be necessary. Suppose, for instance, that our office receives a printed report on a cardiac

stress test done on one of our patients. The clerical staff would need to bring up the patient’s record in the EMR, check whether an order for “Cardiac Stress Test” for that patient exists and if not, go to the order-entry section, place an order for a “Cardiac Stress Test” for that patient, modify the default parameters of the order to indicate that the order is being placed for data-entry purposes only (so as not to generate a charge for our billing system or a task for our referral coordinator), scan the document, go to the result entry section of the EMR, and link the scanned image to the order just created.

One hopeful development in this area is the growing use by hospitals and some large physician groups of web-based read-only systems for accessing patient information. Access to these systems is often given to referring physicians, allowing them to view transcribed notes and diagnostic test results. Two of the three hospitals used by our physicians offer such systems. When we receive a paper report originating from one of these hospitals, we can retrieve the full text of the document from their web site, and enter it into our EMR by “cutting and pasting” instead of scanning the paper document. This does not reduce the complexity of the workflow described in the paragraph above, but it slightly reduces the time needed to enter the information (because scanning takes longer than cutting and pasting), vastly reduces the storage space needed for the document, and retains the ability to include the document in full-text searches of the patient record.

Outgoing Documents

In general, getting information out of an EMR is easier than getting it in, and this goes for information transfer on paper as well. However, challenges still exist. Our EMR allows us to print the patient record in a variety of ways, and the flexibility itself can be confusing to our staff. We have found it necessary to produce a written procedure manual on how to generate a “complete” printed version of the EMR record. Even when the

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printed version of the EMR record is complete, however, the format is sometimes unfamiliar to those who read it, especially in specialty situations, as in the vignette above, where a particular paper-based format has become a de facto standard.

One particular irony with EMRs is the inability to transfer records from one EMR to another, even when they are from the same vendor. I have sometimes noted that we are sending a thick stack of printed patient records to an institution where I know they use the same EMR that we do.

Conclusions

The problem of how to handle paper patient-related documents in EMR-based practices will not go away. The growing trend towards vertical integration of healthcare, coupled with the increasing use of EMRs, may lessen the problem somewhat, since information can more often flow between various care

domains electronically rather than on paper. However, even in highly integrated care systems, some care will always occur outside the system, generating documents (usually on paper) that will have to be incorporated into the patient's record. Several steps, however, may help reduce the burden this imposes:

- Healthcare organizations using EMRs should develop standard written procedures for incorporation of scanned images of paper documents into the EMR. This will maximize efficiency and produce consistency in the structure of data in the EMR
- Healthcare organizations should work towards electronic, rather than paper-based, communication of patient information to those outside the organization.
- EMR vendors should design efficient, simple functionalities for incorporating scanned images of

patient documents, appropriately tagged with metadata.

- EMR vendors should work towards electronic transfer of patient records between two users of their software. This would require not only an electronic connection and appropriate security and privacy safeguards, but also a way to address differences in the structure of patient records arising from local users' configurations of the EMR.
- Government, standards-development agencies, and EMR vendors should work towards the eventual goal of electronic transfer of patient records between EMRs from different vendors.

About the Author

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