

Me to we: Introducing collaborative elements in the electronic record

Physicians must demand excellence from digital systems as the next wave of health record technology helps all members of the care team manage relationships rather than documents.

ABSTRACT: For physicians, dissatisfaction with electronic medical records often stems from being overwhelmed by redundant data entry tasks, while for patients dissatisfaction can result from being unable to access their data. The collaborative health record is a way to improve communication and engagement between patients and their health care teams while recognizing that health concerns do not always arise during regular office hours. During conversion of records from paper to electronic formats over the past 2 decades, quantity rather than quality was emphasized, and physicians were given incentives to move

quickly from paper workflows in hard copy form to paper workflows in digital form. This has resulted in “systems of record” rather than “systems of engagement,” which need to be improved by involving the patient, the physician, and other health care team members in meaningful interactions. Such a collaborative system can allow for patient engagement, integration of patient-reported outcome measures, and asynchronous communication. By ensuring that physicians have the best tools, health care may see the same remarkable returns on investment that digitalization has afforded other industries.

For better or for worse, electronic records have solidified their place in the doctor’s office since efforts starting in the 1960s led to widespread adoption across North America.¹ While the terms electronic medical record (EMR) and electronic health record (EHR) can be used interchangeably, we have used the term EHR throughout this article to acknowledge the capacity of electronic records to go beyond the medical and address the broader total health of a patient.

EHRs have largely fulfilled their duty in replacing paper charts as the documentation standard, but in doing so have also created growing discontent among physician users² and, by extension, their patients, who have

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never been considered active users of these systems. Dissatisfaction for physicians stems from being overwhelmed by redundant data entry tasks and for patients from being unable to access their data. A change that could support the evolving doctor-patient relationship is the collaborative health record (CHR), a way to improve communication and engagement between patients and their health care teams while recognizing that health concerns do not always arise during regular office hours.

As opposed to a singular software entity for record keeping and documentation, a CHR system permits collaboration and engagement in electronic formats. The CHR can provide patients with increasing access to their data, a goal consistent with the patient-centred model of care delivery and provision of a patient medical home. The opportunity now exists to move the focus of health information technology efforts away from me (the physician) to we (the physician, patient, and health care team), and from digitalization of paper to a platform that facilitates patient engagement in practice workflows and in longitudinal models of health care delivery.

Physician dissatisfaction with EHRs

The high adoption rates for electronic records in Canada facilitated through government incentive programs such as BC’s Physician Information Technology Office (PITO) have been praised previously.³ However, the assumption that adoption is the end-goal ignores meaningful use, the increasing burden of “digital paperwork,” and the EHR as a “third wheel” in the sacred doctor-patient relationship.⁴ The positive IT transformation seen in industries such as banking and commerce has simply not happened in health care.⁵

A 2013 RAND and American Medical Association study of physician professional satisfaction in over 30 practices using 14 different EHR products provided qualitative and quantitative feedback on a wide range of experiences.⁶ The study highlights three positive elements related to physician satisfaction with EHRs and nine primarily negative elements (Table).⁶ The study authors conclude that “The current state of EHR technology appears to significantly worsen professional satisfaction for many physicians—sometimes in ways

that raise concerns about effects on patient care.”⁶

The law of unintended consequences very much applies to the widespread adoption of electronic record keeping. As sociologist Robert K. Merton warned could happen in some cases of purposeful action, there have been unanticipated results from economic incentives promoting EHR use that have distorted consumer behavior.⁷ It appears that quantity rather than quality was emphasized during EHR adoption. Physicians were given incentives to move quickly from paper workflows in hard copy form to paper workflows in digital form, and the result has been “systems of record” rather than “systems of engagement.”⁸

Entirely absent in the EHR software produced and promoted through technology transfer funding is any meaningful notion of patients as agents in their own records or any use of patient-reported outcome measures (PROMs). The vast majority of commercially available and adopted EHR solutions in Canada have been designed as registries to manage databases as opposed to relationships, while the power dynamics are clearly on the side of the physician, who in turn has become a data entry clerk.

Table. Important effects of electronic health records (EHRs) on physician professional satisfaction found in a study by the American Medical Association and RAND.⁶

| Improved professional satisfaction with EHRs | Worsened professional satisfaction with EHRs |
|---|---|
| Facilitate better access to patient data | Require time-consuming data entry |
| Improve some aspects of quality of care | User interfaces do not match clinical workflow |
| Permit better communication with patients and between providers | Interfere with face-to-face care |
| | Provide insufficient health information exchange |
| | Create information overload |
| | Mismatch between meaningful-use criteria and clinical practice detracts from patient care |
| | Threaten practice finances |
| | Require physicians to perform lower-skilled work |
| | Template-based notes degrade the quality of clinical documentation |

Principles of collaborative record keeping

The health care system is increasingly adopting multidisciplinary care teams and the patient medical home as best practice, which requires technology to facilitate communication and collaboration in the following relationships:

- The patient and the physician.
- The patient and the care team.
- The physician and the care team.

In contrast to the EHR, the CHR can ensure digital engagement by relying on the following principles:

- Patients should be involved as ac-

tive participants in their own health record.

- Patient-reported outcome measures should be integrated in the workflow.
- The workflow should facilitate collaboration between patients and the care team that goes beyond in-person visits to include both synchronous (e.g., videoconferencing) and asynchronous (e.g., secure messaging) communication.

To enable such collaboration, new CHR information systems take a different approach to user and access control structures than an EHR traditionally would. The record-keeping system acknowledges that nonphysicians such as nurses and allied health professionals are meaningful partners in providing care, and ensures that different users have fundamentally different access levels and, in fact, unique personalizations of the software available to them. For example, a physiotherapist would not be granted access to laboratory or prescription data but would be granted access to clinician notes about musculoskeletal issues. This kind of personalized access acknowledges that the role of a given health care provider may vary from practice to practice and may evolve over time, and that it is impractical to restrict a provider's access based simply on the record system.

Beyond allowing functionally unique types of health care providers to be effective agents in care delivery, a CHR system enables team members to communicate with one another and loop in the patient as appropriate in care-related discussions, and conversations are made even more productive with the integration of online message threads for a specific item (e.g., a lab test result, a prescription).

Patient involvement

According to e-patient Dave deBronkart, "Patients are the most underutil-

ized resource in health care."⁹ This is a resource CHRs can make better use of by fully involving patients in their own care. For example, patients can fill in substantial portions of their health record themselves through their desktop computer or smart phone, thereby acting as a primary source of health information. Though high-quality reviews are yet to be done, there is substantial evidence regarding the importance of patient-reported data, and the need to collect information from multiple sources.^{10,11} This is made possible by the CHR model, which permits clinicians to validate or even alter (in a traceable fashion) input from a patient while sharing the activity of documentation with the patient, who has a vested interest in contributing to an accurate and comprehensive record.

The traditional EHR model was based on the assumption that clinicians and other health care providers would be the sole sources of medical information acquired during history taking. However, the integrity of data entered into the medical record by a physician has been widely studied and is now in question as multiple studies show discrepancies between patient histories and physician notes.¹² Having patient-generated information stored in discrete data packages coded according to international standards (SNOMED CT, ICD-10, etc.) allows physicians to focus on health promotion and treatment rather than data management.

Integration of patient-reported outcome measures

Harvard economics professor Michael Porter states that "The universal development and reporting of outcomes at the medical condition level is the single highest priority to improve the performance of the health care system."¹³ Yet the inclusion of

standardized or substantial features to facilitate collection of PROMs or aggregate data has been largely absent from EHR systems to date. In fact, despite clinicians' best intentions to integrate tools like the PHQ-9 questionnaire used for assessing patients for depression and tracking the results in their daily workflows, the cost-effectiveness of spending extra time collecting and inputting such data is dubious.

The CHR model presupposes that any effective health record platform should at its core empower patients to report longitudinally on the outcomes that are relevant to them in terms of quality of life and other measures based on interventions that are suggested to them by their care team. The aggregated data can then serve as the foundation for personalizing care and validating health care spending on a systems level.

The CHR model promotes PROMs collection through the support of multimodal, contextual pairing of outcomes with different events. For example, a patient who books an appointment to discuss concerns about depression would automatically be asked to complete the PHQ-9 on a smart phone before the visit. The responses would then be scored and represented in graphic form for the clinician to review during the patient visit. This process would take place in the background so that the clinician could focus on the patient results rather than how they were collected. An initial trial of such a PROMs-based workflow at the Mayo Clinic (Jacksonville) demonstrated high satisfaction levels (86%) and ease of use, with completion rates nearing 97%.¹⁴

While PROMs do not provide an independent solution to understanding clinical outcomes, they are a useful component for shared care decisions. It is natural for the CHR to use

patient-reported outcome measures as a universal and standardized language to drive data-driven practice—a goal that can be accomplished when software removes the burden of data collection from the provider and streamlines it in an efficient manner.

Asynchronous communication

Digitalization affords a major opportunity to deliver care with asynchronous communication. Care utilizing asynchronous communication can be defined simply as any care not requiring live, real-time interactions. E-mail is a good example of an asynchronous communication modality that has fundamentally transformed the world around us. E-mail and instant messaging have enabled a whole new level of efficiency in our day-to-day lives and serve as ways to facilitate multiple asynchronous communication streams simultaneously for ultimate productivity.

In the health care world, asynchronous communication is rarely used for connecting with our patients. Whether booking appointments or communicating simple requests, patients are required to be present or to engage in a live interaction by phone or video. Likewise, a typical clinician workflow depends on real-time interactions. Despite current technology, most physicians are still unable to communicate with patients through secure messaging.

It makes sense for a health record platform to allow asynchronous interactions on specific items related to a patient's record, especially when a CHR model can facilitate such communication while maintaining clinician productivity. Furthermore, asynchronous communication can be expected to benefit when structured information such as PROMs is available at the fingertips of care providers, and systems can permit data-

driven decisions to be made not only asynchronously but also during live interactions. Such workflows can respect the clinician's time and prevent open-ended messaging that results in unfocused discussion.

For asynchronous communication to be sustainable and widely adopted, public billing codes must reflect the value and cost-savings of this form of service. While there are some exceptions, most physicians in Canada are not supported when they communicate asynchronously with their patients.

Questions and challenges

Just as the adoption of electronic health records over the past 2 decades has brought significant change management challenges in health care delivery, it is inevitable that the adoption of collaborative health records will involve unique challenges. Special focus and attention are required to address the ramifications of increased collaboration, transparency, and sharing of medical records. In a 2016 *American Journal of Medicine* commentary,¹⁵ Klein and colleagues highlighted the following outstanding questions about open notes shared transparently with patients:

- Should the content and format of notes be changed?
- Can the patient's "story" return to the medical record and if so, how, and to what degree?
- Which patients may benefit from reading notes, and which may not?
- Should some notes be hidden, and how can that be explained to patients?
- Will patients withhold important information if they sense that transparency poses threats to their privacy?
- Will they uncover errors that could diminish trust and even fuel litigation?

Dr Delbanco of the Beth Israel Deaconess Medical Center summarizes the goals of the OpenNotes ini-

tiative, which engaged 105 primary care physicians and 20 000 patients in a 2010 study that gave patients access to their notes by secure online portals: "Open notes create partnerships toward better health and health care by giving everyone on the medical team, including the patient, access to the same information."¹⁶

Along with challenges regarding transparency, shared notes will present challenges to physicians working in an environment where allied health professionals and other care team members are intricately involved in the same digital systems. How much information should be accessible, for example, to a dietitian formulating a nutrition plan for a patient? Should the dietitian have access to the same health records as the team's psychiatrist? It will be critically important to develop the privacy and legal framework that answers these questions in a manner that does not increase legal liability for the physicians, institutions, and larger systems seeking to proceed with collaborative care delivery.

Moving from me to we

Systematic examinations of care provider satisfaction and value-based analyses indicate that the adoption of EHR technology has achieved mixed results rather than the groundbreaking advances and improvements expected. Unanticipated results have included time-consuming data entry, lower productivity levels, and impersonal patient-provider interactions. Despite widespread EHR adoption, we do not yet have a health care system that is responsive, outcomes-driven, and highly efficient.

The CHR model is one way to move closer to such a system by shifting the entire paradigm of health records to acknowledge the inherent value of patient-driven interactions. We have outlined a few major CHR

benefits that highlight the capabilities of a CHR system compared with an EHR system, including the collection of patient-generated data and PROMs and the use of asynchronous communication. In this article we have not discussed the more traditional workflows such as revenue cycle management, laboratory data aggregation, and scheduling based on the understanding that the groundwork for these basic functions has already been laid.

In sum, the physician community cannot become complacent about what has been accomplished or accept a system that leaves a lot to be desired. As physicians we always strive to provide the best care for our patients and we need to ensure we have the best tools to deliver that care. We must demand excellence from our digital systems. Let us move forward together with the next wave of health record technology and aim to manage relationships rather than documents. In doing so, we may see the same remarkable returns on investment that digitalization has afforded other industries. **BCMJ**

Competing interests

Dr Ramsey is CEO of InputHealth Systems Inc., the developer and producer of health care software. He owns shares in the company and receives financial compensation in the form of a salary. Dr Seth is also affiliated with InputHealth Systems Inc., owns shares in the company, and receives financial compensation from the company.

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