Electronic Health Records: a “Quadruple Win,” a “Quadruple Failure,” or Simply Time for a Reboot?

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Just a decade ago, when paper charts were commonplace in the USA, it seemed that electronic health records (EHRs) were destined to transform the quality and efficiency of healthcare delivery, as well as the care experience for patients and clinicians. Few would deny that old fashion paper charts can be awkward to navigate, burdensome to read, poorly amenable for health information exchange, and inadequate for supporting systematic quality improvement. The sentiment that EHRs could solve these problems was pervasive, and many experts predicted that widespread EHR implementation would save billions.¹

The reality over the ensuing years has, to put it mildly, not met expectations. According to a 2014 analysis led by the Office of the National Coordinator for Health Information,² over 80% of US doctors now use EHRs. Yet, many of the predictions about the benefits of EHRs have yet to materialize to the extent predicted. Though EHRs have facilitated some substantial improvements—the ability for clinicians to access charts from any wired location, electronic transmission of prescriptions, and enhanced tracking of population health measures, to name just a few—they have also resulted in numerous unintended consequences. Noteworthy concerns include egregious medical errors resulting from design glitches³, charting templates filled extensively with meaningless boilerplate, the common practice of pasting old notes⁴ that makes it difficult to know which documentation is “real,” “alert fatigue”⁵ due to excessive EHR warnings, and even reduced communication among clinical team members.⁶

Moreover, contrary to expectations, EHRs may also hamper clinician productivity—the so-called IT productivity paradox.⁷ As Robert Wachter, MD, explains in his incisive 2015 book *The Digital Doctor: Hope, Hype, and Harm at the Dawn of Medicine's Computer Age*,⁸ many simple tasks like ordering a medication that took seconds using pen and paper can take much longer with computers. EHRs also substantially increase the time it takes for clinicians to document patient encounters,⁹ and as a result, many health systems report that clinicians see fewer

patients per day than they did with paper charts. Furthermore, expectations that EHRs would eliminate wasteful, duplicative services by facilitating health information exchange have, to date, proven illusory in most settings.¹⁰ Initial predictions that EHRs would save the healthcare system billions now seem fanciful.

Because of these shortcomings, EHRs represent one of the key drivers of dissatisfaction among clinicians. A frequently cited 2013 RAND survey of physicians concluded: “physicians approved of EHRs in concept and appreciated having better ability to remotely access patient information and improvements in quality of care; however, for many physicians, the current state of EHR technology significantly worsened professional satisfaction [particularly as a result of] poor usability, time-consuming data entry, interference with face-to-face patient care, inefficient and less fulfilling work content, inability to exchange health information, and degradation of clinical documentation.”¹¹

In short, despite some undeniable benefits, the EHR revolution has failed to advance the “quadruple aim”¹²—improved quality, patient experience, efficiency, and clinician satisfaction—to the extent many had anticipated. While it is unfair to label the EHR era a “quadruple failure”—particularly since there are many different EHR products, some better than others—I believe it is time for a reboot of our approach.

It is in this unsettling context that we consider the study in this month's *JGIM* by Street et al. examining the impact of EHRs in the exam room.¹³ In the study, the researchers analyzed video recordings of 217 patient encounters, involving 32 unique primary care and specialty physicians. Using meticulous coding, the researchers assessed patient participation in clinical encounters by enumerating patient behaviors, such as asking questions, stating preferences, or expressing concerns. They also coded measures of physician facilitation of the encounter using measures such as “partnership-building and supportive talk,” and they recorded the amount of total silence during encounters. Finally, the researchers assessed how measures of physician interaction with the EHR within the exam room, including mouse clicks, key strokes, and gazing at the computer screen, correlated with patient participation, physician facilitation, and silence during encounters.

Perhaps the most noteworthy finding of the study was how frequently physicians interacted with the computer. During an average visit (mean length 20.3 min), physicians clicked the

mouse 216 times, completed 729 keyboard strokes, and spent a whopping 8.9 min gazing at the EHR.

Not surprisingly, physician interaction with the EHR—keyboard strokes specifically—was correlated with less active patient interaction. Physician time spent gazing at the computer was also associated with more silence during the visit. Surprisingly, however, physicians' EHR activity was not correlated with facilitative communication.

This analysis does not prove that computers in the exam room impede clinical interaction. Rather, this study demonstrates a correlation between physician interaction with the computer and lower rates of patient engagement. A randomized study would be needed to demonstrate causality. Moreover, the researchers used surrogate measures of patient engagement, such as the number of patient questions, the expression of patient preferences, and silence during the interaction. These measures may not effectively reflect how engaged patients actually were in the encounter. Furthermore, the lack of correlation between EHR activity and physicians' facilitative communication demonstrates that computers alone are not to blame for poor clinician communication. Finally, this study took place at only two health systems, and the findings may not be generalizable to other settings utilizing different EHR products. Nevertheless, when these findings are considered alongside other research,¹⁴ there is cause for concern.

The authors of this study believe their findings suggest the need for clinician training to mitigate the impact of the computer during clinic visits. They propose strategies for encouraging clinicians to use the EHR to enhance patient communication, for example by explaining what they are charting and sharing the screen with patients. The authors also suggest phrases that clinicians might use to stimulate patient participation when they are looking at the screen, such as “anything else going on?”

However, these proposed interventions only address the symptoms rather than the root cause of the problem. I would rather see this study and others like it generate momentum for a more fundamental reboot of our approach to EHRs. This reboot should preserve the positive effects of EHRs (i.e., the ability to remotely access patient information, improved legibility, electronic prescribing, and certain successful reminder and communication functions) while taking head on the failings. Perhaps most importantly, there must be a dramatic and thoughtful simplification of EHR documentation templates: it should not take over 200 mouse clicks and more than 700 key strokes to complete one ambulatory encounter. Put simply, EHRs must be redesigned around the needs of clinicians and patients rather than billers and administrators.

With respect to the specific challenges related to computers in the exam room highlighted by Street et al., one commonly proposed solution involves the use of scribes. Though expensive, early evaluations of medical scribes show promising results.¹⁵ But even simpler interventions borrowing on lessons from the paper chart era may also prove effective. Although

paper charts had their share of problems, documenting information during a clinical encounter is much easier with pen and paper than with a computer and keyboard. Mechanically, it is easier to face the patient while writing than while typing, even for expert touch-typers. Perhaps exam room documentation could be made easier with electronic scribble pads that convert handwriting into EHR text. This might offer the advantages of paper charting while ensuring legibility. Using such technology, clinicians might be able to write a medication order on an electronic scribble pad and transmit that prescription electronically to the pharmacy or nursing station in legible text using standardized fields.

For substantial reform to occur, however, we need honest reflection about how EHRs have changed our healthcare system, both for the better and the worse. Too often, when confronted with concerns about EHRs, health system leaders become defensive. Until health system and policy leaders are ready to acknowledge the widespread frustration with EHRs among clinicians and patients, studies like the one by Street et al. remain critical for demonstrating the need for change.

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