

Building interfaces for self-assessment and feedback in the EMR

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Abstract

Electronic medical records (EMRs) have played an increasingly significant role in healthcare. With these major advances, however, have come major pitfalls like the increase in physician burnout and stress. This position describes interventions that can help to address these pitfalls by supporting the desires and interests of the clinicians using the EMR. It presents three augmentations related to self-assessment and feedback to attempt to address these needs: a retrospective dashboard, a collaboration tool, and a research and note taking interface.

Keywords 1

Self-assessment, feedback, self-learning, electronic medical record, computer-supported cooperative work, interfaces

1. Introduction

Since their widespread adoption, there has been increasing understanding that electronic medical records (EMRs) play a large role in physician stress and burnout. Physicians find themselves working more from home after hours, answering more messages and emails now sent and received at any time, and suffering through both major and minor usability issues [1,4,8]. Clinicians and technologists alike cringe when reading Atul Gawande's *Why Doctors Hate Their Computers* or Schulte and Fry's *Death By 1,000 Clicks* – disturbed by the time demand of the EMR, the legal-political complexities, the introductions of new errors, and the impersonal feeling that the whole journey has caused [5,10]. These systems appear to do everything to pull clinicians away from the work that they find most meaningful, a key feature in determining the likelihood of burnout [11]. One might reasonably think that this problem must be a global issue, impacting all health systems relying heavily on EMRs. Unfortunately, US

clinicians appear to be uniquely burdened – receiving more messages, spending more time after hours, and spending more time on clinical activities like note writing, ordering medications or tests, and reviewing patient charts [6]. With this said and all the complexities considered, there continue to be both technical and political advancements that encourage and support growth of tools aimed at improving the EMR for users [2,7].

This position will argue that developing and improving tools and interfaces to facilitate hospital clinician self-assessment and feedback can be one component to help address inpatient clinician burnout related to the EMR. Many innovations focus on reducing the time using the EMR but few focus on increasing the personal value obtained from using the EMR. Adjusting interfaces to include tools that provide physicians the ability to holistically learn and grow could reduce the frustration and burnout associated with using the EMR, improve patient care, and provide a feeling of growth to each clinician. We propose features for adoption and discuss how they fit into key

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components of computer-supported cooperative work (CSCW), improving the alignment of the EMR with incentive structures, workflow, and awareness [9]. CSCW has long had a role in shaping EMR development but the interplay between policy makers, EMR vendors, hospitals, and care teams continues to make implementation complex [3]. These suggested features include ways to retrospectively present previous patient information, improvements to collaborative tools, and tools for learning and research. Such features could be integrated into the current workflow of clinicians and could help make the EMR a better tool for clinicians on the whole.

2. Discussion

2.1 Improving Review of Previous Patient Information

EMRs are primarily designed for real-time clinical care as opposed to retrospective use. However, clinicians spend significant time, often more than they wish, looking up previous patients and assessing themselves based on what they find [12]. This aligns with both a clinician's personal incentive and interest to improve on their work as well as the hospital's interest to improve the quality of care [9]. As simple as this may seem, providing clinicians with the opportunity to see what happens to their patients after caring for them and get a sense of how their patients are doing collectively is a function that is unavailable to most clinicians. Simple information like the number of patients treated, number of patients discharged, number of patients readmitted, why patients are getting readmitted, etc. are relatively inaccessible to a clinician without fairly significant additional work. Emergency room and inpatient clinicians have little to no knowledge of what happens to a patient in the long run unless they spend the time intentionally tracking these patients [12].

We propose the potential value of a simple dashboard aimed at presenting this information, focusing specifically on a clinician's collective patient panel and allowing them to review

individual cases as they deem necessary. With the added information, they could now have a way to roughly sense whether the changes they make to their practice are making a difference for their patients, comparing themselves from year to year or identifying trends or themes in their patient population. Clinicians are already spending large amounts of time finding ways to tally portions of this information themselves. An interface providing this information in a readable and concise format will significantly improve the efficiency in their workflow and allow them to spend time thinking of solutions rather than merely tallying data [12]. Given the amount and the scope of clinical data in the EMR, building such interfaces with existing data could be an easy, user-focused implementation with tremendous value-add.

2.2 Rekindling peer to peer, genuine collaborations and connections between clinicians

Clinicians have a common practice of discussing challenging or tricky cases with one another, relying on friends or close colleagues in this process. At the same time, clinicians feel relatively isolated in a lot of their work and feel like they are left on their own to manage patients that may benefit from multiple perspectives and opinions [12]. The EMR has the opportunity to build on this collaborative nature of medicine. The current workings of EMR inboxes/emails have created a level of noise and message fatigue that sometimes discourages genuine conversations between providers [5]. These existing tools meant to improve collaboration and communication have become inundated with bureaucratic and system related messages, losing sight of their original intentions. This leaves a gap where personal, formal peer-to-peer interaction is missing in the everyday use of the technology—a part of a clinician's desired daily workflow that the technology could be designed to support [9].

We propose a focus on using the EMR to facilitate connections between clinicians rather than isolating them further. It could kindle and

start relationships with other providers to strengthen the healthcare community and improve collaboration on patient care. Tools could aim at both communicating with the close friends that clinicians already have as well as finding new ones in different fields and specialties. These collaborations would be patient-based, driven by clinical questions and curiosity about active care or retrospective questions looking for feedback or teaching points. Integrating such interfaces in the current EMR systems also has the benefit of efficient communication that aligns with the privacy standards in the Health Information Portability and Accountability Act (HIPPA). Again, the EMR has an opportunity to reinforce and encourage behaviors that clinicians actively perform as a way to feel more complementary to their work as opposed to antagonistic.

2.3 Streamlining the process of research and discovery

One of the most enjoyable features of clinical work is the continuous learning and discovery that occurs from patients, other providers, and the literature. Although EMRs are designed to contain thousands of different alerts to their users, the platform does little to reinforce education or provide the groundwork for new learning to be made. Currently, many EMRs do link to open outside learning tools like UpToDate, Epocrates, or similar tools but leave the user alone in finding and coordinating an answer – something which might require multiple resources, websites, and tools. In addition, after finding the desired information, there is nothing available for clinicians to more systematically keep track of the information learned, opening the door for inefficiency as the same search may be repeated many times. Clinicians try many different ways to keep track of or organize this information but are unable to find reliable and consistent methods [12].

We propose that the EMR has an opportunity to support providers in these learning aspirations by considering their workflow and helping coordinate the tools related to them. Such things could allow providers to highlight

important cases to be reviewed again later, allowing them to insert or connect comments or thoughts to a patient that may not be suitable for the patient record but instead for the clinician's future reflection. Tools could help coordinate searches among platforms, streamlining the process for the clinician in finding answers to clinical questions. Second, the EMR or a tool within it has the potential to support the saving and organizing of these learning points, helping a clinician keep track of them and find them again later on. These types of interventions could reduce the frustrations associated with inefficient learning and allow clinicians to more tangibly feel progression in the knowledge they have achieved.

3. Conclusion

Although the EMR has revolutionized the healthcare industry, it has clearly been accompanied by some frustrating side effects that are creating new problems such as physician burnout and stress. It is important that one recognizes the components that are contributing to these issues, such as increased time using the EMR and reduction in time spent doing the things that are most important, among other things. Thus, augmenting the EMR interface to support items that clinicians find interesting and help them do those things more efficiently is important to explore.

This position describes behaviors and content that clinicians are already engaging with while using the EMR but with inefficient and ill-designed methods. It argues that designing interfaces that intentionally address these areas around self-assessment and feedback would be beneficial in combating these EMR-related issues, while also providing tools within the EMR that are designed for the clinician's growth. Although there are policies and structures that can make implementation challenging, we believe our suggestions do little to go outside a clinician's normal practice, aiming to operationalize these practices. We acknowledge that different types of clinicians may also experience these features differently and would advise a starting focus with

emergency and inpatient physicians as these groups have little to no systematic follow up with past patients. It is important to recognize that the majority of the opportunity that exists is in the interface and intention of the system, without requiring new data, new variables, or new data collection infrastructure. This should make it all the more exciting to test and implement within the EMR.

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