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### Electronic Medical Records: The Good and the Bad

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# Electronic Medical Records: The Good and the Bad

*Sherry Liou*

As of 2012, 69% of primary care physicians in the United States were documenting on electronic medical records (EMRs), and as EMR systems continue to roll out to hospitals across the country, we can expect this number to continue to rise.<sup>1</sup>

Needless to say, EMRs have great potential to provide benefits to both healthcare providers and patients alike. Allowing for patient records to be accessed across the country—or even across the globe—improves the continuity of care for patients and gives them greater access to and responsibility over their own health records. At the same time, it can be argued that EMR companies are the true beneficiaries of the EMR incentive program that was enacted in 2009 as part of the American Recovery and Reinvestment Act, and that the drop in productivity and the steep learning curves faced by healthcare providers in the initial stages of EMR implementation actually hinder the overall ability of healthcare providers to provide the highest quality of care possible.

As a former EMR implementer, a patient, and now soon-to-be physician, I have experienced the EMR phenomenon from different ends and angles of the spectrum. Although my outlook on EMRs and their true benefit to the American healthcare system has undergone a gradual shift, I cannot say that my perspective has become any clearer. In fact, it is now much murkier than it was initially.

As a newly-hired implementer, I was sent around the country to support healthcare providers during the first few days that the EMR system was introduced at their hospitals, a period of time the EMR industry affectionately refers to as the ‘go-live’. Physicians and nurses alike complained that the software was ‘clunky’ and a hindrance to their workflow. Nurses were concerned that they were spending more time staring at the computer screen than doing actual patient care. Surgeons were concerned that nurses would not be able to find their Signed and Held orders after hours. At one hospital, providers who had previously used other electronic data collection systems were so unimpressed with the new EMR system that they threatened to go back to documenting on paper.

At the time, I attributed the healthcare providers’ frustrations to a general opposition to change and irritation with the hospital administration for forcing the system overhaul. Having grown up around computers, working with our EMR system was second nature to me. I could open a document, input the necessary data, save the information in a folder, and then retrieve the data whenever I needed it. I found the software intuitive and the interface user-friendly. These were, after all, two of the major selling points of our company’s software, and I endorsed them completely.

Furthermore, at every company meeting, we were reminded of the benefits that our EMR imparted on the quality and continuity of care for patients. Our CEO often used one example in particular to illustrate the benefits of an integrated EMR system: A patient went on vacation to Europe and forgot an important medication at home. Since her health records were kept digitally in our EMR system, a local doctor was able to access her prescription records online and subsequently prescribe her the same medication in Europe in much less time than it would have taken for the European physician to call the woman’s primary care physician to obtain the necessary information. This woman was so affected by this incident that she wrote a letter to our CEO expressing her gratitude. Unfortunately, this excitement and gratitude never seemed to translate to the healthcare providers who were the true end users of our software.

My first experience with an EMR system as a patient came not during a hospital visit, but during a checkup with a new dentist. I remember sitting reclined in the dentist chair with my mouth open as one of the dental assistants examined my teeth and read off her examination to a colleague who was stationed in front of the computer, documenting all of the information in my file. The entire experience was impersonal, and not at all like the dentist appointments that I was accustomed to during which my dentist made the effort to ask about my family or my job. It seemed like they were more worried about filling in all of the necessary fields on the computer screen than explaining to me what exactly they were looking for or what they had found on examination of my teeth. I left that appointment with a bad impression and never went back. Since that day, I have only had positive experiences with EMR as a patient. Nevertheless, that first encounter always comes to mind when someone asks me about my thoughts on EMRs.

My view on EMRs continued to evolve as the possibility of becoming a physician became less of a dream and more of a reality. As I started to imagine myself in the role of a healthcare provider, I began to empathize more with the surgeon who struggled to place electronic orders for his patients, the nurse who was hindered by the many required questions on the patient history questionnaire, and even the registrar who could not locate the insurance information for a newly arrived patient. I began to think about what I might do if I was in their situation. As I reflected further, I considered all of the possible mistakes that I could make using an EMR system—especially as a young, inexperienced doctor.

A study done by the Emergency Care Research Institute (ECRI)<sup>†</sup>, which included 36 voluntarily participating hospi-

<sup>†</sup> The ECRI institute is an independent, nonprofit organization that promotes safety, quality, and cost-effectiveness in healthcare through research, education, and consultation.



tals, provided results demonstrating a total of 171 health information technology (HIT) malfunctions over a nine-week period. Of these 171 HIT malfunctions, 25% involved a computerized order entry system, 17% were caused by clinical documentation system errors, and 13% were caused by errors in the lab information systems.<sup>2</sup> The analysis proceeded to show that the errors caused by EMRs are partially due to human error in using the systems, but are also caused by the computer systems themselves. Unfortunately, the number of reported incidents is only a small percentage of the total number of adverse events that are related to the implementation of EMRs.

Now, as a medical student experiencing my first patient encounters, I no longer feel comfortable wholeheartedly endorsing the usage of EMR in hospitals. There is no doubt that with experience, I will master the ability to balance face-time with the patient with time spent on the computer, but I have to ask myself, "How many mistakes—potentially even life-threatening mistakes—will I make before then?" Fortunately for me, by the time I start my clinical years, EMRs will be commonplace at most of the large healthcare institutions, so I will have an advantage compared to the physicians who have had to experience this EMR overhaul in the prime of their careers. Unfortunately, because there is not a standardized EMR across all hospitals, I know that there will still be a steep learning curve with retraining in different EMR systems, leaving room for error.

Furthermore, many academic medical centers are still struggling with how to appropriately incorporate EMR training into the medical school curriculum. There are mixed feelings about whether or not access to EMR as a medical student is beneficial. Although there are numerous clinical benefits for giving medical students access to EMR—including the ability to enable evidence-based medical training, early exposure to best practices consistent with clinical recommendations, and facilitation of critical clinical thinking early on in training—it has also been shown that "a lack of computer navigation skills may contribute to limited provider–patient communication" and thus a diminished learning of interpersonal skills by medical students.<sup>3</sup> There is also concern that the clinician decision support component of the EMR systems may actually compromise the medical student's ability to learn how to make critical decisions. Therefore, the implication of EMRs on the training of future physicians is still unclear.

While EMRs offer a spectrum of benefits—empowering patients to take charge of their own health, increasing the continuity of care, as well as catching human error—they also have their downsides. Contrary to the heroic stories of EMRs helping healthcare providers identify deadly allergies before the incorrect drugs are given, there are also stories of EMRs incorrectly interpreting the time of midnight, resulting in the delayed administration of vital antibiotics to a newborn or the doubling of the administration of a potent drug. One of the more severe errors that have been documented include the failure of EMRs to link lab results to transplant surgery records, leading to organ rejection and subsequent patient

death.<sup>2</sup> Furthermore, the implementation of an EMR system comes at a huge cost: the financial impact of purchasing new hardware and software, as well as training and maintenance costs, are daunting. It will be years before we know if the return on interest for EMR software is worth the cost.

Because the EMR industry is still a relatively nascent one, in my opinion, it is difficult to say definitively if the benefits of electronic medical documentation outweigh the costs of implementing these systems. I believe that it will take a few more years for the EMR frenzy to settle before we can determine if further development of EMR systems can better accommodate the needs of healthcare providers and if healthcare providers can fully adjust to these electronic documentation systems.

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