

# Healthcare Information Technology: Where Are We Now, and Where Are We Going?

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## **Healthcare Information Technology: Where Are We Now, and Where Are We Going?**

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Today technological advances are happening at much faster rates than ever before. Nationwide there is increased implementation of Electronic Medical Records in all different types of healthcare facilities: large teaching hospitals, ambulatory care centers, physician practices, and free health clinics. Hospitals have many motivations for implementing EMRs, including data collection and analysis, improving data security, accessibility, reliability, and evaluation of clinician performance [7]. Information technology has the great potential to improve quality and patient safety, all while reducing costs. EMRs are the center of any health information technology system and have already proven to reduce errors, specifically with prescription medications [9]. The negative impact of error can be dramatically decreased by providing critical information at the point of care, improving the speed of response once an error has occurred, and by tracking the occurrence of errors to allow monitoring for trends and feedback to providers. In addition to monitoring individual patient progress, EMRs can record data pertinent to institutional priorities such as; finance, risk management, quality improvement, and accreditation standards [1]. In today's ever growing healthcare economy, EMRs have become somewhat of the expected, both for clinicians and patients.

Although there are many advantages with EMRs, healthcare has not been able to make use of the potential of technological advances in the same way as many other industries have done [15]. Many reasons for this have been explored but, "a misalignment of incentives, limited purchasing power among providers, and variability in the viability of [EMR] products" have been the leading culprits [4]. Implementation experience has been varied and often negative, notably in large public healthcare systems [3]. Poor usability, flexibility, and the inability of an existing platform to continue to meet hospital requirements creates challenges that some hospitals determine to be unsurmountable. In addition, the cost of implementation of a new system, including education of staff, acquisition costs for software and hardware, the inability of a new system to "read" the data already on hand in the practice, are all significant disincentives. Amplifying these shortcomings is dissatisfaction amongst patients who feel disconnected from their care team because distracted clinicians spend more time figuring out how best to document on poorly designed user interfaces than addressing patients' needs. [12].

The need for cooperation amongst care-providers will result in increasing the use of digital technologies [15]. This cooperation or "care coordination" deliberately organizes patient care activities between two or more staff to ensure and improve the appropriate delivery of healthcare services. Sharing important clinical information allows everyone to have clear expectations about their roles. Less confusion means less time wasted digging for information from the many different people who have interacted with the patient. Consistent coordination of care will have all the patient's needs and preferences documented in the right place for easy access. Well-designed, targeted care coordination that is delivered to the right people can improve outcomes and reduce frustration for patients, providers, and payers [14].

In an effort to facilitate care coordination, the federal government stepped in on February 17, 2009 with the "Health Information Technology for Economic and Clinical Health Act", which directly addresses EMRs and how they must be applied with the intention of "Meaningful Use" [13]. The concept of Meaningful Use has increased the national emphasis on EMRs and

hospital quality. Physicians with an EMR that met meaningful use criteria were significantly more likely than those not meeting the standard to rate patient management tasks as “easy” [11]. The Meaningful Use endeavor has been broken into three parts, each being implemented in a stepwise fashion. Stage 1 focused on the basic functionality of EMRs and just setting up the technology in the hospital by 2014. Stage 2 built upon Stage 1 and included e-prescribing and the incorporation of laboratory results on EMRs, as well as requirements for increased accessibility of data by patients and transmission of patient care summaries electronically by 2016 [8]. Meaningful Use stage 3 primarily focuses on improving measured patient outcomes and self-management tools accessible to patients. Stage 3 requires the use of application programming interfaces (APIs) which gives patients the ability to view, download, or transmit their health information, using any application of their choice by 2018 [10]. This idea of choice and flexibility will allow applications to collect patient data from multiple different locations and seamlessly integrate the data onto a single platform. However, Stage 3 glaringly fails to address the foundational issues needed to improve interoperability. Without the infrastructure how can we possibly move forward?

Perhaps as a nod to their limitations, EMR companies are facilitating the transfer of data to 3<sup>rd</sup> party applications focused solely on care coordination and communication utilizing APIs. This is evidenced by the advent of the Fast Healthcare Interoperability Resources protocol. FHIR is a standard for exchanging healthcare information electronically. It can be used as a stand-alone data exchange system, or in partnership with existing widely used systems. FHIR aims to simplify EMR implementation without sacrificing information utility, while providing a consistent mechanism for data exchange. In addition to the capability for interoperability between different EMRs, FHIR permits access to patient data using any kind of device from computers to tablets to cell phones. Access anywhere and everywhere creates an integrated system with many benefits for physicians, patients, and administrators. This is the kind of IT infrastructure healthcare needs but up until now has failed to provide.

Efficacious utilization of electronic data is possible with intuitive applications that require little training and are optimized for clinical work. Health applications designed with clinicians on board the development team will help to ensure different department needs are met and will dramatically increase coordination of care, which will reduce hospital length of stay, infection rates, readmission rates and increase patient satisfaction. So far, EMRs have shown they have great potential in the field of healthcare but they have limitations because their function is simply data housing. A new model which focuses on data utility is what the modern generation of health IT and applications need to strive for. With the dawn of 3<sup>rd</sup> party applications implementing FHIR, that future is now. Will you be on board?

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