

## **Electronic Medical Records: An Introduction**

Jeff Spitzer - November 26, 2007

Electronic medical records (EMR) are more effective at delivering high quality health care than traditional paper records.

Paper health records have been around for quite some time, and until recently, the health care industry has been reluctant to upgrade to an electronic format. This has partly been due to resistance to change, and partly due to a sense that the paper system was functioning effectively, so why bother to change it.

The reality, however, is that health care organizations have become overwhelmed with patient data.

This is evidenced by the fact that clinics and hospitals usually have paper files stacked about as far as the eye can see. Beyond the physical challenge of handling that volume of paper, reliance on paper files and charts often means that the amount and quality of time spent with patients is diminished. Organizing paper charts so that a patient's medical history, medication list, and family history are easily accessible is difficult to do. Doctors often have to flip through multiple pages of barely legible charts, trying to find a particular piece of information, which may be incomplete or missing entirely.

In the worst case, this can result in misdiagnosis and incorrect treatment of the patient's condition. According to a report in 2006 by the US Institute of Medicine, medical errors were the eighth leading cause of death in the United States, contributing to 7,000 fatalities per year, at an estimated cost of \$37.6 billion (USD) annually. Approximately \$17 billion of these costs, the report said, is associated with preventable errors.

Clearly a more effective infrastructure than the paper variety is required, one that is capable of storing and managing patient data in a more centralized, robust, and flexible way. This was successfully achieved when the US Health Insurance Portability and Accountability Act (HIPAA) of 1996 was implemented. HIPAA is a set of rules that doctors and health care providers must abide by. The Act ensures that all medical records, medical billing, and patient accounts meet certain consistent standards with regard to documentation, handling, and privacy. This standard took effect April 14, 2006.

In addition, HIPAA requires that all patients be able to access their own medical records, correct errors or omissions, and be informed how personal information is shared or used. Other provisions involve notification of privacy procedures to the patient.

In spring 2004, the US federal government mandated that every American have his or her own EMR file within 10 years. To help encourage the process, the Healthcare Quality Act of July 2005 offered financial assistance to help offset implementation costs.

### **Enter the EMR**

Back in the 1960s, a physician by the name of Lawrence L. Weed came up with the idea of incorporating a patient's entire medical history into one accessible, electronic file. This patient record format is referred to as "electronic medical record," or an EMR.

Using a database, rules engine, and knowledge base, an EMR captures and stores a patient's complete medical history, family history, and list of medications and allergies in one easily accessible, centralized location. The information is then submitted to a workstation, laptop computer, tablet personal computer (PC), personal digital assistant (PDA), or voice recognition system for health care staff to retrieve and process. This system provides doctors with real-time, patient-centric information to aid in decision-making directly at the point of health care delivery. Regardless of where and when the

patient has previously been treated, all the relevant patient data is available to the health care practitioner via the EMR system.

EMR systems serve to automate the overall workflow of tasks, allowing for the maximum amount of practice efficiency. EMRs can help

- improve the overall treatment of the patient;
- streamline current procedures;
- assist with reducing medical errors; and
- improve office efficiency and overall documentation quality.

Because many different processes can be automated through the use of EMR, health care organizations have seen improvements in productivity, including reduced amounts of paper, copying, management, transcription, and storage costs. Beyond that, since EMR patient data is compactly stored on servers in digital format, hospitals, clinics, and doctors' offices are able to convert valuable space, previously occupied by file cabinets and paper storage systems, into areas for patient care and treatment. And because nurses and doctors spend less time searching for information, patient waiting times can be reduced, and physicians can spend their time more effectively with patients on a daily basis.

### **Barriers to Overcome**

As mentioned above, one of the challenges to widespread implementation of EMR systems that must be overcome is the fear of change—the shock of the new that brings with it resistance to alternative ways of doing things. But once the shock subsides, staff invariably begin to realize that automating what were previously manual tasks means that their time is more productive and their workload is reduced. Similarly, medical professionals will see the benefit of having the right data at the right time to provide the highest quality of care to patients.

### **Conclusion**

EMR systems are now slowly being implemented across the health care system. This change is helping to create better overall communication between the doctor and patient, reducing human error relating to drug interactions, and improving the precision with which diagnoses are made.

However, in spite of all these benefits, traditional paper record systems still predominate. This is especially true in hospitals, which, because of the seemingly overwhelming task of converting to EMR, tend to overlook the inadequacies of paper-based systems. Clinics and individual doctors' practices are more willing to adapt because of the smaller number of patients they handle.

Where hospitals have implemented EMR systems, the tendency has been to do it department by department—a lengthy process. Smaller health care organizations, on the other hand, have been able to migrate to EMR systems all in one step.

As a conservative estimate, EMR systems now account for about 20 percent of the health care market. This is a fairly small penetration, considering the concept has been around for almost 50 years. The widespread availability of inexpensive computer equipment is only 20 years old, and the World Wide Web has been available to the general public only since 1992. Health care, like a number of other industries, is adapting at a relatively slow pace. Savvy medical practices will take advantage of the convergence of these factors and implement EMR to begin delivering higher quality of care to their patients.