



Electronic Medical Record's Impact on Healthcare

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Electronic Medical Records (EMR) began shortly after the computerized tracking systems appeared in the late 1960's. Michaels (2010) explained that "The first use of electronic medical records was in 1967, when both the University of Vermont and Utah's Latter Day Saints Hospitals launched EMR systems that had been in development throughout the decade." Since that time, EMR's have continued to evolve to meet the needs of patients and healthcare personnel. This article will discuss the continued impact that electronic medical records have made in the healthcare industry as it pertains to the quality of care, quality of life, timely decisions, and the ability to retrieve and share patient information. This is in an effort to better understand the benefits, complications, and measurable outcomes due to the implementations and improvements sourced back to EMR systems to gauge future implementations and improvements. We will use single payer and multi-payer system examples as scope of coverage.

Quality of care is the level of a patient's satisfaction with the care provided to them by a facility, personnel, equipment, and environment. Wang (2010) described:

"Quality health care can be more exactly described as striving for and reaching excellent standards of care. It involves assessing the appropriateness of medical tests and treatments and measures to continually improve personal healthcare in all fields of medicine, from the aides that help you eat, to the surgeon who removes a tumor from your brain."

Some of the improvements in quality of care have been due to implementation and improvements of EMR systems. In a study done by Gunningberg, Fogelberg-Dahm, & Ehrenberg (2009), the use of EMRs allowed for ease of standardized use and functions of the medical records; "With the possibilities of the electronic health record (EHR) to provide information and give fast feedback to the healthcare organization, it is of high priority to develop standardized documentation practices for various areas of care." Another noted improvement is the improved legibility of the records when compared to traditional paper charting. Gunningberg, Fogelberg-Dahm, & Ehrenberg (2009) continued to describe that "These deficiencies have consequences for the quality and safety in care in that errors could occur and the continuity of care for patients may be hampered." When records are transferred from one department to another and even from one facility to another, the use of standardized and clear record keeping will determine the quality of care that the patient receives from the facility, personnel, equipment, and environment down the line. One way for medical facility management to know how they are performing and look for problem areas within their processes is to survey the patients using the HCAHPS method. According to Jha, Orav, Zheng, & Epstein (2008) from the Harvard School of Public Health; "Patients' perceptions of their care, especially in the hospital setting, are not well known. Data from the Hospital Consumer

Assessment of Healthcare Providers and Systems (HCAHPS) survey provides a portrait of patients' experiences in U.S. hospitals.” This survey is performed post discharge and is administered by a third party. Their conclusions:

“found moderately high levels of satisfaction with care, with a high degree of correlation among the measures of patients' experiences. As compared with hospitals in the bottom quartile of the ratio of nurses to patient-days, those in the top quartile had a somewhat better performance on the HCAHPS survey. Hospitals with a high level of patient satisfaction provided clinical care that was somewhat higher in quality for all conditions examined. For example, those in the top quartile of HCAHPS ratings performed better than those in the bottom quartile with respect to the care that patients received for acute myocardial infarction and for pneumonia” (Patients' perception of hospital care in the United States 359(18), 1921-1931).

These surveys found that facilities with higher nurse to patient ratios and the ability to obtain patient data faster through standardized charting and legible records scored higher on the HCAHPS survey. The study explains: a higher quality of care a patient receives will increase patient returns as well as future recommendations to friends and family. These qualities described will have a direct impact on the patient's quality of life.

Quality of life is a difficult element to describe and is relatively new to the healthcare industry. Hsieh (2009) demonstrated this when describing “there is no single agreed-upon definition of quality of life and therefore, no single agreed-upon measure of quality of life.” Quality of life is individualized and because of this many have struggled with how to adjust patient care to accommodate all patients. However one element that is being used in post partum treatment is the Jadad scale. This scale evaluates the mental status of the patient at crucial time intervals of beginning parenthood. It has been discussed by experts that it could be used by other healthcare professionals to evaluate the quality of life for other clinical treatments as well. By implementing the EMR system, healthcare experts suggest that as the standardized evaluations are completed, the information could be passed quickly to the attending physician for evaluation and possible considerations could be made faster (Shaw, E., Levitt, C., Wong, S., & Kaczorowski, J. (2006) pg 33). Timely decisions in the treatment of patients are critical to ensure quality of life is maintained. This is in an effort to meet the patient's wishes as best as possible.

In many cases, a timely decision in the medical field can be life or death for the patient. Follen, Castaneda, Mikelson, Johnson, Wilson, & Higuchi (2007) describe

“The lack of real-time information may result in delayed treatment, uninformed decisions, inefficient resource used, and medical errors.” The purpose of the “evidence-based guidelines that meet the Institute of Medicine's aim of providing safe, efficient, patient-centered, and timely care” (Disease Management 2007;10:208-215).

The implementation of EMR systems when compared to the traditional paper charting has increased the ability for information to be retrieved and shared among the medical personnel assigned to each patient. With new features such as mobile review and dictation deficiency correction, physicians are more available and accessible when scheduling visits. This also allows for medical personnel to retrieve and share patient information. (Follen, Castaneda, Mikelson, Johnson, Wilson, & Higuchi, 2007 pg. 208-215).

Whether it is from a paper chart or from an EMR system, retrieving patient information from current and previous visits is one of the major concerns physicians have with medical records. Ilie, Van Slyke, Parikh, & Courtney (2009) described that

“when faced with a decision that involves choices between alternative information sources, individuals tend to base their selection and usage decision on the least amount of effort or the minimum cost (psychological, physical, or monetary) involved in using the source.”

In the earliest cases studied, this returned physicians to paper charting. Previously with paper charting, each staff member who needed to see the patient chart had to wait until the person using the chart was finished in order to document updates related to the patient. Then, that chart was filed and depending on the patient volume the facility experienced, a secretary or a team of staff had to search for the physical copy of the record and deliver it to the physician's desk. Current studies show that the trend is shifting. With the EMR system, multiple staff can access and update the patient's record in real-time and allow others to see the changes as they pertain to the patient overall care during their stay. Post discharge the files are compiled and added to the database. Most EMR systems allow physicians to access their own patient's records through a secure encrypted website that requires only a username and password to access the records that were electronically charted. This has been shown to reduce the physician's time away from their patients. It also grants them the ability to spend more quality time reviewing upcoming treatments and techniques to allow for advancements in which the patient will benefit. (Ilie, V., Van Slyke, C., Parikh, M. A., & Courtney, J. F.; 2009; pg. 213-241).

Benefits associated with EMR implementation and improvements vary depending on the use and situation of each facility, personnel, equipment, and environment. The generalized scope of improvement in the U.S. healthcare industry due to electronic medical records has only been tracked, trended, and researched in specific applications. Follen, Castaneda, Mikelson, Johnson, Wilson, & Higuchi (2007) describe from their study of one application implementation that

“Empirical evidence suggests that implementation of an EMR can offer multiple benefits. Their use can facilitate the provision of evidence-based decision support for providers to manage patients in a timely and systematic way. EMRs may also facilitate complete electronic documentation and efficient sharing of patient information across multiple providers, document medications prescribed, and laboratory tests ordered and performed. In addition, some systems allow pharmacists the ability to dispense medications as well as check for drug-drug interactions, allowing providers and pharmacists to work more collaboratively to ensure that patients receive adequate information about their medications. EMRs also may be used to order laboratory tests, which should obviate duplicate or unnecessary testing. Each of these EMR functions contributes to the efficiency with which patient information is managed as well as the quality of care provided. Not only do EMRs lead to cost and time resource benefits for healthcare providers, but their use has also led to an estimated cost savings of \$23 billion for Medicare and \$31 billion for private payers annually. These cost savings are attributable to the accumulation of electronic data, the reduction in staff time used to locate, pull, and file patient medical records, and a decrease in the duplication of tests and services” (pg 208-209).

Along with these benefits there are inherent risks and complications that face each facility, personnel, equipment, and environment – some of which may be very difficult to overcome.

As in any change, there are certain complications that will need to be addressed throughout the implementation and improvement stages. Shortliffe, T. (2005) described some of these complications during his study of EMR implementation:

“Recent enthusiasm for the automation of medical records and the creation of a health information infrastructure must be viewed in the context of a four-decade history of anticipation and investment. To understand the current opportunities and challenges, we must understand both the evolution of attitudes and accomplishments in healthcare information technology (IT) and the cultural, economic, and structural phenomena that constrain our ability to embrace the technology. Because prudent IT investment could make a profound difference in U.S. health and disease management, our strategic response must begin with an understanding of the pertinent history plus the challenges that lie ahead” (pgs 1222-1223).

Staff's acceptance of EMR and understanding the “who, what, when, where, why, and how” the systems can be applied is a noted issue that will need to be addressed in order to have a successful implementation of EMR. Gunningberg, Fogelberg-Dahm, & Ehrenberg (2009) explained “we suspect that the quality of recording will improve when nurses become more familiar with the new system.” As the staff gains experience in their EMR system, they will become more familiar with the usage. Some facilities have implemented a staff training system and have even employed IS educators to assure the staff understand and use the systems to their full potential.

Even with high enthusiasm from the staff, healthcare facilities have lagged behind in the adoption of EMR systems. Follen, Castaneda, Mikelson, Johnson, Wilson, & Higuchi (2007) describe

“Despite their importance and widespread support, these systems have slow provider adoption rates. Our understanding of how health information technology may be used to improve healthcare is limited by the relative paucity of research on the adoption, integration, and implementation.”

This lag time is an obstacle that hospitals in general will face due to the high restrictions on what constitutes a qualifying EMR for general use.

Some additional changes will continually need to be addressed as new regulations and policies are implemented. EMR will have to continually adjust to incorporate the new requirements. In order to do this, highly skilled staff will need to be hired to meet this demand. Gunningberg, L., Fogelberg-Dahm, M., & Ehrenberg, A. (2009) described “to facilitate documentation, the templates need to be refined to be more user-friendly.” The IT staff will need to have an intricate knowledge of the regulatory standards as well as current policies that the medical facilities have in place in order to design and build their EMR. An example of this knowledge includes the ability to understand what physicians go through on a daily basis. Ilie, Van Slyke, Parikh, & Courtney (2009) described

“in a large hospital context, physicians often must do their rounds on many different floors in order to see patients. Traditionally, the paper chart has been conveniently located near a patient's room. Computer terminals, however, may be spread within or among hospital floors and may not be within easy reach. Furthermore, some hospitals may not have a sufficient number of computers in place for physicians' use. Based on the

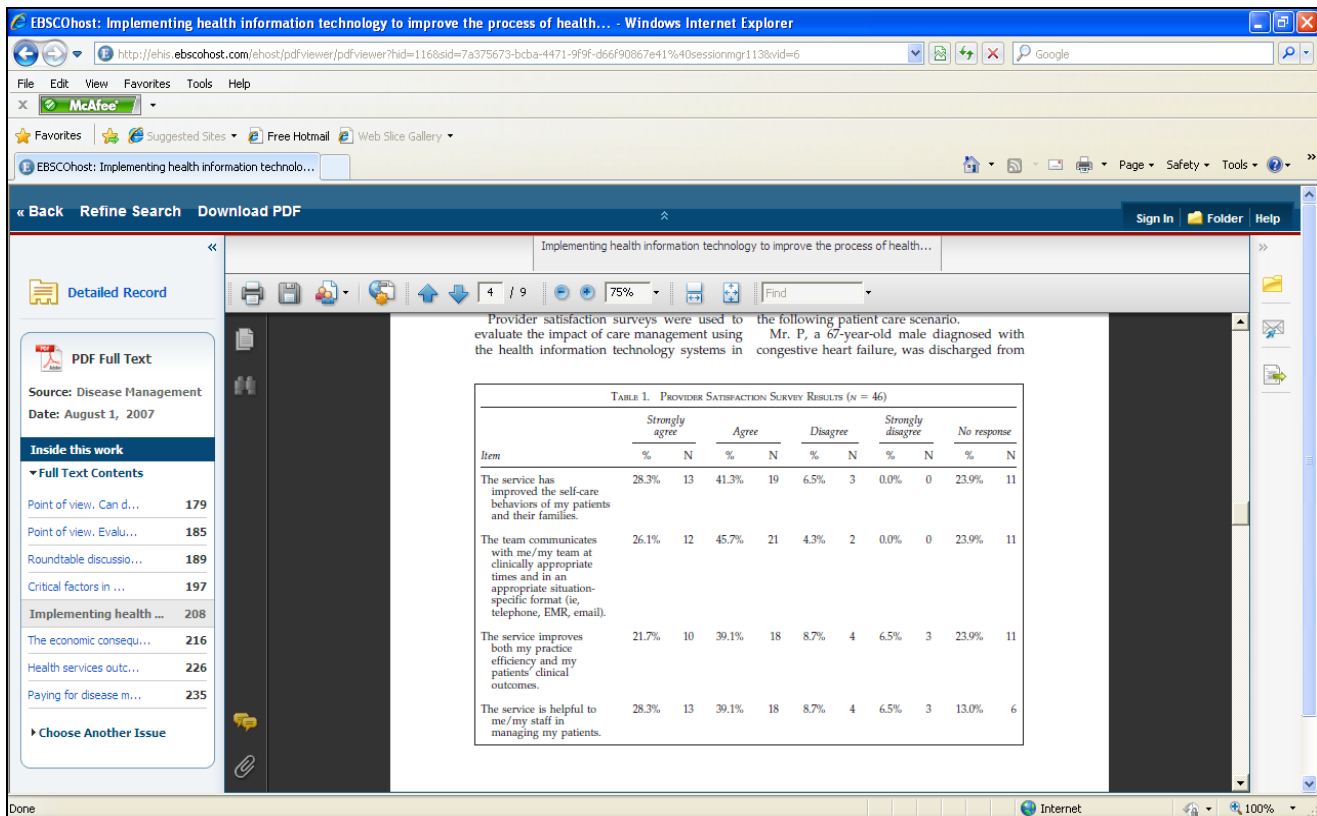
'least effort' principle... it is plausible that physicians' use of EMR may be impeded if access to a computer terminal is not convenient."

Keeping this in mind, physicians are continually looking for the best methods to complete their tasks in the least amount of time but with the best possible outcomes. One way they do this is by procuring methods that are proven and measurable.

Measurable outcome is the end result that is repeatable and traceable. Through measurable outcomes new policies are written and implemented. Methodologies are developed and generally available due to the researched measurable outcomes. Some of the measurable outcomes from the above descriptions allow us to see the implementation and improvements that others have been through which gives insight into the issues that facilities have faced and will face as EMRs become the norm. Orav, Zheng, & Epstein (2008) from the Harvard School of Public Health described that "patients' perceptions of their care, especially in the hospital setting, are not well known. Data from the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey provide a portrait of patients' experiences in U.S. hospitals." This survey is performed post discharge and is administered by a third party. Their conclusions

"Found moderately high levels of satisfaction with care (e.g., on average, 67.4% of a hospital's patients said that they would definitely recommend the hospital), with a high degree of correlation among the measures of patients' experiences (Cronbach's alpha, 0.94). As compared with hospitals in the bottom quartile of the ratio of nurses to patient-days, those in the top quartile had a somewhat better performance on the HCAHPS survey (e.g., 63.5% vs. 70.2% of patients responded that they 'would definitely recommend' the hospital; $P < 0.001$)."

Measurable numbers allows for scaled expectations for future implementations of EMR systems." Follen, Castaneda, Mikelson, Johnson, Wilson, & Higuchi (2007) explained "according to the providers, such services (EMR) improved the quality of care (50%) and patient satisfaction (33%), as well as operational efficiencies by saving provider time (22%) and staff time (26%)."



Having the information allows executives at each facility to analyze the information. This individualizes the EMR to the needs of that facility to draw the facility to a clean EMR implementation and improvement conclusion.

In conclusion, EMR systems increase the ability to improve quality of care, quality of life, timely decisions, and the ability to retrieve and share patient information. This allows for a better understanding of the benefits, complications, and measurable outcomes due to the implementations and improvements sourced back to EMR systems. Follen, M., Castaneda, R., Mikelson, M., Johnson, D., Wilson, A., & Higuchi, K. (2007) described it best when stated

“integration of health information is critical to the provision of effective, quality care in today's fragmented healthcare system. The increasing prevalence of chronic conditions and the demand for a comprehensive understanding of patient health on the part of providers are driving the need for the integration of health information through electronic health information systems...The integration of these systems is likely to enable the efficient management of health information and improve the quality of health care as it would provide real-time patient information in a coordinated manner.”

With the increased need for quality patient care, EMR will continue to be an intricate solution to the problems that will arise.

If you would like more information about Electronic Medical Records and McKesson solutions offered by VCS, please contact us at 610.444.1233 or vcs@getvitalized.com. More information about the services and solutions offered by VCS can be found at our website, www.getvitalized.com.

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