Political Environment Surrounding the Implementation of an Electronic Health Record

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Abstract

The healthcare delivery system in the United States has been in need of major reform for many years. None of the attempts at major transformation seem to ever work. At the same time, information technology has advanced at a great pace. It appears to be most evident in industries other than healthcare. With information available globally in retailing, banking and other businesses, it is thought by many that this use of technology in the healthcare field may be just the reform needed to transform healthcare into the high quality industry it should be. In particular, the electronic health record (EHR) is set to link all aspects of patient information to provide for the best possible continuity of care in a seamless fashion. The purpose of this paper is to look at the political environment encompassing the implementation of such a system as well as discussion of the benefits and drawbacks.

Many changes have been introduced into the health care arena in the recent years. One major change that has taken place is the passage of the Health Insurance Portability and Accountability Act (HIPAA) of 1996. While there are several components and goals of HIPAA, the ultimate objective of this legislation is to make positive changes in the delivery of health care. These changes would then result as a positive force on patient care. It has taken several years to implement all of the various aspects of the legislation and has had a big impact on the way healthcare providers view medical information.

The implementation of a complete electronic health record (EHR) seems even more important now than ever in striving to uphold the tenets of HIPAA. The need for this significant step in the quality treatment of patients is further noted by President Bush's announcement regarding his plan for health care. It calls for electronic health records for every American within the next ten years. This fact coupled with the naming of Dr. David Brailer as the National Health Information Technology Coordinator (Bush, 2004) underscores the sense of urgency for moving healthcare into a more electronic age. Healthcare facilities will need to plan for the future of their technology needs. It will also be essential to find avenues of finance for those facilities that do not have ready access to the capital funding needed to implement such a large-scale project.

What Is An Electronic Health Record And Why Is It Important Now?

There has been a great deal of confusion in defining the electronic health record. In fact, it has been very difficult to nail down a specific definition, as each individual appears to have their own preference as to what constitutes an EHR. For the purposes of this paper, the definition chosen is that outlined by Paul C. Tang, Chair of the Committee

on Data Standards for Patient Safety in a Letter Report by the Institute of Medicine (Tang, 2003, July 31):

> An EHR system includes: (1)longitudinal collection of electronic health information for and about persons, where health information is defined as information pertaining to the health of an individual or health care provided to a individual; (2)immediate electronic access to person- and population-level information by authorized, and only authorized, users; (3)provision of knowledge and decision-support that enhance the quality, safety, and efficiency of patient care; and (4)support of efficient processes for health care delivery.

The Institute of Medicine (IOM) uses a somewhat generic definition in that it does not specify the exact physical parts of the record; rather it details the functions of the end product. This should be a more preferred definition in the healthcare world of today. As technology continues to evolve each day, the definition should be one that will continue to be static and not ever-changing. It is for this reason that the IOM definition is chosen for this paper. However, it is wise for one to be aware that not every professional will choose this definition.

One expert in the area of the electronic health records has found that, depending on who you are talking to, the definition may change (McLendon, November 22, 2004). He has placed emphasis on the definition of the health record for legal purposes, as set forth by the American Health Information Management Association (Amatayakul et al., 2001). This practice guideline attempts to define a health record for legal purposes, whether kept in a paper format or an electronic format. While it seems to be accepted by

those that are close to the health information management profession, there is little evidence that it is a widely accepted definition.

Another term used for the EHR is electronic medical record (EMR). While one must be careful to assess the exact definition when interpreting various articles, many times these two terms are used interchangeably. It is important to be consistent in using the same definition of the EHR when discussing the different facets of implementation so that there is no confusion in what the end product will be. For example, the health information director may be using the definition as outlined above, while a vendor may think of optical storage of scanned charts as a complete electronic record. The outcomes of the discussion could be very devastating to the resulting EHR project.

Several reports have been written on the inefficiencies of the current healthcare system. One common thread through many of these is the overwhelming need for a better way of sharing information. There is a very real need for transitioning to an electronic format of health records to best transport patient information from healthcare provider to healthcare provider. An electronic format would also enhance the reimbursement aspects. If designed correctly, the electronic health record could serve as a patient education tool to enhance their role in their own care. The Markle Foundation is one group that has done extensive work in this area. This group has identified three main areas that need to be addressed to provide an environment of healthcare connectivity (*Achieving electronic connectivity in healthcare: A preliminary roadmap from the nation's public and private sector healthcare leaders*, 2004), as follows:

1. A non-proprietary framework should be developed to allow all participants to share information. The group recommends that a

specific national identification number should not be used but rather each participant should have their own architecture and the use of strict standards would allow seamless linkage of data.

2. Any financial barriers will need to be overcome, perhaps through incentives with emphasis on standards certification and the improvement of quality of healthcare provided.

3. American citizens will need to be brought into the realm of the equation, with public service messages and other means. This crucial step will help to ensure consumers feel comfortable with this new way to access their own information.

The recommendation for the connectivity to be non-proprietary is an important one to help assure that progress is made in the quality of the networks for everyone and not for the purposes of lining the pockets of one or two specific corporations. In reviewing other industries, such as banking or retail, it is evident that the technology exists to provide instant access to vital information. Perhaps there is no other industry in dire need of change. The information technology link is an essential one to fit into the healthcare delivery system.

To further enhance the systems knowledge management concepts may be built into electronic health records, such as to improve patient safety. This can be accomplished by working to reduce errors in patient care. If pertinent knowledge could be imbedded in electronic health records, the decision-making process could be streamlined and prevent errors. One example is that of medication errors. If a doctor wishes to prescribe a specific medication for a patient, the doctor could be prompted to

any possible drug interactions the patient might have with drugs the patient is already taking. The same type of alert could be set up for erroneous dosages or allergies the patient may have. This is only one of many types of applications to the electronic health record.

The need for a nationally connected electronic record is further documented by the American College of Physicians (ACP). In their recent report (Gorgen & DuMoulin, 2004), the case is made for the use of electronic health records in improving the quality of patient care in America. As with other substantial reports, this one also focuses on the area of interoperability of systems. Dr. David Brailer as the National Health Information Technology Coordinator has made this the focal part of his plan (Thompson & David J. Brailer, 2004).

Emphasis for the need for linking information in regard to reimbursement methodologies is made in the ACP report. It places less emphasis on the patient's role in the EHR. This area should not be overlooked in the whole plan, as patients should have an integral part in their own care. One key piece in the whole puzzle is that the patient becomes more educated and informed in his or her own care. This step may serve to increase the quality of care by the patient being more aware of possible errors. The patient is also most familiar with their own care by several practitioners, thereby serving to enhance the communication link. While physicians have several patients to watch out for day after day, a well-educated patient will know about the care they receive. This is not to say that all patients should be experts in the medical field, but rather knowledgeable as to their own medical conditions.

The ACP report (Gorgen & DuMoulin, 2004) calls attention to the importance of physician buy-in. A part of this process is the affordability of the systems. With the report being generated by a physician group, it is a bright spot in the implementation of a national EHR system. Physicians' groups hold a great deal of power in lobbying efforts. Therefore, the backing of these groups is essential in the successful implementation of an EHR system. One aspect that is particularly brought out in the ACP report (Gorgen & DuMoulin, 2004) is that of an electronic prescription system. This is an illustration of one of the many ancillary areas that may be encompassed by an extensive and well-constructed EHR.

Environmental Scan

The stage has been set for the impending implementation of an EHR. In a summit on health information technology, held in Washington, D.C. July, 2004, a plan was revealed. Department of Health and Human Services Secretary Tommy Thompson and National Coordinator for Health Information Technology Dr. David Brailer presented a report, including goals for reaching the goal of a nation-wide EHR within the next ten years, as follows (Rode, September, 2004):

- Inform clinical practice – Essentially, this goal is to bring EHRs directly into clinical practice, with the expectation that it will reduce medical errors and duplicative work as well as enable clinicians to "focus their efforts more directly on improved patient care."
- Interconnect clinicians – Interconnection allows health information to be portable and move with consumers from one point of care to another. This will require an "interoperable infrastructure" to help

clinicians gain access to critical healthcare information when clinical or treatment decisions are being made.

- Personalize care – "Consumer-centric" information is considered central to allowing individuals to manage their own wellness and assist with their personal healthcare decisions.
- Improve population health – Improvement of population health centers on the "collection of timely, accurate, and detailed clinical information to allow for the evaluation of healthcare delivery and the reporting of critical findings to public health officials, clinical trials and other research, and feedback to clinicians."

These goals are concise and to the point. They clearly cover many different aspects of health information. Clinicians and consumers are targeted as major factors in the success of a health information technology network. Clinicians will be able to easily access information for better decision-making in the treatment of patients. This will not only contribute to better continuity of health care for consumers, but also help to reduce medical errors and lower costs that result from duplication of various health tests as they are not readily available for review by clinicians. Patients will also play a larger part in this plan. It is evident that consumers are taking more of a personal part in making decisions regarding their own health care. With ready access to an electronic health record, the consumer may decide who may see their private information and exactly which information clinicians would have access to. This is a drastic change from the days that patients were afraid to be caught looking at their own information in the medical

record to a time of patient empowerment to help make sure critical health information is accurate.

Dr. Brailer further announced twelve strategies that would help to achieve the goals of implementing the EHR (Rode, September, 2004):

- Provide incentives of EHR adoption
- Reduce the risk of EHR investment
- Promote EHR diffusion in rural and underserved areas
- Foster regional collaboration for interconnection
- Develop a national health information network
- Coordinate federal health information systems
- Encourage the use of personal health records (PHRs)
- Enhance informed consumer choice
- Promote the use of telehealth systems
- Unify public health surveillance architecture
- Streamline quality and health status monitoring
- Accelerate research and dissemination of evidence

Unmistakably the various aspects of EHR implementation have been well thought out by Dr. Brailer. Many different aspects are addressed in the strategies. However, in order to achieve these strategies and ultimately, the goals of EHR implementation, more has to be done. There must be legislation to pave the way for the successful achievement of the strategies.

With all of the advantages and long-term benefits that may be realized from the implementation of an EHR, it is important to see where the U.S. stands in the process.

There have been increased implementation rates, yet in 2002, only 13% of IT executives reported a fully operational system. Thirty-two percent had begun the installation process. It is notable also that there were still 29% of IT executives that have no plans to implement an EHR. That is more than twice the number that have fully implemented systems (Sensmeier, 2002). It is unknown that size of the facilities that have completed the implementation process but assumed through anecdotal indication that it is most likely larger hospitals and large enterprise systems. To make an EHR system effective for all, it must include all healthcare facilities, regardless of size. All healthcare consumers must be served.

Impending Legislation

There are currently several pieces of legislation that have been introduced that could impact the national health information technology initiatives. Senator Edward Kennedy is the sponsor for S.2421 which is noted as "a bill to modernize the health care system through the use of information technology and to reduce costs, improve quality, and provide a new focus on prevention with respect to health care" ("Health care modernization, cost reduction, and quality improvement act", 2004). This piece of legislation addresses primarily the electronic aspects of medical records but also goes the extra steps to aid in the reforming of the health care system, as follows ("My advocacy action center", 2004):

- Sets a goal of full implementation of a broad-based system of electronic medical records and automated bill-paying

- Offers larger reimbursements for providers who implement these systems and reduces payments for large facilities that do not implement
- Requires the DHHS Secretary to set quality standards for healthcare service providers
- Requires public and private payers to reward attainment of the established quality standards through their reimbursement procedures and permit the reduction of reimbursement to providers who fail to meet the established quality standards

This bill is proactive in pushing the bar for quality patient care. No longer would facilities be rewarded by saving money for themselves, but they would be saving money through providing high quality of care. Those that could not live up to this quality would be reimbursed at a lower amount. This bill also includes error notification software so that a warning would be displayed if an order was entered that was likely to cause an adverse reaction to the patient. Preventive health care is also stressed, with increased health insurance benefits in those areas. It also gives direction to schools, worksites and communities in addressing nutritional eating habits ad well as increasing physical activities in each of these areas. While this legislation addresses many positive aspects of health care, it is deficient in one major area. It only applies to entities that employ fifty or more health care professionals when it addresses decreased reimbursement for not using a clinical information system. When you review the number of clinical facilities that fall into this category, it would seem that the enacting of this bill would leave a huge gap in the establishment of a health information network that would work for all consumers.

Another bill, S2710, has also been introduced in the Senate (Thompson & David J. Brailer, 2004). This bill focuses primarily on the establishment of a national health information infrastructure ("National health information technology adoption act", 2004), as detailed below:

- Establish an Office of Health Information Technology within the Department of Health and Human Services
- Provide for the development and adoption of interoperability standards for healthcare information technology systems
- Provide for $50 million in loan guarantees per year from 2005-2010 for the adoption of health information technology (accompanied by an annual reporting requirement)
- Provide $50 million in competitive grants per year from 2005-2010 for the purchase of health information technology (accompanied by an annual reporting requirement)
- Development of standardized measures of quality healthcare for all federally supported health delivery programs by the Secretaries of HHS and Veterans Affairs

The congressional sessions of 2004 did not produce definitive health information technology legislation. One of the major factors in the passage of legislation of this sort depend on the make up of the Congress (Asmonga, October 28, 2004). In a Republican presidency and Republican-dominated Congress, it is hard for a bill introduced solely by Democrats to be successful. Therefore, those that are cosponsored with both Republican and Democratic backing are the ones that are most likely to make any progress in being

passed and implemented. Also, with the resignation of the Department of Health and Human Services Secretary, Tommy Thompson, it is hoped that the momentum will continue.

Benefits and Roadblocks of the EHR

In reviewing current literature resources and in speaking with professionals in the healthcare field, there is an overwhelming feeling that the implementation of a nationally interconnected EHR has huge potential. This has been documented by several groups. The American Society for Testing and Materials (ASTM) has developed a guide for the EHR ("Standard guide for content and structure of the electronic health record (ehr)", 2003). Within this guide, several advantages of the EHR are detailed, including:

1. a unified repository of healthcare information
2. information that is accessible from multiple sites
3. more efficient communication between healthcare providers
4. cross-patient retrievals will provide statistics needed by clinical, outcomes, and health service researchers as well as administrators and managers
5. better defined policies and procedures to improve healthcare practice
6. a longitudinal health record that can be developed more efficiently and effectively

These benefits are substantial and far-reaching for healthcare facilities. They have the potential for a huge positive impact in improved patient care, providing the ultimate environment in continuity of care for patients.

For the past several years, healthcare facilities have been concerned with quality of patient care. There has been a great deal of press on patient safety and how to improve healthcare encounters for patients. Perhaps the EHR will be an avenue to aid in reaching quality goals. One pediatric clinic took a look at a paper-based record system versus a computer-based system. At the end of the trial time, it was felt that clinicians had spent more time with patients and addressed more routine health areas than with the previous paper-based system. All those that were involved in using the computerized record recommended continuing using it (Adams, Mann, & Bauchner, 2003).

The EHR allows for advanced technology in helping clinicians treat patients. One example is that of a physician's office that used the EHR to implement decision support tools. These decision support tools were imbedded into the electronic record and aided the physician as symptoms were described (J. J. Janas, 2003). This advanced application of the EHR technology would not be possible using a paper-based medical record. The resulting outcome is a higher quality patient visit and increased satisfaction.

An important emerging technology that deals with patient safety is that of the computerized physician order entry (CPOE). This is another decision support system to help avoid errors. One example would be of a physician that perhaps mistakenly ordered the wrong dosage of a medication. In a paper-based system the error could cause irreparable harm or even death. In a CPOE system, an alert would be displayed causing review of the order. Other safeguards can be built into the CPOE system in the form of parameters.

Jackson (2004) details firsthand experiences of two healthcare enterprises that have implemented the CPOE. One is of Geisinger Health System in Danville,

Pennsylvania. In the beginning it was somewhat of a hard sale. Physicians were not comfortable with the new system and resisted the change. However, after becoming more at ease with the new system, it became an important part of the health system. It has become a recruiting tool and a way to keep top-notch physicians concerned with quality issues. The Chief Information Officer could not put a specific number on the amount of errors that have been saved but felt it was an overwhelming improvement in patient safety as well as an excellent way to communicate between caregivers (Jackson, 2004).

Another health system that has benefited from CPOE is Rush University Medical Center in Chicago. It includes a large hospital as well as a health center for the elderly. This health system uses the term provider order entry instead of physician order entry because even nursing staff use the system to enter information. They have been using their present system since 1996 and have had a great amount of success. It is based on a series of screen prompts so that information is kept in an organized and consistent manner. While it was difficult to win over some of the physicians in the beginning, they are now the biggest proponents of the system, with an increase in patient safety being a great benefit (Jackson, 2004).

Healthcare facilities have had to scrutinize their return on investment, especially with the implementation of such an all-encompassing system as the EHR. However, one phenomenon that has been experienced with this new technology is that patient safety issues have been placed before monetary return in many healthcare systems. It reinforces the idea that patients are demanding more and more accountability with regard to safety and health systems are responding. (Newell & Christensen, 2003) have realized this

trade-off on return on investment concepts and have identified steps to be taken in regard to patient safety technology initiatives, as follows:

1. Definition of patient safety
2. Identification of the types of initiatives that deliver patient safety outcomes
3. Validation of the patient safety initiatives that have been identified either at a strategic organizational level (annual and five-year strategic business plan), or at a constituency level (medical and clinical staff across specialties and services)
4. Confirmation as to whether the desired patient safety initiative is achieved via workflow redesign, information technology (one or several components), or a combination of the two
5. Mapping of desired patient safety initiative(s) to existing IT strategic plan
6. Determining the order of magnitude of the actual impact to implement the identified patient safety initiative (there may be more than meets the eye; an initiative ay require a fairly extensive number of tasks to be planned for and completed across multiple-disciplines)

It is apparent that the implementation of such an EHR will be a benefit by drastically changing the way healthcare systems look at patient safety and quality issues.

There are also roadblocks to the implementation of the EHR. These roadblocks include "cost, leadership, return on investment, vendors keeping up with users' needs, and deficits in the following categories: public policy, standards, security, and a true

definition." (Erstad, 2003). Work has been done in many of these areas, with ASTM developing industry standards and striving to win acceptance in the healthcare field as well as information technology sector. No matter how much is done to advance EHR products that are in keeping with the highest of quality patient care, it is of little use to a healthcare facility that cannot afford the price tag.

Another roadblock is that of privacy questions. It is ironic that HIPAA regulations have, in a way, paved the way for the implementation of a national EHR. At the same time, it has left some holes in the privacy of these records. One such example is that of pre-emption status (Asmonga, October 28, 2004). Since HIPAA regulations allow pre-emption of some state laws, the privacy laws may differ from state to state. This creates problems when electronic information is transported from state to state as the patient is treated in different states. It was hoped that the HIPAA regulations would provide a sound foundation to build the national EHR, especially in regard to privacy concerns. There is a delicate balance between confidentiality and access of medical information. The technology exists to keep computerized data confidential to everyone. However, it should not be kept so confidential that it actually hinders the release of vital health information to those that need access for top quality patient care. In order to understand privacy and confidentiality, one must first be aware of the definitions associated with these issues. (Kurtz, 2003) makes the following definitions:

1. Privacy is the right of an individual to control disclosure of his or her medical information.
2. Confidentiality is the understanding that medical information will only be disclosed to authorized users at specific times of need. It entails

holding sensitive data in a secure environment limited to an appropriate set of authorized individuals or organizations.

3. Information security includes the processes and mechanisms used to control the disclosure of information. It is the protection of computer-based information from unauthorized destruction, modification, or disclosure.

Political Environment

It is evident that the implementation of an EHR is important in addressing healthcare delivery issues. This is illustrated by the 2004 presidential campaigns. Both George Bush and John Kerry provided their EHR plans, with Bush proposing a ten year implementation plan and Kerry suggesting a secure EHR by 2008 (Scott, September, 2004). The federal government is continuing to work on establishing the groundwork for such implementation. However, this groundwork has been in the works since as early as 1991 with the work done to try to establish a National Health Information Infrastructure, or NHII (Shams, 2004). Even more widespread than the NHII, is a more global approach to the healthcare initiative, with the Integrating the Healthcare Enterprise (IHE). This initiative strives to use existing data standards in healthcare information technology in a format that is internationally accepted (Kohn, 2004). The potential impact of this venture is huge. Most recently, federal funds have been cut to the Office of the National Coordinator for Health Information Technology (ONCHIT). Until baseline legislation can be passed and fundamental monetary support garnered to help the implementation be done faster, all the plans are worth very little. A ray of hope is found in the Medicare improvement law that was passed in 2003. It called for electronic prescriptions by 2007

and also formed the Commission on Systemic Interoperability that is to report to Congress by October 31, 2005 in regard to developing "a comprehensive strategy for the adoption and implementation of health care information technology standards, that includes a timeline and prioritization for such adoption and implementation" (Scott, September, 2004).

Perhaps a particularly tough part of the EHR initiative is that there are several strong major players. One expert interviewed identifies these as hospitals, physicians, health information professionals, as well as health plans, government agencies, consumers and vendors (Asmonga, 2004, October 28, 2004). The United States has a unique hybrid type of healthcare system in that it has both government involvement as well as a free enterprise aspect. Many questions remain as to how the EHR will eventually be implemented. Maybe a strong, innovative product will emerge, with so many vendors fighting for the competitive edge over the others.

Personal Health Records

Personal health records (PHRs) are another part of the EHR implementation picture. Many healthcare consumers keep their own health records in one form or another. Perhaps they do not trust the disjointed communication between healthcare providers or understand that while this communication link may be there, it may be slow. Allowing easy avenues for healthcare consumers to manage a portion of their own health records can have a dramatic effect on the way we view our own care. One author feels a well-designed PHR has "the potential for improving quality, safety, cost, and convenience of healthcare" (Fox, 2004). Another explains the PHR as closing the gap in health information that can lead to medical errors (Wolter & Donnelly, 2004). It is hoped

that the PHR part of the picture will really come into it's own with the implementation of EHR on a national format. As consumers become more comfortable with an electronic format, they may become better stewards of their own care.

Financial Issues

Cost issues can be complicated in regard to the EHR implementation process. They encompass several phases of achievement of a true EHR. The different categories of cost include: "software, hardware, infrastructure development and maintenance, implementation, education, planning and administration" (Erstad, 2003). Each of these cost categories covers even more layers of costs, such as workforce expenses in implementing each phase of the project. There are additional cost factors that must be considered for the future of the project such as the amount of capital as well as manpower that will need to be expended on updates for the system and software.

Healthcare facilities are facing a huge dilemma. Many are in imminent need of large capital projects, such as upgrades in technology or facilities. However, revenue continues to be tighter and tighter. It is felt that the problem is not related to the lack of occupancy. Healthcare facilities are as busy now as ever, if not more. Usage of healthcare systems is only expected to increase as the population of the United States continues to age and the baby boomer generation becomes the elderly of tomorrow. Healthcare systems are experiencing increased costs related to malpractice/liability insurance, staffing, as well as pressure from low government program reimbursement. An underlying theme is the realization that patient safety is paramount. Projects should be carefully prioritized, looking at the safety issues as well as long term payoff (Clarke & Wolfert, 2003, October).

Funding is particularly difficult for small healthcare facilities. Larger facilities have more room to absorb costs and minimize the impact on their revenue cycle. With a bigger day-to-day cash flow, it is easier for larger facilities to afford the upfront costs associated with the implementation of the EHR. Small facilities are faced with the problem of trying to improve patient safety and services by implementing technological systems to advance health information, yet are unable to pay the upfront costs of the EHR system.

The Health Technology Center has offered a possible solution for those hospitals that do not have the financial ability to purchase an EHR for their facility. This revolving loan fund is detailed in the "HIT Revolving Loan Fund Position Statement" published by the Health Information and Management Systems Society ("Health information and management systems society", 2003, August). It is an idea referred to as the "HealthCare Information Technology (HIT) Revolving Loan Fund". This fund would offer qualifying hospitals loans backed by the federal government to purchase EHR systems. It would be a self-sufficient system, with the interest from the loans being returned to the fund for more hospitals to take advantage of. It appears to be one of very few ideas put forth that would make the EHR a viable alternative to paper records for small healthcare facilities. There may be some grants available, probably through private means, which could serve to help small facilities implement the EHR.

Conclusion

It is evident that the health care delivery system of today is not efficient and, in some cases, does more harm than good to patients. Therefore, it is imperative that major changes be carefully planned and implemented. A big step has been taken with the

promise of the federal government to ensure electronic health records are part of our every day lives within the next ten years. This should result in better access to vital information as well as a decrease in treatment errors and a more efficient system of billing and reimbursement. While the framework has been set, the next vital step is at hand. Careful consideration must be given to the legislation that has been proposed. Leadership is needed by those knowledgeable in health care technology systems to make sure that the proper groundwork is laid for a successful infrastructure. It must not be piecemeal but rather cautiously thought out and executed to be successful. The future of the U.S. healthcare delivery system depends on the success of EHR implementation.

References

Standard guide for content and structure of the electronic health record (ehr). (2003). (Vol. E1384-02a, pp. 14.01): American Society for Testing and Materials.

Health information and management systems society. (2003, August). *HIT revolving loan fund position statement* (pp. Retrieved April 11, 2004 from http://www.himss.org/content/files/HITRevolvingFundInfoSheet_2825.pdf).

Achieving electronic connectivity in healthcare: A preliminary roadmap from the nation's public and private sector healthcare leaders. (2004).): Markle Foundation.

Health care modernization, cost reduction, and quality improvement act, 108th Congress, 2nd Senate Sess.(2004).

My advocacy action center. (2004). *Congressional Legislation* Retrieved October 21, 2004, from http://capwiz.com/ahima/issues/bills/?bill=5886366.

National health information technology adoption act, 108th Congress, 2nd Senate Sess.(2004).

Adams, W. G., Mann, A. M., & Bauchner, H. (2003). Use of an electronic medical record improves the quality of urban pediatric primary care. *Pediatrics, 111*(3), 626-633.

Amatayakul, M., Brandt, M., Callahan-Dennis, J., Didear-Folck, K., Frawley, K., Grant, K. G., et al. (2001). Definition of the health record for legal purposes. *Journal of American Health Information Management Association, 72*(9), 88A-H.

Asmonga, D. (October 28, 2004). Director of government relations, american health information management association, personal interview concerning political aspects of ehr implementation.Washington, D.C.

Bush, G. W. (2004). President unveils tech initiatives for energy, health care, internet, *American Association of Community Colleges Annual Convention.* Minneapolis, MN.

Clarke, R. I., & Wolfert, R. (2003, October). Capital allocation: Three cases of financing the future. *Healthcare Financial Management*, 58-62.

Erstad, T. I. (2003). Analyzing computer based patient records: A review of literature. *Journal of Healthcare Information Management, 17*(4), 51-57.

Fox, L. A. (2004). *Health record paradigm shift: Consumer health informatics.* Paper presented at the American Health Information Management Association National Convention, Washington, D.C.

Gorgen, M. S., & DuMoulin, J. P. (2004). *Enhancing the quality of patient care through interoperable exchange of electronic healthcare information*: American College of Physicians.

Janas, J. J. I. (2003). Using the emr as a decision support to improve quality. *Journal of Clinical Outcomes Management, 10*(7), 383-387.

Jackson, K. (2004). Implementing cpoe: Two success stories. *For The Record, 16*(14), 12-15.

Kohn, D. (2004). *Integrating the healthcare enterprise (ihe): An international approach to the development of implementation guides for electronic health record systems.* Paper presented at the American Health Information Management Association National Convention, Washington, D. C.

Kurtz, G. (2003). Emr confidentiality and information security. *Journal of Healthcare Information Management, 17*(3), 41-48.

McLendon, K. (November 22, 2004). President, information evolution management, personal interview concerning vendor aspects of ehr implementation.

Newell, L. M., & Christensen, D. (2003). Who's counting now? Roi for patient safety it initiatives. *Journal of Healthcare Information Management, 17*(4), 29-35.

Rode, D. (September, 2004). National hit plan sets cornerstones for e-him. *Journal of American Health Information Management Association, 75*(8), 18, 20.

Scott, J. S. (September, 2004). Why stop at hipaa? Getting back on the healthcare information highway. *Healthcare Financial Management, 58*(9), 34-35.

Shams, K. (2004). *Integrating your clinical systems for a physician-focused ehr/cpr.* Paper presented at the American Health Information Management Association National Convention, Washington, D. C.

Tang, P. C. (2003, July 31). Key capabilities of an electronic health record system. Letter report by committee on data standards for patient safety to institute of medicine. National academy of sciences. Retrieved March 30, 2004, from http://books.nap.edu/books/NI000427/html/1.html.

Thompson, T. G., & David J. Brailer, M., PhD. (2004). *The decade of health information technology: Delivering consumer-centric and information-rich health care, framework for strategic action.*

Wolter, J., & Donnelly, J. (2004). *Phr (personal health record) in the city - a new him role.* Paper presented at the American Health Information Management Association National Convention, Washington, D.C.