

Electronic Health Records: A Journey to Next Generation Healthcare

Executive Summary

The federal government has undertaken far-reaching measures to deploy Electronic Health Records (EHR) by 2015 in an effort to improve quality of care and health outcomes. EHR, as defined in the recently published "Meaningful Use" criteria, has broad scope and reach, touching every stakeholder in the healthcare ecosystem.

Many industry publications and vendors use the terms Electronic Health Record (EHR) and Electronic Medical Records (EMR) interchangeably. EHR, as defined in meaningful use, goes far beyond EMR and organizational boundaries. While the focus of this white paper is on EHR, it is essential to understand the difference between them. (Refer to 'EMR vs. EHR' overview)

Historically, adoption of EHR/EMR has been significantly lower in U.S. compared to other developed nations. To boost adoption and leverage its benefits, the federal government has budgeted \$19.2 billion for Health Information Technology (HIT) as part of the American Recovery Reinvestment Act (ARRA). The goal is to move the healthcare industry beyond current adoption barriers and accelerate the use of HIT among various stakeholders in the ecosystem to improve outcomes, increase quality of care, and reduce inefficiencies and duplication through better availability of information and decision tools at the point of care.

The U.S. Department of Veteran Affairs is a strong example of what an EHR system can do for quality of care. Though some studies have shown that the national medication errors can

EMR vs. EHR

According to the Healthcare Information and Management Systems Society (HIMSS), an EMR is a component of an electronic health record that is owned by the healthcare provider. The EMR is a set of applications and workflow tools that digitizes the creation, collection, storage and management of patient information within the confines of a single organization. An EMR system may touch clinical data repositories, lab applications and patient information management systems, among others -- but all within the reach of a single organization.

EHRs, on the other hand, comprise as far as possible, a complete and unified view of all the patient's clinical assessments and care records drawn from across a wide region corresponding to all the providers who are seeing the patient -- the totality of his/her personal data, state of health and delivered care. HIMSS defines EHR as a longitudinal electronic record of patient health information produced by encounters in one or more care settings.¹



The HIMSS EMR Adoption Model

According to HIMSS, there are seven levels of adoption of electronic records ranging from Stage 0, where there is little or no adoption, to Stage 7, where there is full adoption. As depicted below, adoption beyond Stage 3 is very low.

EMR Adoption Model SM			
Stage	Cumulative Capabilities	2008 Final	2009 Final
Stage 7	Medical record fully electronic; HCO able to contribute CCD as byproduct of EMR; Data warehousing in use	0.3%	0.7%
Stage 6	Physician documentation (structured templates), full CDSS (variance & compliance), full R-PACS	0.5%	1.6%
Stage 5	Closed loop medication administration	2.5%	3.8%
Stage 4	CPOE, CDSS (clinical protocols)	2.5%	7.4%
Stage 3	Clinical documentation (flow sheets), CDSS (error checking), PACS available outside Radiology	35.7%	50.9%
Stage 2	Clinical Data Repository, Controlled Medical Vocabulary, Clinical Dec, may have Document Imaging	31.4%	16.9%
Stage 1	Ancillaries – Lab, Rad, Pharmacy - all installed	11.5%	7.2%
Stage 0	All three ancillaries not installed	15.6%	11.5%

Source: HIMSS Analytics™ Database ©2010

N=5166

N=5235

be as high as 3% to 8%, by comparison, the EHR system at Veteran Affairs has enabled a decrease of error rate to as low as 0.003%². This is just one facet of the potential of EHR and the transformation it can bring to healthcare, an industry that has lagged behind finance, banking and other sectors in leveraging IT.

Despite the high priority placed by the government on EHR, momentum has yet to be established. The big unresolved question is: Are we ready to begin the transition into an “EHR Nation” within the mandated timeframe?

This paper presents an overview of the current state and barriers to adoption; the anticipated evolution of EHR; the journey towards Meaningful Use compliance; and a perspective on how organizations should prepare for this significant transition.

EHR Adoption

If we take a snapshot of EHR adoption in the U.S., the picture isn't encouraging. According to the Healthcare Information and Management

Systems Society (HIMSS) EMR adoption model, 1.6% of hospitals were measured at Stage-6 by the end of 2009; only 0.7% of the hospitals in the U.S. were considered fully functioning at Stage-7, meaning they no longer use paper charts to deliver and manage patient care.

On a positive note, a larger cluster of hospitals (51%) were at Stage-3. However, organizations at Stage-3 cannot realize considerable quality or cost benefits because significant transactions still take place on paper at this stage. Progression beyond Stage-3 requires a large up-front investment, a commitment to which very few organizations have been able to meet.

Additionally, hospitals are not able to exchange data with other hospitals due to a lack of standards/interoperability across institutions, limiting the opportunity for coordination of care. These challenges, coupled with a lack of regulatory impetus, have impeded industry-wide adoption of EHR.

Realizing these challenges and barriers, the HIT Policy committee has recently developed a

broader definition for Meaningful Use that mandates hospitals move to Stage-6 and 7 by 2015. When this is achieved, the expectation is that the industry will start reaping significant rewards and ROI collectively. Despite previous challenges, there are reasons for measured optimism and broader adoption this time around:

1. EHR will become a competitive advantage for organizations, leaving slow adopters behind.
2. Stimulus Incentives will help defray a sizeable portion of the technology investments required for EHR implementations.
3. Broader definition and scope of EHR, including the requirements for health information exchange, is expected to improve quality and outcomes, and facilitate a wider exchange of health information among organizations. This in turn will result in improved ROI and increased adoption.
4. In summary, the overall purpose of Meaningful Use definition is to make EHR all-inclusive so that benefits reach all stakeholders in the ecosystem, including patients, providers, payers, and society as a whole.

ARRA and Evolution of EHR

American Recovery and Reinvestment Act and the HITECH Act

On February 17, 2009, the American Recovery and Reinvestment Act (ARRA) was signed into law. Multiple healthcare technology improvements, including EHR, were spotlighted in the bill with a budget allocation of \$19.2 billion. The proposed rule on EHR (CFR 42 Parts 412-495 dated Jan. 13, 2010) clearly articulates various criteria for Meaningful Use and associated goals, objectives and measures. These criteria provide a powerful instrument with the potential for tremendous impact on quality and care outcomes.

The following table shows how EHR will address some of the key challenges/barriers to adoption:

Incentives

In an effort to encourage early adoption of EHR, The Centers for Medicare and Medicaid Services (CMS) has proposed a model that offers better incentives for early adopters -- eligible professionals and hospitals. A qualifying eligible professional can receive EHR incentive

Current Barrier/Challenge	ARRA/Meaningful Use
1. Interoperability	Government mandated goals and measures around Health Information Exchange (HIE) are expected to provide a boost to the exchange of key clinical information among care providers. This in turn will spur care coordination among providers, resulting in reduced costs and better ROI. However, establishing an interoperability framework is an essential precursor for successful information exchange.
2. Upfront Financial Commitment	The ARRA has budgeted \$19.2 billion in an incentive package to providers for EHR adoption. This financial incentive will ease the burden for physicians and hospitals.
3. Security and Privacy Concerns	Stringent privacy and security measures are mandated with updates to HIPAA Privacy and Security requirements and fair data sharing practices set forth in the nationwide privacy and security framework.
4. Insufficient Financial Return	Delivery systems that approach Stage-7 of the HIMSS model and deploy HIE infrastructures will see a tremendous jump in ROI in these programs, as well as quality improvements.

payments for up to five years, with payments beginning as early as 2011. In general, the maximum amount of total incentive payments that an eligible professional can receive under the Medicare program is \$44,000. This amount tapers down to \$39,000 and \$24,000, if the professional is not able to demonstrate

meaningful use either in 2011 or 2012. Maximum incentive under Medicaid program is \$63,750.

The incentive formula for hospitals is different. Eligible hospitals may receive incentive payments for up to four years for fiscal year beginning October 2010.

Getting Ready for Meaningful Use of EHR

Meaningful Use, as specified in the interim final rule, provides a broad framework from which an organization can develop a roadmap for EHR compliance. Implementation of EHR calls for significant organizational changes related to clinical workflow, in addition to information technology implementation and updates. Public comments on the 2009 Meaningful Use matrix reflected a variety of concerns including the need for a change in culture before requiring Computerized Physician Order Entry (CPOE), the risk of providers implementing incomplete order entry systems, and the aggressive timeline for meeting various requirements of EHR.

Given such challenges, it is essential that organizations start planning and preparing for EHR implementations now.

An assessment of where the organization is and what it will take to comply with goals and measures set in Meaningful Use, is a first logical step. Some of the key areas of focus as part of the assessment for meaningful use are shown in the diagram below.

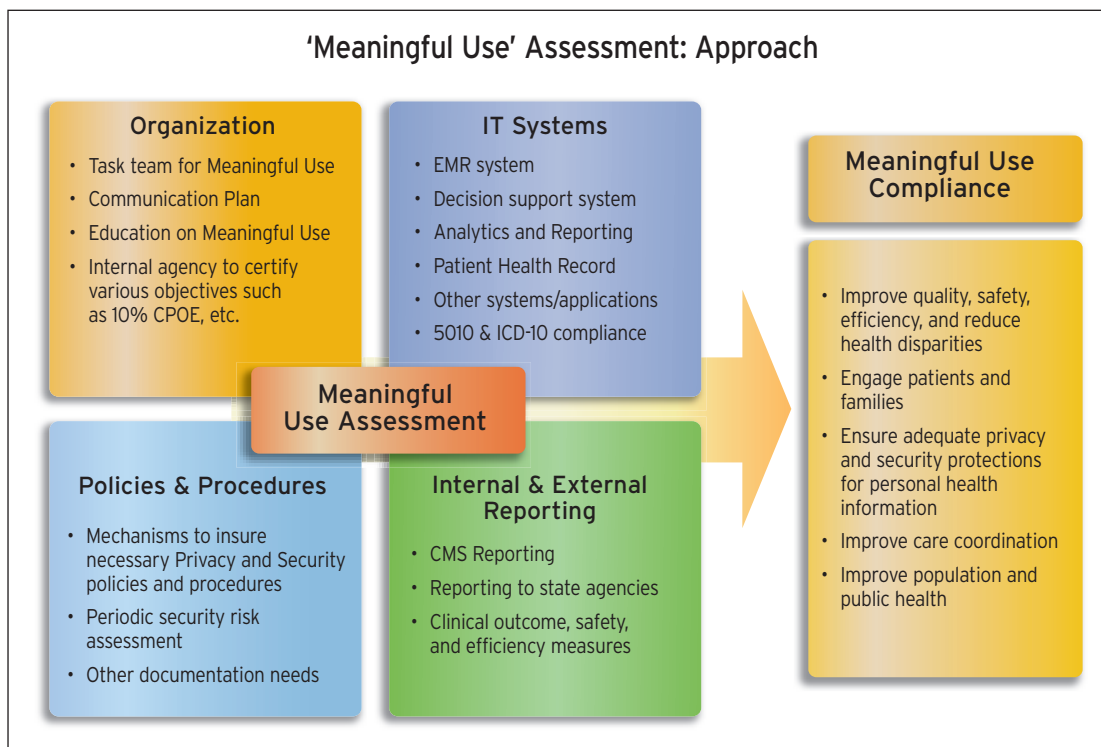
Based on the outcome of the assessment, an EHR implementation roadmap and organizational

change management plan can be developed. While the technology implementation plan will be specific to the solution being implemented, broader aspects, including the ability to exchange clinical data with other organizations, have dependencies beyond the organization and will need to be developed in collaboration with other organizations.

Cognizant's Point of View

EHR is a move in the right direction towards improving quality of care, health outcomes and containment of rising costs. Incentives provided by the federal government for implementation of EHR will certainly accelerate adoption. Traditionally, implementation costs of EHR systems have been high and unaffordable for small and medium-sized hospitals, which represent the majority of hospitals in the U.S. However, with the recent change in incentive structures, costs alone should not be viewed as a deterrent for healthcare entities, particularly small hospitals, physician groups and solo practitioners.

In our view, the healthcare industry is poised for a tectonic shift where an EHR system will no longer be a nice-to-have option. Care delivery through the use of EHR systems will become the default method of practicing medicine.



Hospitals that adopt EHR systems will be perceived as more reliable and efficient. Those without EHR systems will be viewed at a competitive disadvantage by their local communities and payer partners.

Other industries have experienced similar cycles. The banking and financial services sector, for example, transitioned to electronic service delivery in the 80s and 90s. Today it is unimaginable to even think of paper-based, manual banking processes.

We recognize that each provider will have its own unique challenges in adopting new clinical and workflow processes while making the transition to an electronic care delivery system. However, there are a few guiding principles that will be critical to the overall success of EHR system implementation and adoption:

1. EHR impacts every aspect of clinical, IT and care administration. A successful transition to EHR encompasses people, process (workflow) and technology issues.
 - a. **People:** Resistance to change, transitional productivity loss, and disruption to services are some of the people/cultural barriers that will need to be addressed early in the initiative. Identifying champions among physicians, IT and administrative teams will go a long way in addressing these challenges.
 - b. **Process:** There will be significant modifications or changes to clinical and administrative workflow during the course of EHR system implementation. A thorough

understanding and documentation of the as-is workflow and new workflow is critical in foreseeing possible implementation challenges and associated work-around requirements.

- c. **Technology:** Selection of the right EHR product and an understanding of the product vendor's roadmap for Meaningful Use compliance through 2015 are critical for smooth transition. Management teams need to approach EHR software selection and implementation holistically to kick-start their journey. Focus should be on core functionalities needed for Meaningful Use, rather than focus on software features.

2. A quality EHR system implementation often flows from a detailed assessment of the organization's current state, including clinical processes, technology landscape; workflow; IT and clinical resource availability during implementation; cultural challenges; communication and training needs; possible disruption during pre- and post- implementation; and business continuity. All are critical for a smooth transition, as well as identification of blind spots and potential bottlenecks.
3. Implementing an EHR system is one piece of the puzzle. Additional areas that need to be addressed include various reporting needs on outcome and quality measures, clinical dashboards and comprehensive access requirements to patient health records. Clear demarcation of what the EHR core system will address, as well as what needs to be

EHR Implementation Enablers

1. Form a multi-disciplinary EHR team consisting of representatives across all functional areas.
2. Create awareness around the benefits of EHR, overcoming challenges for successful implementation, and process and cultural changes required during implementation.
3. Conduct a review of various EHR options available in the market with an open mind. Focus on the core care delivery capability of solutions without falling into the feature-function trap.
4. Draw up a high-level implementation playbook. Include objectives and scope of EHR, product selection, IT and workflow changes, policy and procedure changes, implementation testing and training.
5. Communicate, communicate and communicate throughout implementation.

addressed outside of the core, will play a key role in avoiding surprises at a later stage.

Publication of the long awaited Interim Final Rule has set the clock ticking. In our view,

organizations need to make Meaningful Use assessment a priority, finalize a suitable approach, and implement EHR early to derive competitive advantage in the market place.

References

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- ² Clinical Pharmacology and Therapeutics, Volume-81 Number 6, June 2007

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