The State of EHR Adoption:
On the Road to Improving Patient Safety
Whether the designation is electronic medical records (EMR) or electronic health records (EHR), there is widespread consensus that the costs and difficulties associated with system adoption are surpassed by the benefits to be gained by all stakeholders. In addition to providing more efficient and cost-effective care delivery workflows, EHRs offer opportunities to standardize care delivery processes, reduce medical errors, and speed reimbursements.

Despite being identified as an essential tool to support quality care initiatives, improve patient safety and reduce healthcare costs, electronic medical and health record (EMR/EHR) systems have been stuck in a slow growth cycle. Financial costs, changes to traditional workflow, and anticipated productivity losses have restricted investments and adoption by many care providers. However, now the pressure on caregivers to make those changes needed is continuing to mount.

Most efforts to increase EHR adoption have come through federal guidelines, regulations, and financial incentives. And so they continue. EHRs are an important and high profile component in Congress and in the Obama administration’s national policy agenda.

Signed into law in February 2009, the American Recovery and Reinvestment Act of 2009 and its provisions known as the Health Information Technology for Economic and Clinical Health Act (HITECH) provide funding for acquisition of HIT systems and adoption incentives for healthcare provider organizations. In addition, money has been earmarked for the development of a nationwide health information technology infrastructure to support the use and exchange of electronic health information. The organizational EHR is an essential element in this proposal, and its adoption by care providers is critical to transforming and modernizing the business of healthcare. In short, the government remains committed to the goal of the utilization of an EHR for each person in the United States by 2014, and has added to its call to action both guidelines and funding for adoption of the technology.

Further, the ARRA defines certified EHR technology as a “qualified EHR” that meets certain standards that define the type and functional capabilities of the system. Core functions include patient demographic and clinical health information, such as: medical history and problem lists; clinical decision support; electronic order entry, including computer-based provider order entry and e-prescribing; health information exchange; and data collection and query to support healthcare quality initiatives.

Included in the billions tagged for healthcare providers are incentives, which are aimed at luring recalcitrant physicians and hospitals into the digital age by using a classic carrot-and-stick strategy. For physicians who demonstrate “meaningful use” of electronic health record (EHR) technology and performance during the payment year's reporting period, Medicare and Medicaid reimbursements will increase. Those who do not adopt the technology are threatened with penalties in the form of reduced payments, which are scheduled to begin in 2015.
FACTORs DRIVING EHR IMPLEMENTATION

Improved safety, quality, and efficiency are the main business drivers for EHRs at organizations that have implemented or plan to implement an EHR. Although differences between inpatient- and outpatient-based care providers are minimal, hospitals are more likely to identify the goal of improving safety and quality, whereas non-hospital-based organizations are somewhat more likely to say the goal to improve efficiency and operations is the bigger driver.

When respondents were asked to identify additional key factors that are important drivers for EHR implementation, nearly all (99%) counted business cases—including competitive strategy, essential to adding efficiency, streamline operations, and improve safety and quality—as the primary drivers for EHR adoption overall. At larger hospitals, competitive strategy is particularly important whereas at hospitals that are not part of large networks and non-hospital-based businesses, incentive programs are the most important.

LEADING EHR ADOPTION

While CIOs and their IT departments, along with physicians and nurses, are reported to be closely involved in EHR adoption and implementation projects, executives are usually the ones who spearhead the initiatives—a leadership role seen across all types of care provider organizations. Most hospital IT departments (81%) are deeply involved and provide key support for adoption and implementation of EHRs—as they should be.

However, smaller hospitals are also more likely than average to have physicians in charge of these projects. And, as would be expected, physicians are also more likely to be the leads at non-hospital-based businesses where they often function as de facto CEOs.
Not surprisingly, these same leaders are called on to help mitigate staff resistance to EHR implementations. Organizations that have implemented EHRs used a variety of strategies to overcome resistance, but training and clinical champions are the top two. These strategies were used by almost all hospitals that have implemented an EHR (93%) and planned by 88% of those with plans to do so. Clinical champions are often physicians, but many also report other clinical and non-clinical personnel including the CEO, clinical informaticists, IT directors, health information managers, and ancillary staff champions.

Supplementing training and champions are organizational adoption and use policies and other strategies targeted to get buy-in from physicians. Other strategies include: “at-the-elbow” support; kick-off parties; “Adopt-A-Doc” Program where IT staff “adopted” physicians for training/remote access; and one program that had clinical applications coordinators sitting in the outpatient department readily available to assist nurses, physicians, ancillary staff for many weeks on the system, templates, and other uses of the EHR.

THE CURRENT STATE OF EHR IMPLEMENTATION

The first deadline, set in 2004, provided a 10-year window in which to establish a national EHR system. Although there has been some progress toward that goal, most advances have been psychological. Most care provider organizations are now committed to the transition to electronic health records, and expect the benefits of automation to support long-standing patient safety and quality goals.

Overall, the majority of survey participants report that their organization has either implemented some type of an EHR or has plans to do so. Hospitals continue to be the most aggressive in moving to EHRs. Larger hospitals, as well as those that are part of a network and those located in urban areas, are the most likely to have implemented an EHR. And nearly all of those represented here are engaged in some phase of implementation.

Among those organizations that have implemented an EHR or component, the factors that drove the project closely align with the benefits they have realized. Healthcare Informatics Research Panelists with EHRs report that the EHR has en-
enabled them to meet their goals of improved safety, quality, and efficiency—results consistently cited across all care provider types, sizes, and community settings.

Most organizations remain short of fulfilling even basic levels of EHR functionality. When compared against a basic set of six functions—which include clinical notes and documentation; computer-based orders for prescriptions and laboratory tests; electronic transmission of prescriptions; and the ability to view diagnostic laboratory and imaging results—only 21% of hospitals and 20% of non-hospital based businesses meet the criteria.

Far fewer satisfy requirements for a fully functional EHR based on 17 functions of clinical decision support, health information and data, order entry and management, and results management. Only 9% of hospitals and 5% of non-hospitals currently operate with such a robust EHR.

Among the organizations that report no plans to implement an EHR, cost is the single most common reason. The few respondents who work at organizations where EHRs are not on the agenda speculate that their organization might consider EHR adoption with access to more affordable products and/or access to money to implement.

The effect of the Department of Health and Human Services’ rules granting exceptions to existing Stark Physician Self-Referral Exceptions and Anti-Kickback Safe Harbor rules that allowed donations and acceptance of interoperable EHR technology has not been a major force in extending EHR adoption and interoperability. Larger hospitals continue to be the most likely donors.

**IMPROVEMENTS CREDITED TO EHRs**

 Asked to identify the single most important improvement that can be attributed to adoption of EHRs, it is clear that the EHR is achieving its desired benefits. Respondents are about equally divided between organizational and patient-related benefits—both of which are tied to improved safety and quality. There are few differences across different types and sizes of organizations.

One in three providers says the adoption of EHRs is part of their organization’s strategy to improve safety and quality. And nearly one in five says that safety and quality, which is supported by quicker access to information, are the number one patient benefit. Other organizational benefits focus on adding efficiencies and improving operations.
Very few of those surveyed (3%) did not perceive any benefits—and these were confined to non-hospital-based care providers.

Many respondents credit the EHR with improved safety and quality through access to a patient’s consolidated medical record and legible documentation and orders. Other important attributes identified include evidence-based clinical decision support (7%) and structured data collection (2%). Some of those surveyed itemized specific examples of improvements that included increased pediatric immunization rates, reductions in adverse drug events, and clinical reminders to improve vaccination rates, screening rates, and other safety measures.

Although fewer than one in ten identified benefits to operational efficiency as the single most important benefit, two in three of those say revenue cycle improvements have been beneficial to the organization. Nearly all of the improvements are associated with primary attributes typically associated with EHR use, that is, more complete documentation that supports higher coding levels (39%); improved charge capture/faster billing (35%); reduced costs related to transcription (36%); storage space for paper-based charts (32%); and reduced costs for paper (31%). Text-based responses detail two other important attributes:

- “Increased efficiency by [the] decrease in time from order to care delivery.”
- “Too many to list: improved efficiency, improved data for research, improved patient throughput.”

Few report benefits associated with supplementary revenue associated with increased reimbursements for demonstrating higher quality of care through pay-for-performance premiums (12%) or cost savings through reduced malpractice insurance rates (8%).

Although few respondents (8%) rate staff benefits associated with EHR adoption as most important, three out of four recognize their importance as part of the bigger picture. Primarily, efficiency and workflow improvements are noted, with about one in three citing the role of digital signatures in speeding the chart authentication process. Slightly fewer noted ease of use and quality of life improvements. Most of the “other” staff-related benefits focused on access—better, quicker, ubiquitous data entry, and access to documentation and information for all members of the care team, from remote locations and for simultaneous access by multiple users in multiple locations. One respondent reports, “improved pride in work and in organization.” And another says the organization was able to eliminate one and one-half full-time employees with the system.

**EHRS IN THE CLOUD**

As care providers move to EHRs, Web-based systems offer attractive alternatives, particularly for physician practices in small offices. But for many physicians in small offices, the cost advantages are not enough to overcome concerns regarding the security of their patients’ personal health data when stored off-site. Indeed, this group shows a higher percentage of records stored onsite when compared to hospitals.

When considering the text-based responses for those who indicated that storage was something
other than onsite or Web-based, many clarified the various types of models possible. Among those in use by this group of organizations are: ASP with local thin-client; central data center serving multiple hospitals; a combination of onsite and vendor-hosted storage; corporate data centers; local data exported daily to a larger [storage] site; and a remote storage site owned by the organization. Many combine local and off-site storage.

**CONCLUSION**

Given the goals of ARRA-HITECH, EHR implementations in healthcare organizations across the country are all but certain. When asked to share advice with others planning an EHR implementation, one-third of healthcare organizations who had already implemented any EHR component said that “Obtaining buy-in” was the single most important piece of advice they had to offer. They also cautioned others to ensure adequate funding, integrate the EHR with the current systems, emphasized the importance of testing and communication, and to choose a system wisely.

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**METHODOLOGY**

A total of 491 online interviews were conducted with members of the Healthcare Informatics Research Panel. Within this group, 317 members represented hospital-based care providers and 141 represented non-hospital-based providers including physician offices and ambulatory care centers with the remaining 33 representing health plans. Responses were collected from January 13, 2009 to January 28, 2009. The data was then tabulated, analyzed, and objectively reported by Healthcare Informatics Research.