



EMR and Beyond: From Data to Insight

WHITE PAPER

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April 2010	

IDC HEALTH INSIGHTS OPINION

Health information technology (HIT) is now widely seen as an essential element of a nationwide effort to improve quality and efficiency and mitigate the rate of increase in healthcare delivery costs. While automating the patient record keeping of individual providers is also widely recognized as a necessary first step, it is not sufficient to achieve these goals. The real value of this investment lies in the ability to more effectively share this information across the continuum of care to provide timelier and more effective clinical decision making and avoid duplication of services.

In 2010, the entire healthcare marketplace is focused on the impact of widespread electronic medical record (EMR) deployments. With federal stimulus money available to offset the cost of deployment, most healthcare providers and physicians will implement an EMR system over the next five years.

SITUATION OVERVIEW

2010: The Year of the EMR

The healthcare industry awaits the expected finalization of the meaningful use requirements. These requirements will drive the eventual eligibility of U.S. providers for over \$20 billion in federal funding for EMR/electronic health record (EHR) and health information exchange (HIE) technology, which is expected to begin to become available in 2010, under the American Recovery and Reinvestment Act (ARRA).

2010 will clearly be looked back on as the year of the EMR. Every participant in the healthcare market will need to address necessary changes in practice and process as EMR implementations take off. This is being driven by a number of significant market forces. First and foremost is the availability of ARRA funding for qualified

providers. The American Recovery and Reinvestment Act, signed in February 2009, is expected to provide over \$20 billion in funding for EMR/EHR and HIE technology investment by providers. This unprecedented level of funding gives providers an opportunity to acquire this important technology, which promises to improve patient safety and the quality of care while driving efficiencies in providers' practices.

ARRA funding will also help provide cost relief for investment in EMR/EHR technology by small practices as they look to adopt EMR. While most providers have long agreed that EMR/EHR technology will improve patient safety and the quality of care, the high acquisition cost and the questionable return on investment have prevented investment, particularly by the small practices (one to three providers) that make up the majority of practices in the United States. Large practices that are able to achieve economies of scale with EMR/EHR applications have long seen the economic value of investment in EMR/EHR.

ePrescribing incentives are also driving EMR adoption. Prior to ARRA, the advent of Medicare incentives for the use of eprescribing, at the start of 2009, presented a considerable incentive for the adoption of this technology, which can be enabled by EMR/EHR. ePrescribing is also a component of the meaningful use requirements for stimulus payments under ARRA, with looming penalties for nonadoption. ARRA funding, the short timetable for investing in and receiving the benefit, and the penalties that will ensue if providers do not use EMR/EHR by 2016 will drive rapid adoption in the 2010–2013 period, particularly in the lagging small practice segment.

FUTURE OUTLOOK

Healthcare Providers Under Transformation

In 2010, 25% of all Americans (77 million people) will have an electronic medical record, up from the current (prestimulus) EMR penetration of about 14%. Fueled by more than \$20 billion in federal stimulus money, EMR deployments will grow to cover 60% of the U.S. population by 2016. In 2010, this transformation will drive a broadly based investment in infrastructure services, hardware, and software as healthcare providers look to maximize the benefits from healthcare IT. This investment will comprise not only the EMR, electronic prescribing, computerized physician order entry (CPOE), and HIE technologies that are directly indicated by the meaningful use requirements but also the software, hardware, and services that are required to support these applications. This should fill the gap between the functionality delivered by the applications and the adoption levels and results required to achieve and demonstrate meaningful use.

The Last Mile: EMR and HIE

These changes will finally begin to drive EMR and HIE technology to the last mile. In the small ambulatory practice market, infrastructure requirements, lack of IT resources, wide distribution of small practices, and economic requirements will create difficulties for accessing and implementing technology. Given the demand and complexity of the small practice market, national EMR vendors will struggle to deliver the service and support at the local level that small practices need and want. National EMR vendors will leverage existing and new relationships with distributors to small and medium-sized businesses to better serve small practices and deliver EMR/EHR technology to the last mile. These distributors will include national VARs, networks of channel partners, and retail channels that will be mobilized to sell, implement, and support EMRs/EHRs in small practices.

HIEs will also be established to share and consolidate EMR data at a regional level. The HIE is expressly called out in the definition of a meaningful EHR user in the HITECH Act: "...electronic exchange of health information to improve the quality of health care, such as promoting care coordination..." Furthermore, other requirements for demonstrating meaningful use, such as clinical decision support, population health management, patient engagement, eprescribing, and reporting on quality measures, will require active health information exchange.

The number of HIE initiatives that are evolving into sustainable organizations is growing. According to the eHealth Initiative annual survey, 57 HIE initiatives reported being operational in 2009, up from 42 in 2008, a nearly 40% increase. IDC Health Insights anticipates that this trend will continue and that the greatest growth among enterprise HIEs will occur in the next 12–18 months as they invest in HIE technologies to qualify for ARRA incentives and demonstrate meaningful use of EHRs.

Community HIEs — that is, regional health information organizations (RHIOs) and statewide HIEs — will also gain traction as healthcare organizations become better positioned to exchange health information by investing in EMRs and HIE technologies and through federal and state grants. In August 2009, Vice President Joseph Biden and Secretary of Health and Human Services (HHS) Kathleen Sebelius announced \$1.2 billion in grants for healthcare IT funded by ARRA. The grants include \$564 million in cooperative agreements that will be awarded through the State Health Information Exchange Grant programs to states and state-designated entities that support the effort to achieve widespread and sustainable health information exchange within and among states. These programs will also assist in the establishment and implementation of appropriate governance, policies, and network services within the broader national framework.

HIE will continue to be a major focus of health reform and healthcare IT initiatives in 2010. Dr. David Blumenthal, national coordinator for health information technology, states in his November 12, 2009, email message (The HITECH Foundation for Information Exchange): "A key premise [is that] information should follow the patient, and artificial obstacles — technical, business related, bureaucratic — should not get in the way." He goes on to say that "exchange within business groups will not be sufficient" and that information must flow across the enterprise and among competing entities. If the administration's objective of electronic health records for all Americans by 2014 is to come to fruition, HIE technology must also be widely adopted by healthcare organizations.

New implementations of regional HIEs help improve the value and insight available from EMR data. ARRA includes \$300 million to support regional or subnational health information exchange efforts outside of the national health information network (NHIN) itself. Funding is also available for state HIE grants.

Demand for a wide range of HIE technologies will continue to increase in 2010 and through 2014 as providers invest in healthcare IT to qualify in time to maximize ARRA incentives and avoid penalties that will begin in 2015. The HIE technologies include integration platforms, record locator services and enterprise master patient indexes (EMPIs), data aggregation, physician and patient portals, and smart appliances and agents.

Enterprise HIEs will be the fastest-growing segment in 2010. Integrated delivery systems and other forms of health systems made up of owned or closely affiliated entities will be the faster-growing segment for HIE technologies. Sometimes referred to as private, proprietary, or enterprise HIEs, these HIEs are not encumbered by data governance issues to the same degree as community HIEs, RHIOs, or statewide HIEs made up of competing entities.

Data Drives Improvements in Quality of Care

All of this new digital patient information creates some significant new opportunities to improve the quality of care. With growing levels of CPOE, EMR, and electronic clinical documentation penetration in the inpatient and ambulatory provider settings, clinical data is increasingly available in electronic form. The availability of this data is driving new use cases for analytics, as providers explore the implications of data that is newly available in an analytics-friendly form.

Meaningful use, pay-for-performance, and quality measurement initiatives all require improved access to EMR data. The demands for analytics that are expected to increase in 2010 include the demonstration of meaningful use for ARRA subsidies, participation in

pay-for-performance programs offered by payers, and measurement and evaluation of quality. In addition, pending healthcare reform efforts have the potential to add to the need for analytics.

In 2010, healthcare business intelligence investment will once again exceed expectations in the analytics category. This will include embedded and standalone business intelligence applications as well as technologies that support their use, including hardware, databases, and infrastructure.

Analytics investments will continue to focus on the embedded analytics categories, comprising analytics capabilities that are embedded within applications such as clinical information systems, administrative systems, and EMR/EHR. However, standalone analytics solutions will also see growth in 2010 as the needs of the most sophisticated healthcare providers, mainly integrated delivery networks (IDNs), begin to exceed the embedded analytics capabilities within applications. This is especially true as hospitals and physicians begin to look for actionable advice as part of the clinical application workflow. Requirements to unify communications and information delivery for health workers also create opportunities to introduce actionable information into the medical decision-making process in real time. This creates a significant opportunity to improve the quality of care while reducing the number of avoidable errors. Ultimately, this ability to provide actionable analytics to the patient bedside will be a significant step on the way to personalizing the delivery of care. Beyond the patient bedside, the availability of electronic health information for analytics will open up potential uses in the fields of epidemiology, pharmacoepidemiology, and public health as providers seek to conduct care management, disease management, and population health initiatives.

Healthcare Payers Move Toward Actionable Information

Healthcare payers will also be broadly impacted by the widespread deployment of EMRs — in particular, efforts to improve transparency across all business processes. Under the emerging reform-based regulatory framework, payers will be expected to participate in and contribute to the HIE database. Data on cost, quality, and outcomes will need to be provided through some type of payer gateway. All of this information will be used to improve the understanding of clinical best practices from a cost and quality perspective.

Payers will also expend significant resources to improve the integration of clinical, reimbursement, and incentive programs. Within most reform initiatives is a revised payment model that moves away from "pay for service" to "pay for quality" or "pay for outcomes" reimbursement models. The success of these models rests, in part, on

the ability to integrate clinical, reimbursement, and incentive programs (with provider and consumer alignment). Only with all three in alignment can health and care improvements be consistently promoted. Nearly all federal and state mandates, including healthcare reform, ICD-10, EHRs, personal health records (PHRs), and standards, focus on improving information availability, comparability, and access. The underlying premise of all these investments is that better information will lead to better decisions, which in turn will lead to reduced costs and increased quality.

Better Decision Making on the Horizon

The demand for real-time and just-in-time information to improve decision making is growing. Both consumers and physicians are increasingly incentivized to use information to make better decisions regarding product design, services used (cost and quality information), referrals, quality guidelines, and protocols. Without information at the point of decision or care, these decisions cannot be made successfully. Current industry information latency leads to suboptimal use of information and missed opportunities to effect change as interactions occur. For example, historical pay-for-performance information was likely delivered quarterly or yearly. Current actionable analytics capabilities can identify relevant gaps in care to both providers and consumers at the point of care — improving care and enabling physicians to actively monitor and manage care guidelines that affect quality-based reimbursement.

Innovative healthcare payers will adopt segmentation analytics to better target sales, program, care management, and communication strategies. These healthcare payers will begin to invest in strategies and solutions to better segment and stratify customers for more individualized and customized encounters. Healthcare payers in past years have implemented unique products to sell to unique populations, including retiree and young/healthy. However, most product and cost containment programs are relatively blunt instruments as product designs, incentives, and payment programs apply to a broad base. There is sufficient market research and consumer behavioral research to enable healthcare payers to create more focused programs and interactions. Healthcare payers are planning to invest in these technologies; a number have hired experts from the retail industry to assist their segmentation efforts.

Three processes where healthcare payers report the greatest investment and where vendors are investing in new solutions are sales and marketing, communications, and care management strategies. In 2009, healthcare payers invested in wellness programs and care management strategies, including electronic health records, personal health records, telemedicine, and Health 2.0 strategies. Implemented across the broad population, these tools were fairly blunt instruments. Expense was

great; adoption was overall relatively low. Most healthcare payers report variable ability to cost justify some of their care management and health and wellness initiatives. Many are now investing in new segmentation tools and analytics to better identify populations and subpopulations for which certain interventions produce better outcomes. In 2010 and beyond, technology investment will also be made in the context of this segmentation strategy. Technology investment and deployment to consumers will align with the healthcare payers' objectives and programs for that consumer segment. Healthcare payers will more judiciously invest in innovative care management technologies for specific populations with specific outcomes in mind.

Life Sciences: On the Path Toward Personalized Medicine

Broad EMR adoption can be expected to be the foundation that enables physicians to begin to leverage individual patient medical data and improve the likelihood that treatments will be safe and effective. However, the EMR in isolation offers only limited benefits based on the physician's level of usage and basic capabilities such as CPOE and decision support to avoid drug adverse events. The EMR data can be leveraged, alongside data from other endeavors, such as clinical trials, to provide a broader insight into the use and outcomes associated with drugs and biologics. Beyond simple EMR adoption, clinical intelligence solutions will be needed, including clinical decision support systems (CDSS) and business and clinical analytics — along with significant additional medical and IT infrastructure.

As these systems mature, they will support the ability to review care, cost, and outcomes data for large groups of individuals. HIE and EMR data becomes part of the medical discovery process as large volumes of data, coupled with advanced analytics, create new opportunities for discovery. The recently passed economic stimulus bill contains new provisions that seek to introduce and formalize this type of analysis for comparative effectiveness into the U.S. healthcare ecosystem. Specifically, \$1.1 billion has been allocated to conduct or support comparative effectiveness research, split between the National Institutes of Health (NIH) and HHS. In the beginning of efforts to more effectively spend future healthcare dollars, these new comparative effectiveness efforts are directly aligned with the path that will lead to broad enablement of personalized medicine in the United States. The key goals of this honorable effort will be the ability to determine which drugs in the same treatment categories work best in specific patients.

Part of the funding allocated to the Secretary of Health and Human Services is designated for the development and use of clinical registries, clinical data networks, and other forms of electronic health

data infrastructure that are clearly needed to enable improved patient outcomes at the point of care. This investment is an important recognition that enabling improved patient outcomes will require real-time access to individual patient medical data to empower knowledge-based medical decision making. This information infrastructure currently exists at only a few leading-edge organizations and must become ubiquitous for personalized medicine solutions to be fully deployed.

The coming comparative effectiveness efforts will have a role in a significant directed advance in the path toward personalized medicine. While likely to provide only empirical information initially regarding the relative effectiveness of drugs based on observational associations, these comparative differences clearly reflect differences in the causes of disease, even though we don't yet understand the true underlying disease mechanisms. This pragmatic information will yield immediate benefit for most people.

Detailed, longitudinal data used in the evaluation of comparative effectiveness and personalized health will also be used to fuel research to provide more detailed insight into disease. A critical component of this research will be in identifying the value offered by a drug to a focused segment of the population. New drug trials focused on identifying the segment where products generate the most value will become a market requirement to win over pharmacy benefit managers in the public and private sectors. Increasingly, phase IV clinical trials and postapproval registries will be used to capture the longer-term cost and outcome quality data to improve the understanding of the therapeutic value of a compound to the individual. Expectations are that government will be actively participating in and aiding this process as a way of reducing the total cost of pharmaceuticals.

It seems likely that EMR adoption will not just fuel comparative effectiveness but also offer up a number of unique, adjacent opportunities to maximize use of this new information infrastructure to ultimately improve the quality of care. The areas that will open up to change are due to the nature of managed and connected IT systems deployed and embraced by communities of care. Innovative companies with novel methods for taking advantage of new capabilities will achieve a competitive advantage. More specifically, these fully managed systems could provide the channel for interactions with providers with applications and contextual information for improving clinical care. In essence, the technology deployed in physician offices becomes the conduit for these high-value activities and adds more of an imperative to embrace and extend this "single pane of glass." The leading areas adjacent to healthcare delivery will be more proactively and efficiently recruiting patients for clinical trials, improving phase IV trial postmarketing surveillance to monitor drug efficacy and safety, and providing additional channels for physician education.

Data from an EMR/EHR will allow identification of patients and physicians who would most benefit from participating in clinical trials. Patient recruitment is a major limiting factor in the conduct of clinical trials in the United States. Availability of privacy-protected, searchable EMRs provides a great opportunity to systematically access a large untapped population of potential clinical trial candidates (including outreach for those patients unaware of available trials) as well as potential investigators who have access to these potential clinical trial candidates. Faster recruitment and conduct of clinical trials overall can be directly linked with faster availability of new drugs and treatments in the marketplace.

A fully managed and connected EMR/HIE infrastructure could also be leveraged for enhancing quality of care through the sharing of therapeutic information on difficult cases from a network of physicians. This could be supplemented with educational materials on newly approved drugs augmented by supporting clinical data, something pharmaceutical representatives have delivered through direct interactions with physicians. Pharmaceutical companies have had to develop new ways to enhance their interactions with prescribers to achieve better sales and more successful marketing campaigns.

Higher-Quality Interactions and More Successful Marketing Campaigns

Life science companies will also look to bring EMR data into their marketing efforts, using this information to better segment and target physicians as part of their closed loop marketing (CLM) activities. Closed loop marketing is something that pharmaceutical companies are embracing more and more, given that it is becoming more difficult to acquire face time with doctors. Market-leading pharmaceutical companies have realized that the integration of eDetailing, sales force automation (SFA), and customer relationship management (CRM) tools can provide the ability to dynamically customize messaging based on physician feedback, behavior, and segmentation, leading to the delivery of personalized content more closely aligned with physicians' wants and needs. Online delivery of drug information is quickly becoming a large piece of the pie for pharmaceutical sales and marketing organizations, but in-person detailing is not going away. Proper execution of CLM across global affiliates enables pharmaceutical companies to achieve higher-quality physician interactions that improve market share, obtain vital customer insight in a real-time manner, and drive significant cost reductions in marketing and administration. Consequently, CLM is increasingly important to brand success and is a valuable tool that complements the efforts of today's field sales operations.

Pharmaceutical manufacturers are also looking to CLM to help manage and mitigate the impact of new aggregate sales spending rules for

physicians. Pharmaceutical sales representatives have leaned heavily on soft-dollar promotional budgets to help create influence and capture physician attention, as physician availability has continued to grow more scarce over the years. More so than relying on free pens and notepads, sales representatives have relied significantly on taking physicians out to lunches, dinners, and offsite meetings to create an environment where they could spend time together and have physicians' undivided attention. However, the new PhRMA code, combined with regulations from the Office of Inspector General (OIG), the Physician Payment Sunshine Act, and mandates that have been creeping up in many states, is now beginning to make these meetings obsolete.

For example, in July 2009, Massachusetts enacted regulations prohibiting gifts and a large majority of all soft-dollar marketing spend on physicians, along with new rigid reporting guidelines. Some of the restrictions set forth by the new regulations include a ban on all free meals unless they take place in a hospital or an office setting and include an informational presentation, a ban on all payment for entertainment and recreation (such as tickets to events), a ban on complimentary items (such as pads of paper), and the elimination of all coverage for physician travel, conferences, and continuing medical education (CME) events. Any form of compensation (grants, scholarships, etc.) in exchange for drugs or devices is also banned, and now, monetary compensation can be used only for legitimate consulting services. Further, companies are required to report all payments to physicians in excess of \$50, even for legitimate consulting fees, to the Massachusetts Department of Public Health (DPH), and come July 2010, a database will be freely searchable by the public through the DPH Web site. The only exception allowed by the regulation is that consulting fees provided to a physician for work related to clinical trials or genuine research do not need to be reported. Though this example is a state-level mandate, all of the above-mentioned national regulations place limits in a similar fashion. Securing face-to-face time with physicians, which was already challenging, has now become significantly more difficult for pharmaceutical sales, and with noncompliance carrying potential fines of \$5,000 per infraction, companies can't afford to be noncompliant. As a result, companies are scrambling to quickly implement software solutions that will provide the necessary capabilities to manage these issues.

Simply gaining visibility to all financial touch points across the organization with each physician is a difficult task, and that's just the first step. Once the proper reporting and dashboards are put in place for organizations to be "reactive," pharmaceutical companies will need to invest even further to become "proactive" so that they can not only see where money is being spent but also strategically decide where it should be spent to get the most bang for their buck with each physician. Tough decisions will need to be made, like deciding which brand team should use the \$50 in promotional activity for a particular

physician. Should it be split across brands? Should it be spent on one brand? The opportunity for business intelligence and analytics applications to add value here will be enormous.

CLM initiatives can literally make or break marketing campaigns, including simply sustaining or growing market share and introducing new products. Likewise, today, pharmaceutical sales representatives face an increasing number of challenges that their predecessors did not confront. Increased patient loads due to an aging population have dramatically reduced physician availability and driven a significant decrease in face time between sales representatives and physicians, which now averages just 30–60 seconds per interaction. Another channel for physician interaction could be this managed EMR infrastructure, with automated contextual information or clinical advice delivered based on patient disease profiles. This may prove to be attractive to physicians because it leaves information gathering and education on therapeutic alternatives on their terms.

ESSENTIAL GUIDANCE

It is important for all participants in the healthcare industry to understand the significant impact that widespread EMR deployments will have over the next several years. As more of the population participates in the digital patient information environment, pressures for industry transformation increase. All participants will be pushed to improve quality, reduce costs, and increase transparency. This will ultimately drive increased integration of information among providers, payers, and life science companies.

As providers and physicians implement EMR and eprescribing solutions, state and federal health agencies will create HIEs to act as repositories for aggregated data. Payers are also being asked to provide treatment and outcomes data to HIEs in an effort to create a significant base of data for clinical, quality, and cost analysis. Data on healthcare quality and cost will be presented to the market, and all stakeholders will have a vested interest in improving and documenting the quality and value of the services and products. The life science industry will benefit as EMR data repositories are leveraged to benefit clinical trial patient and investigator recruitment, clinical trial operations, adverse event reporting, and patient registries.

Increasing participation of physician practices and the widespread deployment of last mile solutions will contribute to an explosion of data from physician practices, labs, pharmacies, telemedicine devices, and remote monitoring devices. Physicians will be able to view all relevant data on treatment options and outcomes.

Life science and biotech companies will also be drawn into the transforming market as comparative effectiveness programs look at the

therapeutic value of drugs based on outcome quality and cost. Increasingly, EMR data will play a role in clinical trial recruitment and phase IV trials as physicians take advantage of opportunities created by integrated access to EMR/EHR/HIE data, managed patient information, and validated and virtual systems (PC, devices).

All market participants must evaluate the required changes they need to make as a result of widespread EMR deployments. Investments in improved integration, enterprise data warehousing, analytics, and improved access to information will help prepare for the market ahead.

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