The Integrated Patient Record: Empowering Patient-Centric Care

WHITE PAPER
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IDC HEALTH INSIGHTS OPINION

Despite the growing use of electronic health records (EHRs) and health information exchange (HIE) technologies, providers and payers still face challenges with regard to accessing all the information known about a given patient or member. Patient health information can be trapped in siloed healthcare information systems, paper-based documents and processes, or non-machine-readable documents. An integrated view of patient information improves the experience of clinicians by enabling them to better serve their patients, which in turn leads to better outcomes. The ability to create comprehensive patient-centric records is crucial for improving not only quality of care but also patient safety. An incomplete view of a patient's health record can be disastrous if critical information, such as medication history, lab results, known allergies, or blood type, is missing from the patient record; 18% of medical errors are the result of inadequate availability of patient information. Key findings of this white paper include the following:

- There is an important distinction to be made between a consumer's patient record or electronic medical record (EMR), which is owned by a single provider, and an integrated patient record (IPR), which combines structured and unstructured data from disparate sources across the enterprise and beyond to the medical trading area. An integrated patient record provides clinicians with a longitudinal view of the care their patients received across the continuum of care and includes health information from multiple healthcare IT (HIT) systems managed by various stakeholders.

- The stakeholder landscape is evolving as a result of health reform and other long-standing drivers in healthcare. New care delivery and reimbursement models, such as accountable care organizations (ACOs) and patient-centered medical homes, will require healthcare organizations to transform how they deliver care. A shift from fee-for-service to value-based reimbursement will place greater emphasis on quality and preventive care, requiring access to comprehensive patient health records.

- Optimal patient care will be achieved through better care team collaboration and care coordination. EMC is leveraging its enterprise content management platform and its healthcare information management capabilities to address the challenges of sharing health information available in a wide variety of paper and electronic formats and managed in disparate health information systems that have historically inhibited electronic data sharing.

IN THIS WHITE PAPER

This white paper, presented by IDC Health Insights and sponsored by EMC Corporation, describes the importance of providing integrated patient-centric records to support patient-centered care delivered across the continuum of care.

HEALTHCARE DRIVERS: MORE THAN JUST HEALTH REFORM

In a postreform era, there is often a perception that health reform is the main impetus for healthcare organizations' focus on digitizing health information and deploying electronic health records. But well before the enactment of the Patient Protection and Affordable Care Act of 2010 (PPACA), healthcare organizations were already implementing electronic medical records, albeit slowly, and beginning to pilot health information exchange technology to aggregate and share data across the enterprise. Many of the same drivers that have encouraged the use of healthcare information technology have also led to health reform beyond the EHR:

- **Unsustainable healthcare expenditures.** The current trajectory of U.S. healthcare spending is simply unsustainable. Spiraling healthcare costs and health insurance premiums are taking their toll on the U.S. economy. If spending remains unchecked, healthcare expenditures will almost double to $4.5 trillion, or nearly 20% of the U.S. gross domestic product (GDP), in 2019, up from $2.5 trillion in 2009.

- **Increased focus on quality.** For more than a decade, forward-thinking healthcare organizations have been looking to industry for Lean and Six Sigma methodologies to improve the quality of care and efficiency of services, reduce defects and errors, and increase efficiencies. Increasingly, payers are refusing to pay to correct medical errors, also referred to as "never events," such as operating on the wrong patient or administering the wrong medication, resulting in an adverse drug event. More than half of U.S. hospitals are operating in the red, and mounting financial pressures have increased their focus on improving quality — not only because it is the right thing to do for the patient but also because it leads to a healthier bottom line.

- **Wider availability of digitized health information.** Qualifying for meaningful use incentives is among the most important drivers of hospital IT investment today. As a result of the American Recovery and Reinvestment Act of 2009 (ARRA) and the drive toward the meaningful use of electronic health records, provider organizations are beginning to have unprecedented access to electronic health information, which will enable them to use data for improved decision making and initiate operational and clinical transformation.

- **Evolving business model changes that will require data sharing.** Data-driven healthcare will enable new care delivery and reimbursement models, such as ACOs and value-based purchasing plans that are evolving as a result of the Affordable Care Act. These new models, which reimburse providers based on quality care measured against patient outcomes, will require healthcare organizations to transform how care is delivered across the continuum of care. As such, healthcare organizations will need to invest in integrated patient-centric records to improve care team collaboration and care coordination. They will also have to invest in health information exchange technology to share data across the integrated delivery network and with other providers, along with payers and government agencies, to provide comprehensive patient information for analytics engines and enable population health management. Increasingly, the discussion surrounding interoperability also includes analytics, population health management, and care coordination. According to IDC Health Insights' 2012 *Accountable Care Survey*, 41% of ACOs are looking to HIE vendors to provide analytics capability.

- **Consumerization of technology and desire for mobile access to electronic data.** As clinicians become more comfortable with mobile devices for personal use, they will want to use them professionally to care for their patients and will expect similar levels of capabilities (e.g., on-demand access to healthcare information wherever there is Internet or cellular access, touch-enabled applications, and an intuitive user interface). According to IDC Health Insights' 2013 *Connected Health Physician Survey,* 59.4% and 40.2% of physicians use a smartphone and a tablet, respectively, to care for their patients.

- **Healthcare challenges that are felt globally.** Healthcare delivery systems around the world face disruptive macro socio-economic forces of change. Demographic shifts, altered patterns of disease, changing patient expectations, and rising political demands are putting pressure on the ability to deliver cost-effective, quality patient care. These disruptive forces present — and will continue to present — both a challenge and an opportunity for healthcare professionals and healthcare delivery models. Innovation and today's sophisticated information technology have driven advances that are already having an effect on the way clinicians and patients interact and could have major implications for the overall delivery of healthcare services.

PATIENT-CENTRIC CARE REQUIRES INTEGRATED PATIENT RECORDS

Defining the Integrated Patient Record

An integrated patient record is distinct from a consumer's medical record or electronic medical record, which is owned by a single provider organization (i.e., physician practice, hospital, or integrated delivery organization [IDN]) and is the digital equivalent of the legal paper "medical record" of care provided across encounters at that provider organization. As more electronic health information is available and healthcare data standards are widely adopted, healthcare organizations will be able to combine structured and unstructured data from multiple disparate systems deployed across the enterprise, as well as across the ecosystem including other providers and payers, to create integrated patient records.

Data sources include but are not limited to ambulatory and inpatient electronic health records; medical images and radiology and lab information systems; picture archiving and communication systems (PACS); and clinical pathways and care management. Although the majority of U.S. healthcare providers use an EHR, because healthcare is still a paper-intensive industry, data can also come from documents. IDC research finds that 38% of documents used in healthcare today are paper based and content from 31% of those documents is retyped into a computer. IDC research also finds that paper is not going away as quickly as expected; 62% of workers say that paper volume either increased or remained flat year over year. Thus, healthcare organizations will need intelligent capture software that allows the use of a wide variety of capture tools from high-volume scanners, multifunction peripherals, desktop scanners, and browser-based tools for a mobile workforce to digitize documents. Data extraction tools turn content into discrete data that can be processed by healthcare information systems. Digitized images of paper documents as well as images of diagnostic procedures (e.g., x-ray exams or EKGs) should also be included in integrated patient records.

An enterprise content management platform provides a central repository for storing and managing access to digitized health information. Content can include office documents and insurance forms as well as medical images and echocardiograms and can be structured or unstructured. The ability to aggregate structured and unstructured content in a single vendor repository for storing healthcare images, media, and other patient-centric documents enables users to search for information across multiple applications, thus creating an integrated patient record. The value of the healthcare organization's EMR is also enhanced by providing access to patient-related content from capture to disposition to retention.

Collaborative care is attainable only when stakeholders across the medical trading area can securely exchange health information via HIE standards, such as XDS, HL7, DICOM, and IHE's Cross-Community Access (XCA) specification standard. IDC Health Insights research suggests that healthcare organizations participating in accountable care organizations are making parallel investments in health information exchange and analytics technologies (see Figure 1). Analytics is a top technology investment area because ACOs need to identify risk and measure clinical and financial performance.

FIGURE 1

Analytics and Health Information Exchange Are Investment Priorities
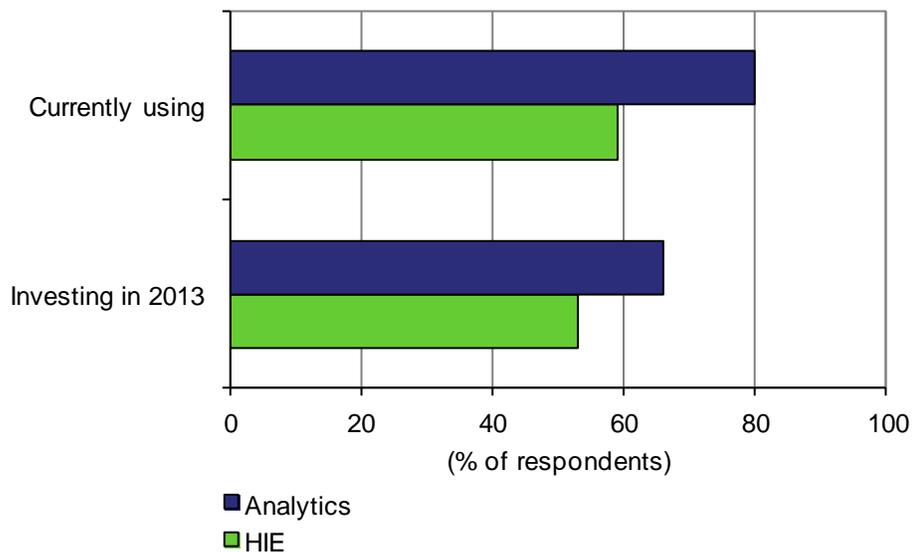
n = 70

Source: IDC Health Insights' *Accountable Care Survey,* 2012

As healthcare organizations make these critical investments in EHRs/EMRs, HIE, and analytics, they also need to consider how they will address data governance and healthcare information management. Sound data governance will help healthcare organizations achieve their long-term goals. Healthcare organizations should create a data inventory to identify what data is available electronically and what is not to develop an understanding of their data sources and the flow of data across stakeholders. By identifying and prioritizing high-value data made available through health information exchanges, stakeholders will have greater access to the information they want and need in an integrated patient record to collaborate with one another.

The Stakeholder Landscape Is Evolving

The diversity of healthcare stakeholders and their evolving roles are having a significant impact on the healthcare landscape. Several notable market trends will result in new business, clinical, and technical requirements for healthcare stakeholders:

- **New care delivery and reimbursement models.** The Affordable Care Act creates the legal foundations and financial incentives (and penalties) to develop new care delivery and reimbursement models, such as the Medicare Shared Savings Program and value-based purchasing plans. Under these programs, there will be a shift from fee-for-service reimbursement to outcomes-based reimbursement, which will create the necessary incentives for more patient-centric care with an emphasis on quality versus volume of care delivered.

- **Convergence of providers and payers.** Providers who establish accountable care organizations or who take on at-risk contracts will require many payer-based processing capabilities and technologies, which will result in a convergence of providers and payers. Different models will emerge, and some ACOs may decide to disintermediate payers and establish their own health plans, a model that has been successful in several markets (e.g., University of Pittsburgh Medical Center, Geisinger Health System in Pennsylvania, Lovelace Health System in Albuquerque). ACOs may decide to contract with payers for different functions such as sales (in the commercial ACO market) or member management. Payers and providers could also create a model where there is collaboration in specific areas such as care management. These new blended provider/payer organizations will require new intelligence collected across the enterprise by the various provider and payer stakeholders.

- **Emphasis on populations of patients versus single patients.** Under the conventional fee-for-service model, providers are paid for seeing patients in traditional care settings. There is little financial incentive to provide preventive care or services in nontraditional settings, such as the patient's home, where reimbursement may be limited. However, the shift from fee-for-service to value-based or outcomes-based reimbursement changes that paradigm. Now providers need to think in terms of all their patients with a specific disease condition, such as diabetes or congestive heart failure, regardless of whether they have been seen for the condition at the provider's office. Population health management and disease management will be a new discipline for physicians who have been trained to care for the "patient in front of them" and will require investments in analytics solutions that enable them to identify and segment patients with certain diseases

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and care management solutions to engage with them to schedule screenings and preventive care. IDC Health Insights research suggests that healthcare organizations are in the early stages of using analytics for population health management; 29% of respondents to IDC Health Insights' 2012 *Accountable Care Survey* reported that they were using analytics for population health and wellness initiatives. In contrast, 66% of surveyed healthcare organizations reported using analytics to identify members or patients in need of care management.

These new models of care and reimbursement will require the development of new key performance indicators and the analytics tools to measure operational, clinical, and financial performance. Dashboards for visualizing performance will be critical for identifying areas for improvement. At the core of population health management are integrated patient-centric records and analytics to stratify and identify at-risk patients who will need some sort of intervention such as health coaching or disease management. Predictive analytics will help identify those patients who are near at risk for certain conditions, as well as those patients who have a willingness to change unhealthy behaviors.

Optimizing Patient Care Through Collaboration

The new accountable care models, which reimburse providers based on quality care measured against evidence-based medical guidelines and improved patient outcomes, will require healthcare organizations to deliver care team collaboration and coordination across care settings, which in turn should improve quality of care and patient outcomes, especially for elderly patients with multiple chronic conditions. On average, a Medicare patient with one chronic condition sees 4 physicians a year. That number more than triples for Medicare patients with 5 or more chronic conditions who see 14 physicians a year. Coordinated care requires access to integrated patient records at the point of care and at the point of decision making.

Integrated patient records enable collaboration among clinicians, consumers, administrators, and even family caregivers if given the appropriate access rights to the consumer's health information. This collaboration can be:

- **Clinician to clinician.** Communication between physicians, nurses, social workers, case workers, and other clinicians regarding a patient's care

- **Clinician to patient.** Communication during or regarding the delivery of care between physician, nurse, or care worker and patient

- **Patient to clinician or clinician office.** Communication from the patient either directly to the clinician during or regarding the delivery of care or patient updates to the patient's medical record

- **Administrator to patient.** Communication from staff regarding an encounter or visit such as appointment reminders or response to refill requests or billing questions

- **Provider to provider.** Communication between hospitals, health systems, regional health information organization, or other provider entities such as skilled nursing facilities, rehabilitation hospitals, hospice, or home health agencies on behalf of the patient through clinicians

- **Provider to payer/payer to provider.** Communication between providers and payers regarding care management as well as the patient's insurance eligibility and benefits

EMC IIG SOLUTIONS FOR HEALTHCARE

Getting Control over Healthcare Information

Healthcare organizations recognize the growing need for fully integrated patient records that will be created by bringing together data from disparate data sources across the enterprise and increasingly from external data sources to provide a complete clinical, financial, and operational view into the organization's performance. Data can be structured or unstructured and in electronic or paper format, complicating the effort.

The first step is to reduce the reliance on paper-based documents and processes through document imaging and content management. Once documents have been scanned or captured, they can be effectively managed (i.e., identified, made searchable, archived according to retention policies). The next step is to get control over medical images by making them available electronically for sharing and migrating from proprietary PACS to a vendor-neutral archiving (VNA) system. Once information from documents, medical images, or other healthcare IT systems is digitized and managed centrally, analytics tools can be applied to enhance decision making at the point of care or need. Care teams have access to the information they need, which supports care team collaboration and care coordination.

EMC offers a suite of healthcare solutions leveraging its enterprise content management and healthcare information integration capabilities through the Information Intelligence Group (IIG), one of four operating divisions of EMC. IIG offers the Integrated Patient Record (IPR) solution suite for healthcare providers and national health systems globally and the Integrated Member Services (IMS) solution suite to

U.S. healthcare payers. Underlying EMC healthcare solution offerings for IPR and IMS are the following EMC technologies from EMC IIG: EMC Documentum, EMC Documentum XCP, EMC Enterprise Archiving Solution (EAS), EMC Document Sciences xPression (xPression), and EMC Healthcare Integration Portfolio (HIP).

Integrated Patient Record Solution Suite for Providers

Despite widespread implementation of electronic health records and increasing use of these systems by clinicians, patients' medical records are still a blend of electronic and paper-based records because paper-based processes persist in healthcare. For example, to gather medical and family histories, many provider organizations still give patients a clipboard with forms to fill out when they check in for their appointment. EMC's IPR solution suite leverages the EMC enterprise content management platform and healthcare information integration capabilities to combine both structured and unstructured data that may have originated as a paper document or as electronic health information to create a patient-centric view of the patient's health information regardless of its source. As a result, IPR helps provider organizations:

- Generate a single patient-centric view of all health information

- Update electronic health records with data from other healthcare information systems

- Digitally capture content and organize all patient records

- Manage and share all medical images

- Archive data, but have it readily accessible if needed, and decommission legacy clinical applications

The EMC IPR solution suite for healthcare providers includes four distinct solutions, built on the EMC Documentum platform, that enable organizations to transform the way they view, access, manage, and use patient information — beyond the EMR or EHR. The four solutions are:

- **Content Enablement for EMRs and EPRs.** This solution captures all structured and unstructured content types — documents, audio, email, digital photos, videos, and other electronically produced information — to help healthcare organizations complete their transition from paper to fully indexed electronic patient records while linking to their own EHR or EMR.

- **Medical Image Management and Sharing.** This solution offers providers the ability to access, share, and manage all clinical media and medical images, including x-rays, MRIs, and CTs, in an open, interoperable vendor-neutral archive that integrates with their PACS.

- **Document Management and Sharing for Medical Records.** This solution digitizes patient-critical paper documents, enables healthcare processes from disparate sources, and provides a comprehensive view of all patient information and services.

- **EMR Consolidation.** This solution enables archiving of patient information to comply with regulatory requirements, maintain long-term patient records, and retire clinical legacy system applications as needed to reduce costs and maintenance while consolidating EMR applications.

The IPR solution suite also includes the EMC Health Integration Portfolio of HIT standards capabilities, which provides the necessary registry patient identity mapping, and XCA Gateway for secure distributed access to the information, along with XDS connectors for exchanging documents captured by Captiva (and other document capture tools) and medical images from PACS, plus HL7 messages. IPR maintains content in its original, natural form, facilitating search, analysis, data mining, and business policy enforcement regarding content retention and disposition.

Using the IPR solution suite, healthcare organizations can optimize new and existing applications with automated processes and workflows that support the relationships between healthcare organizations, improving efficiency and collaboration. Together, the four solutions unite what was once fragmented data stored in a variety of data formats across the enterprise in siloed healthcare information systems and data storage environments. Greater access to healthcare information across the enterprise and the broader ecosystem will enhance reporting capabilities, analytics, and dashboards. Physician access to an integrated patient record will greatly enhance care collaboration with other care team members, leading to a better experience for both the care team and the patient and, ultimately, improved patient outcomes.

Integrated Member Services for Payers

Payers are also mired in paper-based processes and documents. The EMC Documentum IMS solution suite, which is currently marketed only to U.S. healthcare payers, supports payer communication related to member enrollment, compliance, and marketing directed to members. IMS enables payers to:

- Manage member enrollment

- Communicate with members via targeted messaging or marketing campaigns

- Communicate with members to comply with federal and state regulations

- Archive data, but have it readily accessible if needed, and decommission legacy applications

The IMS solution suite leverages EMC Document Sciences xPression, which automates the generation of both general and highly personalized multichannel communication between payers and members (e.g., promotional materials, welcome letters, health and wellness information, and explanation of benefits statements).

Mobilizing Content

The healthcare workforce is highly mobile, and clinicians are increasingly using mobile devices for professional use. Clinical mobility capabilities can be described along the spectrum of:

- **Consume:** Inquire about information available in healthcare information technology systems, medical references, and other online clinical resources

- **Create:** Document care and capture charges and notes

- **Circulate:** Initiate transactions and send and receive messages and alerts

- **Collaborate:** Request and share information with care team members to support the delivery of care

The most common use cases for mobile devices involve consuming content. According to IDC Health Insights' 2013 *Connected Health Physician Survey*, the top 3 medical health applications used by physicians provided access to drug references/medical databases applications (46.4%), view-only lab/diagnostic test results (28.9%), and eprescribing tools (25.3%).

In response to clinician demand for mobile access to patient health information, EMC is enabling solutions on the mobile platform. In 2012, EMC acquired Syncplicity, a privately held firm based in Menlo Park, California. Syncplicity provides native cloud-based sync and share capabilities purpose built for enterprise customers. Syncplicity's solutions are integrated with the IIG portfolio of enterprise content management solutions.

Market Challenges and Opportunities

The market challenges that EMC faces can also present opportunities for a company with strong healthcare experience and a broad product portfolio. The IIG division has more than 1,600 healthcare customers worldwide representing payers, providers, and government agencies.

- **Security.** As more patient information is moved into EHRs and made accessible both inside and outside the organization via a range of devices, including mobile devices, the risk of a privacy breach rises. The HIPAA Omnibus Rule, published in January

2013, implements the new privacy and security provisions proposed under ARRA's HITECH Act. As a result, privacy breach notification, minimum use, and disclosure reporting requirements become more stringent. The risks and liabilities associated with privacy breaches increase, and annual penalties for violations can reach $1.5 million per provision, up from $25,000. Security must consider the complex healthcare environment with its highly mobile and transitory workforce.

- **Continuous operations.** Many healthcare settings are 24 x 7 operations requiring round-the-clock access to mission-critical clinical applications. In extreme situations, lack of access to essential patient health information could mean the difference between life and death. Thus, uptime, computing performance, and reliability are critical considerations when evaluating healthcare IT.

- **Cost pressures.** More than half of U.S. hospitals are operating in the red. Exacerbating an already precarious financial position for providers are declining reimbursement rates of private and public payers. Careful consideration of the total cost of healthcare IT ownership is essential. More efficient IT operations will enable healthcare organizations to reinvest IT cost savings in more innovative technologies and meaningful use applications.

- **Interoperability.** Interoperability challenges are further compounded because the EMR market is highly fragmented with vendors offering a wide range of solutions, on a variety of technology platforms, for small, medium-sized, and large practices and hospitals. It is not uncommon for an integrated delivery system to have 10 to 20 different EMR products from nearly as many vendors represented in its healthcare IT application portfolio. In addition to the various EMR products, a wide range of clinical applications are found in inpatient and ambulatory settings across the continuum of care that must be connected to establish fully operational integrated patient records.

PARTING THOUGHTS

Healthcare organizations worldwide are facing similar challenges: aging populations, increasing prevalence of chronic conditions, and demand by payers, employers, and governmental agencies to rein in spiraling healthcare costs. To that end, healthcare organizations have invested in EMRs/EHRs and are increasingly investing in health information exchange technologies to make patient healthcare information accessible at the point of care that will enable better care coordination among care team members. Additional investments in analytics and population health management will require data sharing across the continuum of care to create more comprehensive integrated patient records.

However, today, most healthcare organizations are struggling to unlock data trapped in multiple healthcare IT systems, document repositories, and other information silos in a variety of formats without easy access at the point of care or the ability to share patient information with care team members. Enterprise content management and healthcare information management capabilities improve information sharing for the delivery of coordinated patient care, patient administrative services, and health systems operations. The ability to create integrated patient-centric records that combine unstructured and structured data from disparate sources will help healthcare organizations not only leverage the investments they have already made in the healthcare information systems portfolio but also provide better care and services to their constituents more efficiently and cost effectively.

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- Maximize the business value of their technology investments

- Minimize technology risk through accurate planning

- Benchmark themselves against industry peers

- Adopt industry best practices for business/technology alignment

- Make more informed technology decisions; and drive technology-enabled business innovation

IDC Health Insights provides full coverage of the health industry value chain and closely follows the payer, provider, and life science segments. Its particular focus is on developing and employing strategies that leverage IT investments to maximize organizational performance. Staffed by senior analysts with significant technology experience in the healthcare industry, IDC Health Insights provides a portfolio of offerings that are relevant to both IT and business needs.