



I D C A N A L Y S T C O N N E C T I O N



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Clinical and Financial Information Integration: A Critical Component of IT Effectiveness

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The awareness of, and investment in, information technology has never been more pronounced among U.S. healthcare providers, particularly in the clinical information systems (CIS) that are the building blocks of an electronic medical record (EMR). There are many indicators that healthcare, quality healthcare delivery, and healthcare IT are now and forever linked. Federal and state government initiatives demonstrate a desire to improve the quality of healthcare while reducing healthcare costs. Healthcare IT is seen by the Bush administration to be at the forefront of these improvement efforts. While the major thrust is better care and higher quality of healthcare delivery, part of the improvement also relates to a reduction in the national healthcare cost.

Many healthcare C-level executives and IT experts think the industry needs huge investments (\$500 to \$700 billion) in IT in the next 10 years to achieve a 20% reduction in the nation's annual healthcare costs and meet the Bush administration's goals of widespread EHR adoption by 2014. While IDC Health Industry Insights (IDC-HII) does not consider this investment amount realistic in the current economic and political environment (without an infusion of public funds or private largess), the benefits of such a degree of IT spending will be measurable and significant. For instance, an increase in IT spending would help link physicians, clinics, and hospitals on regional and nationwide levels, cut administrative costs, reduce duplicate efforts, and improve the quality of healthcare services rendered to the general U.S. populace.

On a more modest scale, basic IT needs, such as comprehensive process automation and intuitive interfaces, finally seem to have caught up with the highly evolved and complex needs of doctors, nurses, and other healthcare professionals. The resistance to change from provider personnel is melting as tools and systems mature and external demands, such as productivity requirements, become more clear. Advanced IT solutions with higher degrees of utility are appealing to the demanding needs of healthcare personnel and becoming part of their arsenals for providing quality healthcare service. In this environment, IDC-HII expects total IT spending among healthcare providers in the United States to increase to \$33.9 billion by 2009, demonstrating a four-year compound annual growth rate (CAGR) of 7.7%.

In the rush to digitize clinical information and satisfy the needs of clinicians, healthcare executives cannot lose sight of the inextricable interrelationship between clinical and financial data in light of the increasing demands by payers and regulators for providers to both demonstrate quality and justify the cost of care using accepted standards of clinical practice.

The following questions were recently posed by Quadramed to Marc Holland, program director of Healthcare Provider IT Research, at Health Industry Insights, an IDC subsidiary.

Q. What are the most pressing technology challenges for healthcare organizations today?

A. We believe the most pressing technology challenge for healthcare providers today is to use IT to effect process improvement and reduce costs while simultaneously improving quality. The key is integration, not only between departments, but between all entities that comprise the healthcare ecosystem. Absent this integration, significant process improvement is unattainable. Until recently, the introduction of IT into the healthcare industry was historically disjointed, opportunistic, and organizationally fragmented. Today, the industry's major technology challenge is integration of all kinds — data integration, device integration, network integration and process integration. The current level of automation is limited in comparison to other industries and, even worse, highly disintegrated from an architectural perspective.

We see this changing. One major hardware vendor, for example, has carefully examined clinical processes at the point of care and recently introduced an integrated handheld tablet designed to capture a patient's vital signs and automate the charting process. This product goes a step beyond the approach of current IT vendors in the point-of-care space. Currently, a nurse has to come to your bedside, take your vital signs with a thermometer, stethoscope, and blood pressure cuff, for example, and then record your vital signs either into a wireless laptop, if the hospital is fortunate to have one, or one connected at the bedside to a wired network. If not, they must manually record the information on paper and then go back to the nurses' station and enter that information into a desktop PC, which introduces the potential for dangerous transcription errors, delays, and critical omissions. In contrast, this new generation of device mates medical devices directly to a new, lightweight tablet PC. The information is collected electronically right on the tablet and communicated directly to the CIS.

Better integration of information systems, as well as process improvements that provide more efficient ways to collect, use, and communicate information, can go far toward improving patient safety and increasing efficiency, two key goals of forward-thinking healthcare providers. Several examples are cited below in the areas of medication administration, blood transfusion, and patient appointment scheduling.

Another example that many people can relate to is how often, and by how many different people, a patient is asked the same questions over and over again. It's bad enough when patients are repeatedly asked for their name and address and insurance ID, but all too often doctors and nurses are reliant on the patient's, or family member's recollection, which may be incomplete or inaccurate, for such critical information as allergies, disease histories, and active medications and dosages. This is the kind of basic information that should follow you from one physician's office to another, to and from the hospital, between hospitals and other healthcare providers, such as home health agencies or nursing homes, and to and from your local pharmacy — but in healthcare today, this is the exception, not the rule.

Even the most highly automated hospitals seem to have a kind of moat around them; information they need, as well as that which they generate, has a difficult time getting in from or out to other providers. Enabling this flow of information through the use of technology will be a win-win for all.

Q. With much focus on improving patient safety in healthcare, how can integrated identity management and access management solutions impact the care process and also improve revenue-cycle activities?

A. First, in the care process, tight integration of identity management with care delivery processes is an essential contributor to patient safety in a wide range of instances. Perhaps the two examples most often encountered are in blood transfusion and medication administration.

In their landmark 1999 report, *To Err is Human: Building a Safer Health System*, the Institute of Medicine stated that the findings of two separate studies estimated that at least 44,000 and perhaps as many as 98,000 people die in hospitals each year as a result of preventable medical errors. Some of the most frequent errors occur in the administration of medications. IT can play a pivotal role in ensuring that the five "rights " are guaranteed: the right patient, the right drug, the right dosage, the right time, and the right route. At the time of a medication order, patient safety is enhanced by ensuring that the medication ordered, along with the associated dosage, schedule, and the route are compatible with the patient's condition, age, body mass, diagnosis, active medications, and known allergies. This is possible in a highly automated and integrated IT environment, where all required data can be obtained from the patient's admission record, medical history, and medication profile and processed by software that functions in a seamless, orchestrated fashion. But this is only half the battle. Subsequently, at the point of administration, technology can again help ensure that the medication dosage is given to the correct patient. Typically, this is accomplished when the dose is labelled with the patient's identity and is electronically verified, using a barcode label or radio frequency ID (RFID) tag affixed to the patient's wristband prior to administering the medication.

Another source of errors that can be severe, if not fatal, are transfusion errors. A similar approach is increasingly being employed in the transfusion of blood and blood products, again using bar-coded labels or RFID tags affixed to the blood or blood product bag and the patient's ID to ensure the correct unit of blood has been delivered to the patient for whom it was typed and cross-matched.

For maximum effectiveness, identity management should begin at least at the point of admission and preferably earlier, at the time a planned encounter is scheduled. The benefits of this approach can accrue to both administrative and clinical processes.

With the increasing prevalence of electronic medical records (EMRs) and access to cross-institutional electronic health records (EHRs), there is an elevated risk of mistakenly associating data from two or more different patients. This requires advanced software logic that positively identifies a patient to ensure that clinical histories are not associated with the wrong patient. In the absence of a national patient identifier, and with the migration of providers away from Social Security numbers as a patient identifier, a patient identification tool that provides sophisticated matching algorithms is essential to ensure unambiguous patient identification. The consequences of an error could, quite literally, be life threatening.

Second, from the administrative and financial perspectives, the integration of identity management, financial management, and access management can address a number of key issues that plague many provider organizations. For example, real-time awareness of the patient's A/R status, insurance eligibility, reason for visit (RFV), and diagnosis at the time of appointment scheduling can reduce the likelihood of added costs or revenue losses typically associated with incorrect addresses, failure to comply with pre-admission certification or medical necessity requirements, or incorrect insurance eligibility information. These are

extremely valuable capabilities that are now being incorporated into today's leading patient access management systems.

Q. Many organizations have adopted a "best in class" or "best of suite" IT strategy yet have disparate financial and clinical systems, usually from different vendors. What challenges to the revenue cycle will these healthcare organizations face?

A. In the past, payers typically paid for all services rendered to a patient simply based on the patient's contractual allowances for the specified diagnosis. Those days are gone. Today, payers have established complex qualifications that stipulate the specific services they will reimburse for in the course of treating the specified diagnosis. As payers seek to further reduce what they may deem as inappropriate payments, they are establishing criteria governing the reimbursement of specific tests, medications, and other treatments based on their judgment of the clinical efficacy. Without a linkage between these rules and the ordering process, physicians may be unaware at the time of order that the patient's coverage will deny reimbursement, leaving the hospital or the patient liable for the cost of the uncovered services.

Closely related to the above is the increasing frequency with which payers are demanding additional clinical documentation before they will pay a claim. The content of these claim attachments vary widely, depending upon the circumstances of the case. Without integration between these information sources, compliance becomes a tedious, error-prone, labor-intensive process that is expensive and can increase denials and the cost of follow-up, investigatory procedures; steps that can add days, even weeks to the revenue cycle.

Lastly, pay for performance (P4P) initiatives are becoming increasingly commonplace. At present, numerous pilot programs have been implemented by payer organizations at the local, state, and even the national level, with many more planned. A key inhibitor has been the ability of provider organizations to effectively and efficiently comply with the data reporting requirements essential for participation. To date, participation in these programs has been voluntary and the reporting requirements have been at a fairly general level, a reflection of payer organizations' acknowledgment that a lack of sophisticated data systems makes provider compliance difficult. But as healthcare costs continue their unrelenting rise, and as the P4P sponsors sense that the median rate of IT adoption across provider organizations has risen, this will change. Reporting requirements will become both mandatory and increasingly stringent. The number of conditions to which these programs will apply and the penalties to the providers, (or their loss of potential revenue, depending on one's perspective), will have significantly greater financial impact. Whether this impact is positive or negative will largely depend on the ability of the provider organization's IT systems to meet the reporting requirements.

Q. We are starting to hear much talk about CDA (clinical document architecture) documents. What are the drivers behind this initiative, and what positive effects might CDA have on the revenue cycle?

A. Clinical document architecture (CDA) is a set of technical, data, and functional specifications and formats designed to encourage the standardized exchange of health information between two entities (either internal or external). It has been developed and propagated by the Health Level-7 (HL-7) Standards Committee, the oldest and one of the leading healthcare industry advocacy groups for data exchange standards in healthcare. Version 1 was approved by the American National Standards Institute (ANSI) in November 2000; Version 2 was approved by ANSI in May 2005.

CDA is a key component of the industry's drive to adopt standards of information exchange that facilitate interoperability and expedite the creation of EHRs that allow patient data to be aggregated across multiple provider organizations. In order to facilitate this interoperability, transactions must not only conform to a standardized format, but must also contain standardized content that employs standardized nomenclature, such as systematized nomenclature of medicine (SNOMED). The latest proposed version of these standards has been designed to incorporate the Continuity of Care Record (CCR), a more limited, but similarly intentioned, exchange standard. It is called the HL7 Continuity of Care Document (CCD).

To quote one of the contributors, Dr. Robert Dolin of Kaiser Permanente, "CDA is a document mark-up standard that specifies the structure and semantics of a clinical document, such as a discharge summary or progress note, for the purpose of exchange (between two unrelated health information systems). A CDA document is a defined and complete information 'object' that can include text, images, sounds, and other multimedia content. It can be transferred within a message and can exist independently outside the transferring message." (Dolin, et al, *Journal of the American Medical Informatics Association*, 2006.)

Those leading these efforts expect, and we concur, that standards such as CDA and the CCR will have a profound affect on the industry's ability to exchange clinical information, whether for clinical or administrative purposes. For example, recent HIPAA claims attachment specifications call for use of CDA-compliant formats. The adoption of standard message formats will foster the ability to produce such documents as claims attachments in a much more highly automated and more widely acceptable form that will expedite the validation and acceptance of healthcare claims. This, in turn, will reduce revenue cycle times by minimizing the time required to review, adjudicate, and process claims requiring additional information.

Q. What automation needs to occur in the care delivery process to ensure that full reimbursement is received based on CMS's CORE measures?

A. For those on the frontlines of healthcare delivery, it must seem that hardly a week goes by without some agency, public or private, introducing yet another set of quality metrics. The two most important initiatives are the Core Measures programs propagated by the Department of Health and Human Services' (DHHS) Center for Medicare and Medicaid Services (CMS) and the Joint Commission for the Accreditation of Healthcare Organizations (JCAHO).

Compliance with these requires the ability of the provider's information systems to identify and select qualified cases. This is typically followed by a manual review of the selected charts, an abstraction and coding of the required data elements, and, finally, the creation and transmittal of the electronic file to the regulatory authority. These programs, and other similar ones that may be mandated by local government or payer organizations, have comparable, though not identical, reporting requirements, with enough differences to vex even the most patient of medical records or UR/QA directors.

As provider organizations move toward more highly automated clinical documentation processes, the challenge is to ensure that the reporting requirements can be more efficiently satisfied. This means that the required data elements are captured as a by-product of the ordering and documentation processes and that the data can be harvested to meet the reporting requirements with a minimum of manual intervention.

The challenge for their software vendors is to provide the logic and the tools embedded in the underlying software architecture of their clinical documentation systems to facilitate this

process. This includes recognizing the logical conditions that qualify a case for reporting, identifying and displaying available and necessary information, prompting system users to specify the additional data, and making the necessary association between those data elements to facilitate the abstraction in an automated manner. The complexity of these requirements can be daunting and, as with P4P initiatives, we believe that it is likely that these reporting requirements will evolve over time and, in the process, encompass both more types of cases and more complex and detailed reporting requirements. Vendors who can meet these needs will enjoy a competitive advantage.

Q. What operational benefits to the revenue cycle would come from a system that includes natural language processing (NLP) and auto-coding directly from the clinical documentation?

A. Despite the increasingly widespread use and sophistication of clinical documentation and related process management IT, particularly Computerized Physician Order Entry (CPOE) systems, the view that this will presage the end of transcription as a primary means of physician data capture is both premature and overstated. Transcription is, and will remain, a primary tool for clinical documentation because it is faster than writing or entering comparable content into computers using existing input technologies. In fact, we believe that technological breakthroughs in speech recognition and natural language processing (NLP), coupled with the coalescence of standards for controlled medical vocabulary (CMV) — a key objective of the Healthcare IT Standards Panel (HITSP) formed under the auspices of DHHS Secretary Michael Leavitt — will only emphasize the continued importance of transcription.

Two of these anticipated improvements are expected to offer particularly significant benefits: computer-assisted coding and autocoding. The former facilitates the coding process by searching transcribed text and assisting the coder by highlighting known terms relevant to the coding process. The latter, through sophisticated NLP, provides the capability to unambiguously identify procedures and/or diagnoses (and the associated modifiers) and automatically translate them into the corresponding CPT and ICD-9/10 codes. The net effect will be to facilitate chart abstraction, improve coding quality, reduce coding costs, and expedite billing.

In addition, we believe that the next generation of voice recognition technology will foster a dramatic growth in transcription because of its application to an expanded variety of clinical document types. Even in those hospitals which lay claim to having a robust clinical information systems environment and a comprehensive EMR, it is often years before the CIS encompasses the complex documentation requirements of allied health professionals such as physical and speech therapists, for example. We believe that breakthroughs in digitized voice technology will benefit these forms of documentation, as well.

ABOUT THIS ANALYST

As program director, Healthcare Provider IT Research, Mr. Holland provides research-based advisory and consulting services to vendors and health provider executives to maximize the business value of technology investments and minimize risk through accurate planning.

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