Making Data Smart: Practical Informatics is Helping Transform Data into Health Intelligence, and Now Moving into Day-to-day HIM Work

By Mark Crawford

Health informatics is often considered to be an advanced level of health information management (HIM). It's also in high demand—in addition to handling, storing, and retrieving health data more HIM professionals are getting involved in the decision-making process regarding what types of information are needed to resolve key issues and identify the best ways to deliver and focus effective healthcare.

With the implementation of the Affordable Care Act, and the ongoing shift away from fee-for-service payment systems and toward value-based care, healthcare organizations are becoming much more data-driven. "As a result health informatics is the new currency in the field of healthcare," says Mark Bell, vice president of health information technology for the North Carolina Hospital Association (NCHA), based in Cary, NC.

Advanced analytical tools also make it easier to collect, store, and analyze a wider range of data. This allows "health informaticists" to organize and analyze data at deeper levels, generating what is often referred to as "healthcare intelligence."

"Healthcare intelligence focuses on the methodologies, processes, and technologies that transform raw clinical data into meaningful and useful information, for a multitude of healthcare-relevant purposes," says Adam Lokeh, MD, vice president of clinical informatics for Wolters Kluwer Health Clinical Solutions and a surgeon at Children's Hospitals and Clinics of Minnesota in Minneapolis, MN. "Healthcare intelligence provides historical, current, and predictive views of healthcare delivery."

Applied informatics aims to take Big Data and transform it into meaningful healthcare intelligence that can be used to analyze the healthcare landscape at any scale. This can be done at a "30,000-foot level" for national healthcare policy, at local and institutional levels for identifying areas of improvement for care delivery or regulatory compliance, or even the individual patient level.

When done correctly, Big-Data-driven analytics can streamline administrative processes, boost quality of care, and save a lot of time and money.

"Applied informatics has the potential to provide patient-centered care, patient involvement, and appropriate healthcare delivery for every patient—at the right time, and in the right amount," says Barbara Andrzejewski, program analyst for the Department of Veterans Affairs' Office of Informatics and Analytics in Birmingham, AL, and executive director of the VHA Informatics Council.

An Evolving Discipline

Applied informatics is the process of taking informatics concepts, theories, and practices and using them in real life situations to achieve better health outcomes. This includes collecting, storing, analyzing, and presenting data, typically in a digital format. These efforts are driven in large part by the acceleration of electronic health record (EHR) adoption brought about by the Centers for Medicare and Medicaid Services' "meaningful use" EHR Incentive Program.

"EHRs are designed to collect prodigious amounts of structured data, and informatics has become shorthand for putting these data to good use," Bell says. "The growth in the number of university degree programs in healthcare informatics is evidence of a new way of thinking about the value of information and how it must be used to improve healthcare."

The definition of applied informatics has changed over the last few years, says Lawrence M. Pawola, PharmD, MBA, professor of health informatics and director of graduate studies in the health informatics program at the University of Illinois at Chicago. "It is shifting from just using technology principles to collect and store data to a more sophisticated culture that strives to ensure data are accurate and used intellectually to ask the right questions and solve problems or prove solutions."

Digging Deeper for Better Decisions

Informaticists find themselves involved wherever data are being collected, stored, and analyzed for decision-making purposes. This includes clinical data, cost data, inventory data, and utility data. They play a critical role in making sure organizations are achieving the best results they possibly can from their investments in applied informatics programs. These specialists also use their interdisciplinary expertise to strategically identify and implement technological infrastructures and workflows that position their healthcare organizations for success—not just with enhanced care delivery at the point of care but also quality metrics, patient outcomes, and regulatory requirements. With these kinds of critical responsibilities, key health informatics personnel need to be included in strategic planning sessions.

"HIM supports and intersects with informatics at its base and across many applications," says Jennifer Teal, MS, RHIA, CCS, CPC, a HIM specialist for the Department of Veterans Affairs' Office of Informatics and Analytics in San Antonio, TX. "HIM professionals are the custodians of the health record, regardless of the technology used. If anything, health informatics has expanded our roles. We utilize informatics to assign clinical codes, ensure patients have access to their own information, and a variety of other applications.

"HIM professionals are also uniquely suited for non-clinical informatics positions, because the core skill set for both positions is very similar."

Other applied informatics tasks for HIM professionals include electronic health information exchanges, clinical documentation improvement, electronic health records (EHRs), personal health records, records management, data standards and interoperability, meaningful use criteria, natural language processing, usability and human computer interaction, and population health. "As a result," Teal adds, "it is critical that the HIM department stays engaged in all areas of health informatics."

Many health informaticists are taking a more proactive role in clinical documentation improvement strategies to promote better information capture, information exchange, care delivery, and revenue cycle. "Consider the mammoth ICD-10 rollout that is underway," Lokeh says. "By leveraging the power of informatics, HIM staff can pinpoint specific documentation practices and issues that could impact compliance and revenue—thereby making the transition process for the organization much smoother."

Health information management professionals are frequently engaged at the provider or payer level to ensure the fidelity of patient-related data that flow into EHRs, clinical decision support (CDS) systems, data warehouses, and financial systems. In particular, data governance, information governance, and IT system architecture are areas where HIM professionals need to be engaged. "Coders are a great example of HIM professionals using informatics skills to ensure the accuracy of data going into various systems," Bell says. "Without accuracy, providers will not get paid and patients will not receive optimal care."

Applied Health Informatics in Action

With the many technologies used in healthcare informatics today, more data are available for analytical purposes than ever before. Systems can be used to abstract out data, statistics, and other relevant information. "For example, in a health information exchange environment, we can track which patients have had their identities matched with other organizations, how many records have been exchanged, and who has accessed the information," Teal says. "We can use this information to further research the impact that having access to additional health information has on the continuity of care and clinical outcomes for the patient."

Lokeh points out that introducing even the simplest form of clinical decision support into physician workflows can dramatically improve results. For example, following the deployment of evidence-based order set technology as part of its EHR/computerized physician order entry (CPOE) go-live, FHN Memorial, a 146-bed hospital in Illinois, achieved a payback

period of 14 months and expects a 153 percent return on investment over five years. Perhaps most important, however, is that quality metrics improvements were substantial in critical regulatory focus areas.

Order sets help physicians choose appropriate antibiotics and practice patterns according to the latest industry evidence, which often reduces the cost of care delivery. "Since the deployment of order sets, FHN Memorial has realized improvements in key clinical performance indicators within the first six months and has maintained or increased performance since that time," says Lucio Martinez, MD, a hospitalist with FHN Memorial. "Outcome measures include acute myocardial infarction (AMI), heart failure, pneumonia, surgical care improvement project (SCIP), outpatient surgical, mortality, and length of stay. These improvements have translated into higher reimbursements from Medicare under value-based purchasing."

NCHA works with hospitals, health systems, and stakeholders to collect and analyze a variety of data, including financial, clinical, claims, quality, and utilization records. A recent project involved creating a statewide, hospital-unique patient identifier that allows NCHA to see patients move from hospital to hospital and track various readmissions data. "Hospitals have been able to track same-hospital readmissions, of course, but they often had little insight into where patients went for a readmission to a non-owned facility," Bell says. "We now provide quarterly reports to hospitals to help them gain a better understanding of patients who readmit, when, and why. This type of large-scale informatics project has been an interesting journey and we continue to discover new value from our efforts and potential enhancements to derive even more value."

Health Intelligence Demand Expected to Increase

Health informaticists represent the interface between technology and clinicians—their mission is to help clinicians define, communicate, and solve real life issues by acquiring and analyzing the correct data for identifying solutions and best practices. This healthcare intelligence is the combination of process and actionable knowledge and will "enable the transformation of our healthcare system from a quantity basis to a quality basis," Bell says.

In a comparison to manufacturing, "healthcare intelligence would be considered part of a lean transformation where everyone knows the main goals and understands the processes that are put in place to reduce waste and manufacture products with as few defects as possible," Bell says. "We spend a lot of money on healthcare in our country, yet we do not have the best outcomes to show for our efforts. Healthcare intelligence will result in measurable improvements to patient outcomes and cost reductions as we move forward."

With the recent wide-scale implementation of applied informatics by clinical systems, many organizations are collecting more data and have more data available to them than ever before. Even with this abundance, many organizations have trouble understanding the extent of the data they have available, or even if the data are reliable and accurate.

Pawola notes that from an organization perspective many health systems are struggling to become more data-driven with valuable data metrics that are meaningful. "Frankly, their executives don't understand the strategic importance of using data to make decisions," Pawola says. "They think they do, but they really don't, especially when compared to those organizations that are forging ahead in this area. Data, rather than intuition or experience, need to be used regularly to make decisions."

Bell believes the demand for applied informatics in healthcare will continue to increase and subspecialties will emerge, such as bridging the data gaps between departments and organizations, or enabling predictive analytics to work at increasingly larger scales. "This type of future will require a high level of trust between all stakeholders, as well as agreement on guiding principles and processes," he says.

Translational bioinformatics is emerging as a dominant subsector in the informatics field that is focused on optimizing the wealth of biomedical and genomic data that now exists. This is driven in part by the growing abundance of publicly available molecular/genomic data sets that are accessible for analysis and translation into novel technologies and therapies.

"Taking the molecular-level data, translating it to human biology, and then using it to improve healthcare at a higher level really epitomizes translational bioinformatics," Lokeh says. "The knowledge and information gained from this process can then be leveraged to drive more proactive and preventative health by better engaging patients and customizing their care."

The healthcare field is rapidly recognizing the value of Big Data analytics—or the ability to take massive amounts of data and distill it down to fine points of information using advanced technology. New technology and tools are permitting better data

storage and deeper analysis than ever before, which is why applied informaticists play a critical and emerging role in shaping the new healthcare landscape.

Healthcare Entering a New Data-Centered Era

HIM professionals are poised to take these roles, experts say. “We are at the beginning of a whole new opportunity for all of us to be more data-driven, with more evidence to support our decision-making,” Pawola says. “We are developing a new paradigm in healthcare where the strategic use of data will separate the haves from the have-nots.”

Healthcare should now become much like other industries that are data-driven, such as manufacturing, retail, and government, Pawola believes. “Healthcare organizations that see this data-driven opportunity will be the winners in the future,” she says. “Those that don’t will be left behind and struggle with market share.”

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