Workaday Informatics: How Healthcare is Applying Practical Informatics to Save Dollars and Lives

By Mary Butler

Watch and learn. For clinical informaticist Nathan Patrick Taylor, MPH, MS, CHDA, and others like him, watching patient-physician encounters and learning from them is just as important as knowing how to query data in a health IT system. Because as technical as informatics can get, at its heart is the use of data and systems processes to make physician encounters with patients better.

Taylor has a background in computer science and software engineering, but his love of information and data analytics has drawn him to the frontlines of healthcare. He has shadowed neurosurgeons, participated in their stand-up meetings and morning huddles, observed med passes in nursing homes, and sat next to physician consultations with patients.

When carefully observing these patient-doctor encounters, Taylor pays close attention to exactly how physicians interact with their patients. Maybe the doctor enters his review of systems into the electronic health record (EHR) during the appointment, or maybe he waits until later. Maybe the physician shows the patient their EHR on the computer screen while he's working, or maybe they give the patient their full attention. All of this is relevant to Taylor and his role as a clinical informaticist.

When Taylor explains this part of his job to other people, he often hears "Well that doesn't sound like data analytics to me." His response is, "Yeah, all of that together, in order to be good at this job and in this role, I have to understand how both sides work."

Taylor works as a consultant with Symphony Post-Acute Network. As an informaticist he must be able to take those clinical observations and use them to help build better physician workflows, capture better information for billers and coders, and, most importantly, improve the quality of care being delivered.

Informatics is an emerging workforce focus for health information management (HIM) professionals—along with the sub-domain of data analytics. Yet many people—including HIM practitioners—struggle with understanding the role of informatics in their profession even as it becomes an increasingly important part of their future. Informaticists can come from computer science backgrounds, like Taylor, from nursing and other clinical backgrounds, or even HIM and IT.

As healthcare organizations continue to generate enormous amounts of data—due to demands such as the "meaningful use" EHR Incentive Program, accountable care organizations' (ACOs) quality reporting requirements, ICD-10-CM/PCS transition data, and more—HIM professionals need to familiarize themselves with informatics, and fast. They can do this by understanding the role of informaticists in organizations, acquiring more skills in data analytics by obtaining a certified health data analyst (CHDA) credential, and by getting a firm grasp on what exactly informaticists do all day. It's time for HIM professionals to move from having just a theoretical understanding of informatics to finally wrapping their brains around it.

Defining Informatics Not Easy

If you ask five informaticists to try and define what the term "informatics" means, you'll get as many different definitions, according to Taylor and Anna Orlova, PhD, AHIMA's senior director of standards.

"I'm not sure that I hear a clear understanding among AHIMA members about what informatics is," Orlova says. "This is not strange, because, in fact, in fields like medical informatics and other kinds of informatics, it's still a debatable question."

Orlova sees informatics as a "modeling discipline" or modeling tool because "it explains the themes of healthcare to the computer system, to the machine. And the computer is a model." If the computer systems—such as EHRs, clinical decision

support programs, etc.—are designed to capture information as well as they possibly can, then providers can make better decisions with them.

The best example of this dynamic is in clinical documentation improvement (CDI) programs, Orlova says. She shared the example of a children's hospital where a physician leads the CDI program. The doctor, in concert with clinical guidelines, works with HIM and CDI professionals to ask: What is the best way to document a clinical encounter to get the best information possible?

Informaticists look at ways of collecting the best patient registration data, triage data, and the data that flows out of an EHR to create workflow documents and templates.

In this case of the children's hospital, informatics is a joint endeavor between HIM and the clinical side, which is consistent with how Vi Shaffer, vice president of research for healthcare at Gartner, describes the role of informatics. Informaticists are the liaisons between the clinical and the health IT realms. And due to the move to EHRs, the line between these realms has started to blur, Shaffer says.

In the days before EHRs, IT took care of building networks, infrastructure, software coding, and engineering. Now, however, "you're not just creating a system for physician order entry, but for orders management, so you're looking at the whole flow among physicians, pharmacists, nurses," Shaffer explains. "You're looking at how the information is used and how it touches each of those parties. The informatics role, as we call it, starts as a group that does the heavy lifting work, from planning to lifecycle management.

"It's the bridge between the technical stuff that IT does and the business or clinical stuff that the end users do, for complex systems."

David Marc, MBS, CHDA, the health informatics graduate program director and assistant professor of HIM and informatics at the College of St. Scholastica, says that when students ask him about whether they should pursue HIM or informatics, he responds by discussing the available jobs they'll be pursuing when they finish the program.

"What I tell them is that HIM is more about the management of personal health information and is primarily the role to use and manage that information to support quality and efficient care delivery," Marc says. "And health informatics is more about advancement of health information technology and the use of data to support improvement in quality, efficiency, and the cost of healthcare."

Healthcare's Triple Aim Needs Data

The US healthcare system's drive to improve quality, lower costs, and improve outcomes, known as the "Triple Aim," is part of the reason informatics is an emerging field, experts say. Federal initiatives like ICD-10-CM/PCS, meaningful use, and ACOs are all intended to help achieve the Triple Aim, and they all need data—clean, accurate, and reliable data—to do it. Informaticists are going to be instrumental in helping to make these transitions easier for physicians, according to Shaffer.

She says that informaticists historically have reported to chief information officers (CIOs), but that's starting to change as they are increasingly reporting to chief medical officers (CMOs) or chief medical information officers (CMIOs).

"One of the things that really brought it to a head was that CMIOs were expected to take an active role in making sure ICD-10 works. Because, of course, the whole process of conversion, one of the biggest things physicians have to understand is how documentation changes under ICD-10," Shaffer says.

The ICD-10 conversion will require better documentation and, for many facilities, implementation of computer-assisted coding (CAC) programs, which Shaffer says will allow providers to pull more insights about the well-being of a provider's population. But in order for a provider to make the best use of CAC systems, physicians will need to improve their documentation.

"That's not just HIM folks going to doctors and saying, 'Improve this.' No, it's medical informatics and HIM and quality going to the doctors together and saying, 'We want improved documentation for research and analysis purposes, for clinical communication purposes, and for revenue,'" Shaffer says.

She notes that for those kinds of CDI efforts to be effective and persuasive to physicians, informaticists are better positioned to make an impact. If physicians have to field documentation suggestions from HIM, IT, and revenue cycle departments, they're more likely to be overwhelmed by unproductive ideas.

One of the key components of the Centers for Medicare and Medicaid Services' (CMS) Triple Aim initiative is reducing hospital readmissions for nursing home and assisted living residents for conditions such as congestive heart failure.[1] To keep providers compliant, CMS has instituted penalties in the form of reimbursement cuts to facilities that don't lower readmission rates.

Symphony's Taylor says that in the long-term care sector in which he works, informaticists are using data to help post-acute providers reduce readmission and fall rates, and monitor pressure ulcers. Post-acute providers are facing growing pressure by Medicare to lower these rates and data analytics is one direction in which they are turning to solve these problems.

"The big thing to me, and it seems simple and common sense, but a lot just don't do it—you have to talk about the data and we, at Symphony, do it every week," Taylor says.

Symphony's president, along with Taylor, has what they call "red alarm" meetings with their long-term care clients where they will discuss the data they've been collecting on fall and readmission rates and pressure ulcers.

"We'll be in a meeting and my boss will say, 'Your return to hospital rate is 45 percent, what's going on?' And they [long-term care facility administrators and nursing directors] have to explain it and come to the meeting prepared. We send the data out ahead of time so they have time to prepare and get their information together," Taylor explains.

By looking at and comparing a facility's historical data, using systems and programs built by Taylor and his team, Symphony can identify which periods throughout a month a patient is most likely to be readmitted to the hospital. This helps nurses and administrators track risk factors and develop interventions. Similarly, Symphony can help gather data on fall rates in a facility, which can identify which residents fall the most often. Once this information is reviewed, staff can look for risk factors in these patients. For instance, residents whose walking speed has declined are at a greater risk for a fall. If this type of information is tracked, nursing staff can put measures in place that reduce falls, such as better observation and motion sensors.

For pressure ulcers, nursing staff can use Palm Pilots—or iPhone and Android smartphone apps—to take pictures of a patient's pressure sores and track any changes over time. Obviously, if a wound worsens or one develops post-admission, Taylor and his team will bring it to the provider's attention during a red alarm meeting so the facility can take steps to improve wound care practices.

"You have to find out what's going on. Staff could be entering the data wrong and there really is no problem but the data is incorrect. There could be a serious clinical issue like not having enough staff. But you don't know until you drill into the details [of the data]," Taylor says.

Informatics' Role in HIM

The College of St. Scholastica's Marc emphasizes to his students, as well as to those within the HIM profession, that the line between health IT and HIM is becoming pretty gray, and a lot of HIM professionals are taking on roles that demand familiarity with data analytics. This trend, he says, is going to require more education in order to keep HIM professionals up to speed.

Many of the advancements in health IT are the result of work with data. "HIM professionals are those that are taking on the majority of that work," Marc says. "That's where a greater education around health informatics is really required, and you're seeing that through AHIMA's career mapping."

Marc says that in the undergrad data analytics course he's teaching, some HIM students really develop a passion for data and analytics and are motivated to pursue more data-driven, informatics-centric careers. But, he notes, there is still a lot of uncertainty about what data analytics actually is for students and even HIM practitioners since the field is evolving so rapidly.

"By educating students more about what data analytics is all about, we're seeing more and more of our students taking on this role and becoming excited about it," Marc says.

HIM students at St. Scholastica today are taking courses in statistics, health data analytics, database management, computer programming, and other classes that help teach them the language of health IT.

Students with an informatics background are finding jobs with titles like chief data analyst or senior data analyst, Marc says. But he's also seeing people in traditional HIM roles like information officers and privacy and security officers pursuing data analytics opportunities. He says undergrad courses are being closely aligned with AHIMA's CHDA credential. Since the credential is so new, not many students have taken the credentialing exam, but Marc is seeing a lot of interest from students wanting to pursue the more data-centric side of HIM.

"It's such an undefined, diverse area, in that the roles that are taking on analytics have informatics components. However, that being said, I'll say this: If you just do a job search today and search 'informatics,' you're going to have job titles that have informatics in the name, a 'health informatics specialist' or 'informatician' or 'informaticist.' They tend to have more of these, traditionally defined health informatics roles," Marc notes.

The fast-paced nature of informatics and health IT is part of the confusion around job titles such as nurse informaticist, physician informaticist, clinical informaticist, and medical informaticist. Because it's still a burgeoning career path, finding candidates who can meet all the desired experience for those roles is difficult. Taylor's role at Symphony was originally written as a nurse informaticist. "My boss said, 'I don't care that you're not an RN, but you have to play this balancing act,'" Taylor says.

He notes that for his boss, not having a clinical background wasn't a dealbreaker because he had the technical skills to get the tech side set up properly—to get a data warehouse built and the infrastructure that supports the company's automated reporting services.

"I don't for sure know the difference between nurse informaticists and physician informaticists, but they're really hard to find. I'd say if you're a person who loves the tech side and the details of the data, then you spend a little time in statistics, a little time in programming, and probably database query language, you should be able to dive in pretty quickly," Taylor says.

Interoperability is another issue that's top of mind for HIM professionals today, since EHRs can't fulfill their mission in facilitating better care coordination if health information isn't interoperable when it's exchanged. HIM professionals have been among those leading the way in trying to implement and develop interoperable systems, but it's also becoming a key focus for informaticists.

Gartner's Shaffer says interoperability is very important nationally, as the newly published Office of the National Coordinator for Health IT (ONC) Interoperability Roadmap demonstrates. Shaffer says interoperability is also a core responsibility for the IT and informatics communities, with HIM making up the third leg of the stool.

"Data integration, data stewardship and information governance are compellingly important," Shaffer emphasizes. "They're the other piece of what's important for health systems if you look at the trilogy of HIM, clinical informatics, and IT. That's the future. But the new core competency in the health system is data and how to use it. And so if you're thinking interoperability, you're missing an awful lot of the sea change that's going on."

NLP Offers Many Practical Informatics Applications

Healthcare providers that are forward-thinking about documentation infrastructure and data analytics should consider the benefits of technologies such as natural language processing (NLP) for population health and clinical decision-making, says Steve Bonney, executive vice president of business development and strategy at RecordsOne.

NLP is a practical application of informatics in that it processes the free-text or dictated portions of an EHR, which has much richer clinical value to researchers and clinical decision-makers than claims data. Providers can use NLP to identify weaknesses in clinical documentation, screen for clinical trial patients, and track the health of the population that they treat much more easily. Structured EHR data, as captured by drop-down boxes, checked or unchecked boxes, and pre-filled templates provides a lot of information but also presents an incomplete picture, says Bonney. NLP, he says, takes the text from the free-text fields to "create data where there is no data."

Researchers and clinical documentation improvement specialists need the "actionable data" from records that NLP helps generate, according to Bonney.

"To me informatics is all about actionable information. Not just being able to go look for it and find it, but have the information find you," Bonney says.

Currently, RecordsOne is working with the Austin Cancer Center in Austin, TX, to identify prostate cancer patients who fit the criteria for an experimental drug. The researchers work with the vendor's NLP software to hunt through patient records in real time in search of certain words and phrases that meet the drug trial's inclusion criteria. When the system recognizes a patient who meets the trial criteria, it automatically sends an e-mail to the center's researchers, saving them from having to review charts manually.

Bonney says some hospital CDI departments have adopted NLP for the purposes of "case identification," to help track patients with conditions such as diabetes or heart failure, which put them at a higher risk for being readmitted to the hospital after an inpatient stay. Just like NLP helped the Austin Cancer Center screen patients for clinical trial inclusion, it can do the same for keywords written or dictated into a patient's chart.

"We can't read the doctor's mind. So when the doctor documents history, current issues, and that information flows to our system, we can say 'This patient has COPD, is on this particular inhaler, this patient hasn't had a history of whatever.' If they meet eight or 10 of these criteria, that's enough to trigger an alert to a researcher as case identification," Bonney says.

Note

[1] Berwick, Donald M. et al. "The Triple AIM: Care, Health and Cost." *Health Affairs* 27, no. 3 (May 2008): 759-769.http://content.healthaffairs.org/content/27/3/759.full.

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Article citation:
Butler, Mary. "Workaday Informatics: How Healthcare is Applying Practical Informatics to Save Dollars and Lives" *Journal of AHIMA* 86, no.5 (May 2015): 18-21.