Niche Analytics

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Specialty and Non-Acute Data Analytics Initiatives Offer Focus and Opportunity for HIM

By Mary Butler

In the fast-paced world of emergency medicine, it's hard to conjure a metric that's more important to both prospective patients and clinicians than emergency department (ED) wait times. It's a key indicator of the quality of care delivered, as well as a valuable piece of marketing strategy, as health systems have started to put their wait times on everything from their websites to billboards.

Susan White, PhD, RHIA, CHDA, administrator of analytics at Ohio State University Comprehensive Cancer Center, is part of a data analytics team that has created a dashboard for clinicians that helps them monitor and measure ED efficiency.

"Dashboards help them see whether we're triaging lower level of severity patients quickly enough and keeping them moving. Or if we want to see how quickly someone with strep gets a culture done and is moved out. Dashboards let them see, for example, that 80 percent of our level 1 patients were seen by a nurse practitioner, so they're able to measure the impact of process improvements," White says.

This is just one small example of the ways in which data analytics is being used across the healthcare industry, and one where health information management (HIM) professionals' skills are in demand. White frequently has to compete with her organization's data warehouse to get RHIA-credentialed professionals on her analytics team. HIM professionals are well-suited for data analytics jobs because they understand how healthcare operations work, how care is reimbursed, and how and where data is stored—and they possess the clinical knowledge to understand the stories coded data tell.

"The most impressive cohort of critical thinkers I've ever met are HIM people. They are cynical about the data so they'll test things, they'll wonder why. When I look for even an entry level analytics person, I want them to be a good critical thinker. And then I can get them the technical skills," White says.

While opportunities exist for doing general data analytics in large healthcare systems, there are other more focused areas where HIM professionals can get involved with analytics to improve operations and care. HIM professionals are doing data analytics in niche spaces such as long-term care, cancer registries and tumor boards, pediatric physician practices, payer organizations, renal care operators, and accountable care organizations (ACOs), as well as in public health organizations analyzing population health.

For example, cancer and trauma programs are required to maintain a certain amount of data and report it to the central registry—which is where the country gets its national data. To maintain a tumor board to receive required accreditation—and assess treatments—cancer registries need to use data to determine whether a treatment plan is appropriate for patients and if they are responding. Payers are another niche area and have begun hiring data analysts to look at the data on their subscribers and watch for care patterns, alerting people, for example, if they are due for a visit with their provider.

Data analytics is a natural progression for HIM professionals—they are already familiar with the coded data and are used to working with the contents of the clinical record. This article discusses program-specific types of data analytics work and how these niches provide an opportunity for HIM professionals to work with data and analyze how specialty areas can maximize services.

Getting Started in Analytics

HIM professionals looking to break into the data field should take self-paced learning programs to get up to speed on analytics and first look for openings and opportunities in their own organizations. For example, HIM professionals should watch for data integrity specialist positions that open at their organization, which is a great fit for HIM. These positions are often a springboard to getting more involved in the data analytics field. Or if a hospital is starting a trauma registry program in the ED, HIM professionals could apply for that position, which can often include entry-level roles. Finally, more organizations are starting to use dashboards to track analytics and quality—and that's an area where HIM professionals can step in and get experience in data analytics, learn the software (usually Tableau), and get their foot in the door.

Long-Term Care Analytics

When Nathan Patrick Taylor, MS, MPH, CHDA, CPHIMS, director of data science and analytics at Symphony Health, started working at his first true analytics job in 2010 at a company where he installed electronic health records (EHRs) in community healthcare clinics, the term "data analytics" wasn't widely used yet. It was called "dashboarding and reporting." In addition to installing EHRs, he also did quality metric performance measurements and got an early glimpse at how artificial intelligence and machine learning would soon be part of the data landscape. But as part of that job he had to become familiar with clinical coding languages such as ICD-9, SNOMED, and LOINC, and that has helped him in his current role building data analysis tools and dashboards for long-term care facilities.

In long-term care, data analytics plays a crucial role in reporting the data that appear on the all-important Centers for Medicare and Medicaid Services Nursing Home Compare website, where facilities are rated by the number of stars they receive. Taylor says that's the most important metric right now, although there's long been a debate around whether that metric actually does a good job of reflecting the quality of a facility. Predictive analytics have become good at predicting readmission rates for patients with joint replacements, while factors surrounding patients with kidney injuries and dialysis remain a challenge.

It's in this setting, he says, where the race is on to develop tools that can be used at a patient's bedside. Taylor uses data analytics to develop screening tools that help predict a patient's fall risk, how likely a patient is to be readmitted to the hospital, or how likely they are to return to skilled nursing after being discharged. His goal is to create tools that integrate seamlessly into the routine tasks a clinician is already performing, such as summarizing patient status at shift change meetings, rounding sessions, or when a patient is admitted to the facility. In Symphony's long-term care facilities, most charting is done on iPads and iPhones, so Taylor and his team try to develop alerts that, for example, warn the provider that the patient is at a higher fall risk due to a combination of medications that they are entering into the chart.

Taylor says he accounts for providers' tendency toward alert fatigue, so the tools are designed around the concept of "parsimony," which means, "What are the fewest number of variables I can provide that give the most amount of information?" Taylor says. Then, when nurses gather for shift change meetings, the tool prompts them to share the most pressing details about each patient to the nurses on the next shift.

These types of tools only scratch the surface of what's possible—or may be possible in the future, Taylor says. For instance, there's research that suggests machine learning could help analyze photos of pressure ulcers and classify the severity and the risks that accompany these wounds. "We just don't have the capacity to analyze that. By no means are we close to analyzing everything we could do [with analytics]," Taylor says.

'Intelligent Dashboard' Helps Long-Term Care Providers Assess Patient Population Data in a Glance

SYMPHONY POST ACUTE NETWORK®

Readmission Window Report

Selected Facility: **Symphony of Joliet**

Patient MRN	Patient Name	Room #	Comorbidity Index	Admit Date	30-Day Period End Date	Days Remaining	Primary Provider	Readmit Probability	Readmit Risk
ABC123	Patient A	245	8	3/28/2017	4/27/2017	1	Doctor A	54.0%	Substantial
ABC123	Patient B	219	4	3/28/2017	4/27/2017	1	Doctor B	41.1%	Substantial
ABC123	Patient C	115	7	3/30/2017	4/29/2017	3	Doctor C	49.1%	Substantial
ABC123	Patient D	238	6	3/31/2017	4/30/2017	4	Doctor A	41.6%	Substantial
ABC123	Patient E	140	6	4/3/2017	5/3/2017	7	Doctor B	18.2%	Low
ABC123	Patient F	122	7	4/3/2017	5/3/2017	7	Doctor C	49.9%	Substantial
ABC123	Patient G	217	5	4/3/2017	5/3/2017	7	Doctor A	74.6%	Severe
ABC123	Patient H	140	4	4/4/2017	5/4/2017	8	Doctor B	40.9%	Substantial
ABC123	Patient I	127	5	4/4/2017	5/4/2017	8	Doctor C	30.8%	Moderate

This table is what Nathan Patrick Taylor, MS, MPH, CHDA, CPHIMS, director of data science and analytics at Symphony Health, refers to as an “intelligent dashboard.” It reflects each patient that is “in house” at the Symphony Post Acute Network facility in Joliet, IL. It contains demographic details, room numbers, primary provider, and a few standardized assessment scores. It also displays readmission risk probability, and a readmission risk category. The nurses use this report in their shift change meetings every morning discussing the current status of each patient.

The readmission risk is determined using a machine learning algorithm. The algorithm takes into consideration numerous factors based on information collected upon admission and throughout a patient’s stay. Those factors include demographic and social data, and clinical data, such as diagnosis codes, procedure codes, laboratory results, and medication lists. The machine learning algorithm also parses free text from progress notes. After the machine learning algorithm is trained, it is then deployed to a data warehouse and updates the predictions every night. The readmission report is then distributed every morning through a secure electronic interface.

The average patient at one of Symphony’s facilities is typically there for seven to 14 days, receiving rehabilitation services for joint replacement surgery and other rehabilitation. There is also space to provide dialysis for severe kidney failure patients and severe mental illness, although those are a very small portion of the patient population.

Accountable Care Organizations Analytics

In ACOs, a model of care where competing healthcare organizations must work together and share data to lower costs and coordinate care, the use of data analytics is essential to the success of participating providers.

Annemarie Wendicke, MPH, CHDA, senior business analyst, population health and management at Hawaii Health Partners, sees this every day in her hospital, which is part of an ACO. The data Wendicke works with on a daily basis is pulled from the EHR vendor used across all of the hospitals, physician clinics, laboratories, imaging centers, ambulatory centers, EDs, and specialty clinics, and is constantly being analyzed to look for efficiencies and ways to improve care.

“Our IT department has done a great job of giving us a direct link from the database where the data is stored directly into [the data visualization software] QlikView and so we can visualize large amounts of data quickly. We look at hospital encounter data as well as DRGs associated with different diagnoses codes, trends, and patterns,” Wendicke says.

This software has been integrated into the dashboards physicians use so that at any time they can look at their practice’s encounter data to find out, for example, which of their patients have outstanding cancer screenings, which ones need to be reminded to have their blood pressure checked, or which women need to be seen for prenatal monitoring. The dashboards are also used in finance committee meetings where physicians and finance officers might want to find out how many readmissions a given facility had over a certain time period. The dashboard has the ability to let them drill down and look at these kinds of rates by encounter, DRG, diagnosis code, or physician.

One project where data analytics has been particularly helpful is in one hospital's effort to reduce admissions associated with pre-term labor. During a retrospective review of ED medical records the hospital found that many pregnant women were presenting at EDs in the evenings—after OB/GYN practices closed for the day—under the mistaken belief that they were in labor. In most cases they were admitted overnight and discharged in the morning by their physician. The work group then took these findings and developed an educational campaign as well as criteria for admission that was integrated into the clinical decision support programs in ED EHRs. If women didn't meet criteria for admission, they were advised to call their doctor first thing in the morning.

Wendicke is working with healthcare professionals of all different backgrounds, including IT, HIM, data scientists, and project managers, but she acknowledges her biology degree has helped her understanding of the more clinical applications of her work. Having knowledge of data visualization programs like Tableau and programming languages such as SQL helps, too. These are skills HIM professionals can pick up with certifications and on-the-job training.

"One of the things that's required in our department is to have some experience with quality measures and clinical outcomes. They should also be able to present data in a useful or meaningful way for a variety of audiences," Wendicke says.

Cancer Registry Analytics

While some HIM professionals have heeded AHIMA's advice to gain data analytics skills through certifications, workshops, and additional classes, others are being introduced to it on the job, which reflects the inextricable link between the two disciplines. Work on cancer registries and registries for other diseases has always been the domain of HIM professionals, and now that the data collected on these registries are being used for more purposes, familiarity with data analytics has become essential to doing the job.

Pam Moats, BA, RHIT, CTR, cancer registry manager at West Virginia University Medicine's Cancer Institute, has been working on her facility's cancer registry for 27 years. She has learned the analytics and informatics applications on the job, but it's the HIM background she possesses that has really been invaluable in this job.

"You could not do this job if you didn't know anatomy, physiology, and medical terminology—and every year it just gets more and more complex," Moats says. "You have to know where to look in the medical record to pull out what you need. You have to have insight, too, not only the disease process but the treatment process. We have to know, for example, how stage 1 breast cancer would be treated."

Her job includes running and writing administrative reports, marketing reports, and quality improvement studies, as well as using informatics to look for migration patterns in where their patients are coming from and how far they have to travel. Registrars also collect information from every patient that's been treated by the center in order to track survival rates and complication rates, as well as concurrent abstracting and preparing patient data for cancer researchers and clinical trials. Moats says new hires for cancer registrars are required to have at least an associate's degree in HIM and be certified in cancer registry.

Moats has worked as a registrar for so long that she's seen this HIM specialty transition from a completely paper-based system to one that's now entirely electronic, where informatics skills are a must. Since all the work related to registries is electronic, much of the registry workforce works remotely—a reality Moats says she never could have imagined when she started in the field. "It's a great profession—a great job," Moats says.

Mary Butler (mary.butler@ahima.org) is associate editor at the *Journal of AHIMA.*

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