

Powering the Information Engine

Clinical informatics fuels efforts to improve quality of care and population health management

BY GERI ASTON

Meaningful use of electronic health records, quality improvement, cost cutting. These are the challenges hospitals face in today's health care economy. At the nexus of these forces is clinical informatics.

"It's really that marriage of people, process and technology — making sure it's all aligned to get the maximum value," says Mark Van Kooy, M.D., director of clinical informatics at the consulting firm Aspen Advisors.

Federal meaningful use requirements motivated many hospitals to develop clinical informatics programs. Still, huge variation exists in hospital adoption of clinical informatics. Some institutions "aren't sure what the role and the appropriate use of an informaticist would be," Van Kooy says. "But advanced organizations are looking far beyond the core requirements of meaningful use and really trying to use clinical IT systems to drive their business and achieve operational excellence — reduce readmissions, increase safety, provide care in the appropriate setting."

When it comes to quality improvement, an informaticist's role as a link between IT and clinicians can't be overestimated.

"Informatics is the engine that is powering the quality of care," says Karin Lindgren, senior vice president of legal and regulatory affairs and general counsel at Availity, a Florida health information network. "The data are like the fuel in the engine. If you don't have docs who are entering the data, informatics isn't going to work," says Lindgren, who also teaches graduate medical informatics courses at Northwestern University and the University of Colorado.

This is why a big part of informaticists' role is working with clinicians to improve their interaction with the EHR so that the data necessary for quality improvement are collected. That's a major focus for Judi Binderman, M.D., chief medical information officer at St. Francis Medical Center in Lynwood, Calif. One goal is encouraging physicians to keep patients' problem lists in the EHR up-to-date. "How do I identify all patients who have stroke if I don't have the physicians doing a good job of maintaining a problem list so I know which patients should be part of my report?"

On the financial side, Binderman is addressing problems with electronic inpatient admission orders. "If you don't use an order set or you don't have the process for getting an admission order right up front, it doesn't matter how sick the patient is, you're not going to get paid," she says.

"We're using informatics to identify retrospectively who doesn't have an admission order so we can fix that," she says. "We're starting to consider how patients got here. Did they come from the ED and we didn't get the order? Did they come as a direct admission from the physician's office? Are they coming for elective surgery and they just didn't get an admission order?" The answers will help to build admission orders into the process more efficiently and effectively.

Streamlining the system

Ease of use is essential to quality improvement. For example, St. Francis and other hospitals are focused on order reconciliation as patients transition from one level of care to another.

"The process that we've got in the system right now is very time intensive and painful for the physicians," Binderman says. It only looks at medications and, even then, medications from home and from the hospital aren't always in the same screen. Binderman is working with IT staff and clinical informaticists on a process redesign for presentation to a physician advisory panel and a multidisciplinary group of end users, such as nurses and pharmacists.

The emphasis on using informatics to improve quality has spurred some hospitals to change their organizational charts. Forward-thinking institutions have centralized clinical informatics and placed informaticists under the chief medical or nursing information officer, as opposed to reporting directly to the IT department, Van Kooy says. In the ideal model, informaticists are assigned to clinical areas so they get to know the clinicians and understand the workflows and workspace, he adds. They communicate bi-directionally between IT and clinicians.

"Informaticists should be on the unit every day and

Who are informaticists?

Informaticists aren't the hardware people, the software people or the bedside provider, says Mark Van Kooy, M.D., Aspen Advisors director of clinical informatics. "They are the people who make sure that the trains are running on time; that the systems are working."

As the title implies, clinical informaticists usually have some sort of clinical background. They most often are nurses, but a growing number of physicians are going into informatics, notes Judi Binderman, M.D., chief medical information officer at St. Francis Medical Center, Lynwood, Calif.

No official training requirements exist for informaticists, and the range of education runs from learning on the job to a master's degree. Hospitals don't necessarily need someone with a graduate degree but should look for people who understand workflow, IT systems, clinical care and, ideally, how the organization works, Van Kooy says. "It can be challenging to find someone with that balance."

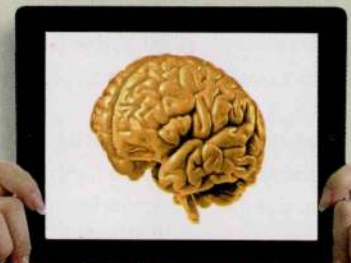
In fall 2011, the American Board of Medical Specialties made informatics a physician subspecialty, with a two-year certification program. Binderman predicts that in the next five to seven years most hospitals looking for a CMIO will expect either board certification or some other type of formal training.

The need for informaticists outstrips the supply, Van Kooy says. He recommends looking internally for physicians interested in informatics and then training them because outside physician informaticists are expensive and hard to find.

For nurse informaticists, again, hospitals might do well to look inside for talented people and then scale them up. "The challenge is who in your organization is prepared to train them?" Van Kooy says. "If you have a mature informatics program, that is pretty easy. But if you're starting out, it's a little daunting to figure out how you're going to take six of your great nurses and train them as informaticists."

Finding outside nurse informaticists is easier because more training programs exist. "But remember, either a nurse or a physician can complete [an informatics] training program at the end of their academic careers and have no organizational experience," Van Kooy says.

— GERI ASTON ●



INFORMATICISTS
are people who understand workflow, IT systems, clinical care and how the organization works.

3 x 3 x 3: Top issues for IT execs

The Healthcare Information Management Systems Society in 2013 published the results of a survey in which health IT executives listed their top three concerns in three areas: top priorities, patient care and staffing needs.

»TOP PRIORITIES

The top three priorities for senior health care IT executives are achieving meaningful use (28%), optimizing use of current systems (20%) and leveraging information (17%).

»PATIENT CARE

The top three areas in which IT can impact patient care the most are improving quality outcomes (31%), reducing medical errors (25%) and standardizing clinical care (12%).

»STAFFING NEEDS

The top three staffing needs are clinical application support (34%), network/architecture support (21%) and clinical informatics (18%).

should be asking every day, 'How is it going? What's working well and what isn't?' Van Kooy says. "They should know immediately when something is not working well or if there is an upgrade that wasn't done as well as it might have been."

At Stanford (Calif.) Hospital & Clinics, informaticists serve on analytics teams, which include data architects, physicians, nurses and quality staff members, that focus on a particular clinical discipline, says Pravene Nath, M.D., chief information officer. The informaticist identifies his or her role as working with the team to improve care, as opposed to simply working on IT.

Common challenges are that the data needed for quality improvement are highly complex, stored in multiple ways across the system and not uniformly entered. "Rather than focus only on how that data could be cleaned up by the IT personnel, the team looks at how the workflow could be changed and the systems could be changed, even on the front end, to improve the acquisition of the data and simplify the process of putting it in so that we're reducing both the garbage in and the garbage out," Nath says.

He points to heart failure as an example. A team trying to reduce readmissions might look at how to identify heart failure patients while they're in the hospital even when the condition is not the primary diagnosis. "Our analytics team works on identifying the characteristics of

patients who have heart failure while they're in the hospital. How do we make sure as a team that heart failure gets reliably entered on the problem list for that patient so we can make sure we're doing all the interventions that we want during the hospitalization and after discharge?"

The groups prioritize and decide what to work on to support care improvement in their clinical areas. The team's nurses and doctors not only bring the clinician viewpoint to the project, but they lead their colleagues in adopting whatever changes the team develops. "In the end, it's not about changing technology, it's about changing the practice," Nath says. "The technology has to support it and empower it and enable it, but if nothing is changing, we're really just wasting time."

»IT opportunities

At Beacon Health System in Indiana, IT no longer drives the innovative projects being done with EHRs or clinical data, says Steve Huffman, chief information officer. "IT tries to step back and let the operator or the clinical department go through the normal Six Sigma or Lean process to improve patient care, and we're able to provide innovative views of the data to support that effort and then measure it either on a real-time basis or everyday basis to keep them on track with improvement."

This new approach has caused a culture change among physicians, says C.J. Wachs,

R.N., director of clinical informatics. "They recognize the opportunities of technology," she says. "They no longer think that it's something being done to them; it's tools for them. They take a large amount of ownership of this, and they are not only holding themselves, but us, accountable to seeing that those tools are driving better patient outcomes."

Ken Elek, M.D., CMIO at Beacon's Memorial Hospital of South Bend, points to electronic decision support alerts as an example of the change. Previously, IT would put in the alerts and then tell the doctors about them. Now, physicians ask for them.

"When we went to electronic progress notes, there was no longer the ability for someone to put a sticky note on the front of the chart that would say, 'You forgot to address VTE [venous thromboembolism] prophylaxis,'" Elek says. The physicians thought the reminder notes were helpful and asked him for an electronic VTE prophylaxis alert. "The alert comes up, they check a box, they sign and they're done," he says. "We try to take our time and put the elements in there that make it a one-step workflow for them, so it's not just an alert popping up to annoy you."

Progressive hospitals also are using clinical informatics to develop best practices tailored to their patient populations, staffing structure and workplace characteristics.

"I can start looking not only at individual

patient outcomes, but start making some generalities about my particular population of patients who have diagnosis X and what seems to be working best for them," Binderman says. "Now I get to a local standard of best practice for evidence-based outcomes, and I've got good data to support that."

Best practices can be developed by looking at outcomes by physician. The data could show, for example, that between two doctors with similar patient populations one physician's diabetic patients are in better control than the other doctor's patients, Binderman says. "Now, I can go back to Dr. Smith and say, 'Would you be willing to try using on a handful of patients the approach that Dr. Jones is using?' and we can figure out if it's really better and should become our new standard of care, or maybe it was just a fluke."

This approach enables hospitals to create customized processes and workflows that support nationally recognized care standards. "We hear people say, 'evidence-based medicine, just do that,'" Huffman says. "Well, that doesn't have localization or account for workflow differences that might happen on one floor versus another."

Once a hospital has adopted a best practice, the informatics team can track variation from it. "We now have the ability to look at what's happening to each patient and by each provider and we can provide that feedback to the providers so they can converge on the standard," Nath says.

► Continuous learning

At the cutting-edge of clinical informatics, some hospitals are exploring the application of machine learning algorithms to large data sets in an effort to identify patterns that otherwise wouldn't be seen that may be associated with an outcome of interest. Stanford Hospital & Clinics is in the early stages of such a project with Stanford University.

"When the computer looks at the data, it's not biased toward the things that we already think might be associated with [the outcome] or that the literature might have already identified," Nath says. "It's looking at large numbers of different parameters and will come back with predictors that may be the ones that are obvious, but they may be surprising."

The idea is to look for indicators that patients are at risk of a negative outcome, such as readmission or a fall, or to more quickly iden-

tify a dangerous condition, such as sepsis, he explains. At-risk patients then could get more intensive care, an earlier intervention or closer monitoring.

While predictive analytics is hot right now, it's incomplete because data systems are still maturing, Van Kooy says. Figuring it out is the key to population health.

"The Holy Grail is to be able to intervene

before patients have a decline," Van Kooy says. "It's much better to correct a minor heart blockage than to treat a heart attack. It's much better to prevent a fall than to treat a broken hip. As we get better and better at understanding the patterns and the predictors of risk and of loss of function, the better we'll get at maintaining the health of our communities." — Geri Aston is a contributing writer to H&HN. ●

EXECUTIVE CORNER



► Making quality improvement easier

For clinicians to use such tools as CPOE or decision support — and to use them correctly — the technology needs to be user-friendly. Take medication reconciliation, says Mark Van Kooy, M.D., director of clinical informatics at the consulting firm Aspen Advisors. "If I have to do too many clicks, if I have to go from one screen to another and back again, if the nurses and the physicians disagree about who should be capturing the data, or the data are incomplete or inaccurate, then everybody's job slows down and there is an increased risk of error. The informatics function is key in designing, maintaining and evaluating those tools and ensuring they work as well as they possibly can."

► Increasing clinician efficiency

Clinical informatics teams look at the effectiveness of different therapies and diagnostics to determine whether they provide value to the patient. One example is prescription drug use, says Judi Binderman, M.D., chief medical information officer at St. Francis Medical Center, Lynwood, Calif. "Are doctors ordering a fourth or fifth generation when in our population a second generation that's a generic and less expensive would do just as well?"

► Providing an edge in liability risk

Creating order sets that follow accepted standards and require physicians to follow the prompts has potential to protect against liability cases or aid in their defense, some experts say. Binderman uses venous thromboembolism prophylaxis as an example. The system can be structured so that providers can't move forward in the order set unless they choose a form of VTE prevention, such as compression stockings or an anticoagulant, or indicate why the patient is not a candidate, such as the patient is already on an anticoagulant. "I've guaranteed compliance, and now no one can come back and say, 'you say you did VTE prophylaxis, but there is nothing documented.'"

► Enabling population health

Some hospitals are experimenting with predictive analytics, combing through large databases to look for patterns. "It's just like how Amazon knows what other books you might read," Van Kooy explains. "People who bought this book might also like this book; people who have this condition might also find that they have this condition or they might get sicker in the next few weeks and may need to see a physician." The accountable care model makes being able to predict and then prevent poor outcomes an advantage. "It's all moving in the same direction of reducing cost and increasing quality in the best possible way by really avoiding illness, avoiding injuries and improving function."

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