SCOTTSDALE INSTITUTE

INSIDE EDGE

Volume 18, Number 7

CDS: Successfully Improving Outcomes and Quality

EXECUTIVE SUMMARY

In a reflection of just how strategically important clinical decision support has become to the emerging world of value-based healthcare, CDS is now part of the official CEO lexicon. In our many conversations with CEOs in the past two years, including interviews for SI's CEO Viewpoint, CDS is invariably referenced as a critical tool for eliminating preventable complications, effectively managing chronic conditions and decreasing readmissions.

CDS—in its essence the application of evidence-based intelligence at the point of care—is imperative for safety, quality and efficiency. If the success and viability of your health system stands or falls on the ability to target medication errors, VTE, diabetes and other improvement imperatives, then your success and viability stands or falls on your ability to use CDS. CDS is a critical element of any future strategy involving accountable care, value-based purchasing and population-health management.

Collaboration: Central to SI's Mission

Because CDS is interconnected with nearly every aspect of healthcare delivery, implementing it is difficult and expensive. Fortunately, you don't have to do this alone. Collaboration is a pillar of Scottsdale Institute and in that spirit SI has supported CDS pioneers and experts across the country in spreading the vision, developing content and sharing best practices.

For example, SI supported and co-published two authoritative CDS guidebooks, most recently *Improving Outcomes with Clinical Decision Support: An Implementer's Guide* (Second Edition, Osheroff, Teich, Levick, et al, HIMSS 2012, www.himss.org/cdsguide), which upon further reference in this report we will cite as *CDS Guidebook*. SI is also a founding Society Partner in the "CDS Collaborative for Performance Improvement" in which many interdependent stakeholders work together to apply the guidebooks' recommendations to their local improvement efforts.

Jerry Osheroff, MD, principal of TMIT Consulting, founded the CDS/PI Collaborative to help providers, EHR/HIT vendors, federal agencies and others leverage CDS to address healthcare quality, safety and efficiency imperatives. Supported by Collaborative tools and resources providers and others are documenting their target-focused CDS strategies in

Scottsdale Institute Conferences 2012/13

Fall Forum 2012
Oct. 25-26, 2012
Hosted by Memorial Hermann Healthcare System, Houston

Spring Conference 2013
April 17-19, 2013
Camelback Inn, Scottsdale, Ariz.

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Oct. 31-Nov. 1, 2013
Hosted by UCLA Hospital System

Spring Conference 2014
April 23-25, 2014
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Jerry Osheroff, MD, TMIT Consulting

a structured template based on the "CDS Five Rights" (defined below). Participants use this documentation for internal discussions and sharing with other organizations—and thereby enhance their CDS and performance-improvement strategies and implementations. In addition, work with SHM distilled CDS best practices for VTE prophylaxis into the Collaborative's template; this is not only helping other participants with CDS efforts in this area, it also provides a model for future synthesis of successful practices from individual sites into best practices. For more information on the Collaborative visit www.scottsdaleinstitute.org and select the "CDS Collaborative" link at the far right of the top navigation bar.

First, some definitions

Many people associate CDS with automated alerts and reminders to help clinicians make the best decisions for a patient's care. However, it is much more than pop-up prompts—which can be problematic. A broad and outcome-focused definition is from the *CDS Guidebook*, p.15, the culmination of leading thinkers' give and take on the subject:

"Clinical Decision Support is a process for enhancing health-related decisions and actions with pertinent, organized clinical knowledge and patient information to improve health and healthcare delivery. Information recipients can include patients, clinicians and others involved in patient care delivery; information delivered can include general clinical knowledge and guidance, intelligently processed patient data, or a mixture of both; and information delivery formats can be drawn from a rich palette of options that includes data and order entry facilitators, filtered data displays, reference information, alerts and others."

This definition is closely tied to the CDS Five Rights Framework, a foundational approach articulated in the *CDS Guidebook* for configuring and deploying valuable interventions. This model states that we can achieve CDS-supported improvements in targeted healthcare outcomes if we communicate:

1. The *right information:* evidence-based, suitable to guide action, pertinent to the circumstance;
2. To the *right people:* considering all care team members, including clinicians, patients and their caretakers;
3. In the *right CDS intervention formats:* based on the intervention types such as an alert, order set, documentation tool, data display or reference information;
4. Through the *right channels:* for example, through an electronic health record (EHR), personal health record (PHR), or a more general channel such as a website or a mobile application;
5. At the *right times in workflow:* when it is most needed to make a decision or take action.

With these assumptions in mind as well as the understanding the healthcare community is still in the early stages of deploying CDS, we asked experts across the country to comment on where CDS is today and where they see it heading.

Huge gaps

"Most practicing physicians lack CDS capability," says Andrew Wiesenthal, MD, SM, San Francisco-based director at Deloitte Consulting who previously practiced for 30 years at Kaiser Permanente. About 35 percent of hospitals have EHRs and, while patient safety has improved, he notes that nearly two-thirds of all physicians still practice without the benefit of CDS. Further, most ambulatory offices lack EMRs, a necessary component of a well-designed CDS strategy.

If Kaiser's nine million members can be viewed as a microcosm, Wiesenthal says, the outpatient sector's significance is clearly the next great frontier: Kaiser has 35 million to 40 million ambulatory visits compared to 300,000 hospitalizations, half of which are routine OB-GYN or newborns. "So, CDS needs to happen in the ambulatory setting. Most 'touching' of the patient—Kaiser's global term for patient encounters of all kinds—occurs remotely. Less than half of all ambulatory encounters are actual physical encounters."

That trend was greatly accelerated by Kaiser's implementation of a member portal five years ago. Again, the numbers tell the story: In 2006 there was zero interaction with members across the portal; today 40 percent of touches occur across the portal. When combined with other media such as telephone calls actual physical visits drop to less than half of all ambulatory encounters.

Andrew Wiesenthal, MD, SM, Director, Deloitte Consulting

Deloitte.

Health systems are getting the message. While just a decade ago only a few academic medical centers used clinical decision support, today most of them apply decision support at the point of care in some form or another. "We'll see an explosion of CDS," he predicts. A simple example: deliver a rule based on the Centers for Disease Control's recommendation that everyone receive an influenza vaccine starting Oct. 1. "It's relatively easy to design a rule to remind a caregiver to ask a person if they've had a flu shot and if they haven't to offer one, and explain to them why it's important."

CDS + HIE = Value

Some health information exchanges (HIEs) are well positioned to roll out CDS rules. "Wouldn't it be nice if we had five to 10 rules that an HIE would handle routinely?" asks Wiesenthal. Applying CDS would create value beyond the rudimentary HIE use of sharing information.

It won't happen overnight as CDS does not operate in a vacuum but is part of a larger cultural transformation. Wiesenthal notes, for example, that orthopedists and other specialists must move past their traditional independence and view themselves as part of

Nearly two-thirds of all physicians still practice without the benefit of CDS. Further, most ambulatory offices lack EMRs, a necessary component of a well-designed CDS strategy.

TELECONFERENCES

October 11
Are We Ready? New Industry Research on Health IT Adoption
- Carol Simon, PhD, SVP & executive director, The Optum Institute

October 15
SI-Cerner Users Collaborative No. 47: Patient Portal
- David Voran, MD, medical director, Heartland Health

October 18
Trinity Health: MU Progress Toward Stage 2
- Carla Robelli, VP, PMO, Trinity Health
- Tauana McDonald, VP, Integration Services, Trinity Health

October 31
Successful Practices, Challenges, and Solutions in Project Prioritization in Large Health Systems-Panel Discussion
- John Kocon, VP, Enterprise Program Management Office, Catholic Health Initiatives (moderator)
- Carla Robelli, VP, PMO, Trinity Health
- Nanda Lahoud, administrative director, Value Realization-Innovative Technology Solutions, Texas Health Resources
- Emily Handwerk, system executive, Information Systems, Memorial Hermann Healthcare System
- Mike Rodriguez, manager, Professional Services, Memorial Hermann Healthcare System
- Rob Lathrop, PMO, Sutter Health

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a larger integrated care team for CDS to be effective. "What are they going to do when they get a reminder to do something they're not used to doing, such as reminding a 68-year-old lady with a fractured vertebra that she's due for a mammogram? We have to refine the notion of responsibility for all care-team members."

An illustration of how this CDS-enabled, integrated-care-team approach—in which even the receptionist plays a key role—can be found in a Kaiser video entitled "Mary Gonzales' Kaiser Permanente Story" on www.youtube.com. "It's what happens when you combine integrated care with integrated information and a broader concept of care. The receptionist is part of the delivery team and not only has decision support but the power to use it. She does so tenaciously," he says, noting that when Mary Gonzales and others like her were surveyed, they felt well-cared for in such a CDS-supported environment.

Applying CDS to populations

"IT-enabled CDS will play a critical role in the success of accountable care organizations (ACOs)," says Bill Bithoney, MD, national medical business leader for Truven Health Analytics (formerly Thomson Reuters Healthcare). A practicing physician for 31 years and head of general pediatrics and primary care at Boston's Children's Hospital, Harvard Medical School, for 17 years, Bithoney was also CEO of the Sisters of Providence Health System (SPHS) and Mercy Medical Centers in Springfield, Mass.

He witnessed firsthand how only 3 percent of patients could account for half of a given population's medical costs, especially from the perspective of the Mercy Medicare Advantage ACO, which the health system managed clinically. The ACO was a joint partnership between Mercy Medical Centers and the Hamden County Physician Group.

Bill Bithoney, MD, National Medical Business Leader, Truven Health Analytics

TRUVEN HEALTH ANALYTICS

Using diagnostic-coding groups and risk analysis, the Mercy Medicare Advantage ACO identified a subset of patients to comply with Medicare's requirement that ACOs identify the sickest 5 percent of patients. When the organization applied CDS to that group, it was better able to manage transitions of care across the continuum, including reconciling medication lists when the patient was admitted to a hospital from a nursing home or discharged from hospital to home.

"In 1999 the IOM told us we killed about 100,000 patients a year. In 2010, HHS told us it was more likely 180,000. Many of those deaths arise from poorly coordinated transitions of care. Medication reconciliation is a form of CDS that addresses those gaps," he says.

Transitions and traction

"If I had to focus on one factor," says Bithoney, "it would be transitions of

care. It's really bad if you forget to tell the next doctor that the patient had surgery, but it happens all the time." A Level 3 defect in Six Sigma means there's a 97-percent likelihood of providing optimum care—but that also means there's a 3-percent chance of delivering poor care such as giving a wrong dose of a medication or performing an erroneous procedure. "If the airlines had a 3-defect performance level it would be completely unacceptable."

CDS can also support value-based purchasing with tools to help prevent re-admissions based on a patient risk-assessment by recognizing symptoms and other patterns of those patients most likely to be re-admitted unnecessarily. "CDS is going to get a lot of traction because CMS is withholding payment for unnecessary re-admissions," asserts Bithoney.

As a result of such clinical intervention strategies, the Mercy Medicare Advantage ACO cut re-admissions to 170 admissions per 1,000 from 383 admissions per 1,000 annually. Thus Bithoney's ACO cut more than 200 admissions per 1,000 Medicare Advantage patients, each of which costs $10,000, he says. That translated to a savings of nearly $2 million a year for every 1,000 ACO patients—even after accounting for the homecare provided to prevent their hospital admissions.

"I don't think the future of healthcare is just CDS or analytics. They just point us in the right direction such as to home visits instead of office or hospital visits." The Mercy Medicare Advantage ACO increased its annual home-health visits to 81,000 in just a year from 64,000 to better support ACO patients.

Says Bithoney: "CDS doesn't operate in a vacuum. It provides information to doctors as to who's at risk and alerts physicians and other providers on the care team to that fact. A combination of intense clinical intervention and CDS is where the rubber meets the road."

CDS and real ROI

"We think of CDS as one of the Holy Grails of healthcare IT, even more than CPOE," says John Lemoine, MD, CMIO at Sharp HealthCare, a seven-hospital integrated delivery system serving the San Diego metro area that won the 2007 Malcolm Baldrige National Quality Award. "CPOE is a milestone, but the real ROI is from CDS," he says.

When applied holistically within the framework of the CDS Five Rights, CDS interventions generate multiple ROIs when applied to workflow in places like the ED—or in more sophisticated ways through intelligent order-set design that support the Five Rights. "Too often we assume CDS is only about rules and alerts, but it's much more than that," he says, noting that Sharp is still in the formative stages of CDS implementation. Instead of focusing on large, all-inclusive order sets, the organization is designing modular order sets that "spell out" antibiotics and therapies, for example, to treat specific conditions like diabetes and pneumonia.

Sharp is also exploring how to use CDS to help it comply with Core Measures and quality measures—to facilitate

continued

November 1
Clinically Focused Packaged Analytics – Panel Discussion
- Joe Van De Graaff, research director, Business Intelligence, KLAS (moderator)
- Lee Pierce, director, Business Intelligence, Intermountain Healthcare
- John Cuddeback, MD, CMIO, Anceta/AMGA
- Mike Kramer, MD, CMIO, Spectrum Health
- James Schweigert, MD, associate medical director, Quality and Medical Director Emergency Medicine, Spectrum Health
- Kristen Farmer, manager, Quality & Professional Practice, Spectrum Health
- Wendy Wright, VP, Clinical Integration, MissionPoint
- Shawn P. Griffin, MD, chief quality and informatics officer, Memorial Hermann Physician Network

November 7
Quality Measures in HIT
- Tim Smith, principal, Deloitte Consulting LLP
- Kirk Mahlen, specialist leader, Deloitte Consulting LLP

November 8
AHS Journey to Meaningful Use
- Bruce A. Wacker MT(ASCP), director, Customer and Regulatory Services, Adventist Health System

Share your organization's experience, success factors and lessons learned with other SI members by hosting a teleconference presentation. Contact us at scottsdale@scottsdaleinstitute.org

WELCOME NEW MEMBER

OSF HEALTHCARE

The Scottsdale Institute is proud to announce OSF HealthCare System, based in Peoria, Illinois as a new member.

OSF HealthCare, owned and operated by The Sisters of the Third Order of St. Francis, includes OSF Healthcare System consisting of eight hospitals and medical centers, one long-term care facility, and two colleges of nursing. Additionally, OSF Medical Group is a physician network consisting of more than 650 primary care and specialty physicians and advanced practice providers in over 90 locations throughout Illinois.

OSF HealthCare owns an extensive network of home health services, healthcare-related businesses and the OSF Healthcare Foundation, the philanthropic arm.

OSF Healthcare System consists of the following:

- OSF St. Francis Hospital & Medical Group, Escanaba, Mich.

continued on next page

physicians in ordering tests or tell them why they may be inappropriate. "The goal for our medical informatics department is to build an order set into the physician's EMR with adequate documentation tools so it's as easy as possible," says Lemoine. A classic example: to explain why a medication prophylaxis for VTE would not be appropriate for a patient with bleeding in the head or gastro-intestinal area when it would seem like the logical for every patient.

John Lemoine, MD, CMIO, Sharp HealthCare

SHARP

A veteran RN-and-pharmacist duo run the order-set department with the intimate knowledge they need to fine-tune them and know which ones are being used and not used. "That part has been very successful," says Lemoine. Less reliable are the rules and alerts supplied by EHR vendors. "We like to put up only actionable alerts. Not just a warning, but why the advisory is up and also what the possible choices are. The double-edged sword is that you have to be a lot smarter because it requires more complex programming."

Hard stuff first

Sharp has opted to tackle the most difficult—ones that are more nuanced and take longer to develop—alerts in the beginning. A big advantage in vetting these and other alerts has been the technical ability to run them 'live' in a production environment yet in the background to determine how many times they fire. "It can surprise you. You think it's going to fire only a couple times a month, but it fires a couple of times a day," he says.

There's a flood of demand for such rules, he says, because of clinicians' tendency to want a technical rather than a personal fix to a problem. For example, a rule to remind caregivers that a patient had a Foley catheter fired so many times that it angered them. "That's been a big challenge, usually because the scope of such rules is so broad that they fire problematically" or too frequently, says Lemoine.

To address such issues, Sharp set up a web page for providers called rules@sharp.com that allows them to message the medical informatics department with requests, which are reviewed weekly. Most of the time the department responds that the requested rule's scope is so broad that it will fire much too often. Should a request be accepted, the order-set group goes to work developing a flow diagram with logic, such as where in the workflow the CDS intervention is located.

This effort requires a governance structure, and Sharp's relatively new informatics department and its user groups play instrumental roles. A 60-person, multidisciplinary EMR operations group meets twice monthly to discuss CDS and workflow via video conferences. Sharp also uses a physician-dominated, evidence-based-medicine user group that determines the features of order sets. Sharp is also making an effort to adapt CDS to ICD-10 and CDI. The process remains the same for all: 1) Assess what the

provider needs; 2) Review for completeness; 3) Present to the provider why it needs to be done.

Forever fine-tuning

The two order-set leaders act as the interface between users, software programmers and analysts. "They're forever fine-tuning things. Sometimes the user has difficulty defining the need. Those guys are really good at filtering," says Lemoine.

At Sharp, CDS governance involves a CMIO, nurse informaticist and director of clinical informatics. A clinical quality committee provides leadership over hospitals for quality measures. "The clinical quality committee is a collaborative group where the thinking happens—Do we need a rule? An order set?" says Lemoine.

While it is too early to have established any comprehensive statistics concerning CDS performance at Sharp, Lemoine says that the organization has documented "if a physician uses the order sets we've developed for pneumonia with the right antibiotic for the type of pneumonia, they're right 100 percent of the time. If they use their own, they're right 90 percent to 96 percent of the time. Under value-based purchasing, it costs $4,000 each time the proper antibiotics aren't used. Value-based purchasing guidelines under Medicare are highly strict for CHF and pneumonia for starters. You have to have CDS and know what part to use. Not just the fancy stuff, but the intelligence in how the EMR can incorporate it and how to use documentation. Just one boo boo and you're out $4K."

Ascending decision support

Until recently, St. Louis–based Ascension Health, the nation's largest Catholic healthcare system with $40 billion annual revenue, had a laissez-faire policy toward CDS, with each of its individual Health Ministries or regional systems responsible for their own CDS development. "Each was in a different stage of implementing an EHR, which you need for comprehensive CDS," says James Nolin, MD, director of clinical excellence at Ascension, which counts 80 hospitals, 1,400 locations and 30,000 affiliated physicians in 21 states.

Ascension was also less directive about CDS because physicians wanted to first ensure CPOE was in place. "Now that CPOE is in place, we're adding CDS," he says. Steering this at such a large organization is still not easy. Ascension employs four major EHR platforms—Cerner, Allscripts, Meditech and McKesson—with enough significant differences that it's difficult to share design among them. Within the four major platforms, user groups have been formed to facilitate information sharing.

"All the things that happen in a hospital occur as a result of physician orders, so we want best-practice content at the point of the ordering process," says Nolin. At the health-system level, Ascension for several years has hosted a central repository of order sets and plans of care.

It has been difficult to be comprehensive with different EHRs and stages of implementation. To that end the organization now takes a two-fold approach.

continued

(110 beds)

- OSF Saint Anthony Medical Center, Rockford, Ill. (254 beds)
- OSF Saint Elizabeth Medical Center, Ottawa, Ill. (99 beds)
- OSF Saint James-John W. Albrecht Medical Center, Pontiac, Ill. (47 beds)
- OSF St. Joseph Medical Center, Bloomington, Ill. (154 beds)
- OSF Saint Francis Medical Center and Children's Hospital of Illinois, Peoria, Ill. (616 beds)
- OSF St. Mary Medical Center, Galesburg, Ill. (99 beds)
- OSF Holy Family Medical Center, Monmouth, Ill. (25 beds)
- OSF Saint Clare Home (long term care)
- Saint Francis Medical Center College of Nursing
- Saint Anthony College of Nursing

Welcome to Kevin Schoeplein, CEO; Michelle Conger, SVP, Chief Strategy Officer; Jeffry Tillery, MD, VP & CMO; Jim Mormann, CIO, and the entire OSF Healthcare System leadership team.

The first is to look at CDS comprehensively around organizational goals—for example, to reduce hospital readmissions—based on workflows and management of patients. "This is not global. This is narrow and deep," he says. The second is to build out the organization's analytics capability based on CDS.

"Both approaches are still in the developmental stage and we have a lot of beta testing going on," says Nolin. "The reason is this: While CDS is important, you have to pick your battles based on the priorities of payers. With government as the biggest payer we need to be as successful as possible with the components of value-based purchasing, including reducing readmissions and meeting core measures, creating ACOs and supporting our CMS contract partnership." Under the latter Ascension is participating in the Partnership for Patients under CMS' Health Engagement Network (http://www.healthcare.gov/compare/partnership-for-patients/index.html).

Changing how medicine is practiced

"This big push by government to improve performance is going to make a difference in both individual and population health. This work is really revolutionizing how medicine is practiced. The most difficult challenge, whether CDS or other reform initiatives, is physician resistance. That's especially true with CDS because it's disruptive to current workflow. These are revolutionary changes, but it initially slows them down. But this is the new norm," he says.

James Nolin, MD, Director of Clinical Excellence, Ascension Health

ASCENSION HEALTH

Having witnessed more than two-dozen EHR implementations, Nolin recognizes the same pattern repeating itself: huge provider resistance generating courageous leadership on the part of advocates; providers finally get through the learning phase and incorporate it into their workflow and then begin to ask, "Why don't I have more tools?" That triggers its own problems because they typically request more alerts. "Alerts can be disruptive," he says, "so you need to use other forms of CDS such as dashboards or predictive analytics."

He says a new area emerging is patient-focused CDS. "One thing we don't do well is give patients responsibility for their care. As a medical profession we've held onto an expert culture where we've got all the answers. People are now walking around with computers in their pockets. All of a sudden you can have people—rather than just their provider—input information and drive some form of CDS," says Nolin.

Given that smart phones are used by a larger percentage of the population than personal computers—people are passionate about their phones, which are more affordable and portable than PCs—smart phones have become an important component of patient engagement and population health management models. "One

WELCOME NEW MEMBER

Tri-City Medical Center

The Scottsdale Institute is proud to announce Tri-City Medical Center, based in Oceanside, Calif., as a new member.

Tri-City Medical Center is a full-service healthcare facility that has been serving the San Diego County coastal communities of Carlsbad, Oceanside, Vista and the surrounding area since 1961. Community-owned and operated, Tri-City Medical Center operates a 397-bed hospital with over 500 physicians on staff, representing over 60 medical specialties and sub-specialties. It offers state-of-the-art technology, including the da Vinci Robotic Surgical System, and it is the only hospital in San Diego County offering spine surgery using the Mazor Robotics Renaissance guidance system.

Among Tri-City's Awards and Achievements:

- The Joint Commission Gold Seal of Approval and Accreditation for outstanding stroke care

continued on next page

thing we want to do is keep people out of the acute-care setting. By providing patient-specific information to them on a smart phone you'll have a huge impact on utilization and drive down cost," he says.

For example, a person could input glucose levels and insulin doses or weight and medications she is taking and receive recommendations in return. Smart-phone apps allow people to set health goals, pace themselves and manage weight loss and many other things. "That's all decision support. We haven't even scratched the surface of what CDS will do for healthcare," says Nolin, noting that Ascension Health is itself developing smart-phone apps for management of chronic disease.

Outside the CDS box in Indiana

St. Vincent Health, a 22 hospital integrated delivery system based in Indianapolis and a member of Ascension Health, is exploring with the Indiana Health Information Exchange (IHIE) how it might be possible to cut hospital re-admission of CHF and COPD patients by using remote home monitoring through a 2010 Beacon Community grant. CDS is an integral component of that strategy.

"My feeling about CDS," says Alan Snell, MD, St. Vincent's chief medical informatics officer, "is that we need to think more broadly than just hospital stays or even discharge and care transitions. CDS can help reduce re-admissions, but we need to embed evidence-based content and CDS as we move more toward team care for the patient-centered medical home and population management."

Alan Snell, MD, CMIO, St. Vincent Health

St.Vincent

CDS helps standardize care done outside the hospital. "When you look at evidence-based guidelines, most are focused on the inpatient side and don't utilize other members of the care team such as physician extenders, nurse navigators, social workers and dieticians. My vision is to deliver all of the CDS components like alerts and reminders to support what we call the customized care plan, designed especially for patients with complex chronic diseases. This will allow us to reduce medical errors, improve safety and quality of care—and also improve quality of life. The goal is to educate these patients and their families to manage their disease better and to remain independent longer," he says.

Also, the customized care plan needs to be coupled with "remote care management" strategies to complement onsite appointments and visits as much as possible through home monitoring of patients. The focus is on early intervention. Vendors of remote-monitoring technologies not only need to embed software into their devices for data collection, but clinical parameters and decision support as well. This will include alerts—usually red icons on a dashboard display—as well as reminders and best practice protocols, guidelines. Certain lab results can trigger alerts that lead to decisions based on the CDS Five Rights when considered

continued

- First nationally accredited Chest Pain Center in San Diego County
- Nationally accredited, with commendation, for its comprehensive cancer care, one of only 1,400 cancer treatment facilities nationally
- San Diego County designated heart attack receiving center
- 6th in nation for reducing heart attack readmissions
- 100 Great Places to Work in Healthcare
- Approved Shared Savings Accountable Care Organization (ACO) for Medicare patients

Welcome to Larry B. Anderson, CEO; George Gilmore, VP, Information Technology; and the Tri-City Medical Center leadership team.

in the context of the patient's longitudinal record.

Such analytics will allow providers to identify a trend, develop business intelligence around that trend even before the patient exhibits symptoms and then trigger early intervention. Evidence-based medicine could, for example, prompt the patient to choose three options. "If you wait until the patient deteriorates so they have to go to the ED, they're usually admitted to the hospital because of their multiple chronic conditions and the ED is so busy that it's typically easier to just admit the patient," says Snell.

"Traditional HIEs have been about results reporting, but when an HIE becomes more sophisticated and adds CDS, it becomes the tool to package and manage all the information about a unique patient."

Beacon Community

IHIE was awarded one of the 17 Beacon Community grants by HHS to further develop HIT to improve quality, cost efficiency and population health. Using remote care management under the program, IHIE has been able to reduce the 30-day readmission rate for CHF and COPD patients at St. Vincent hospitals and other central Indiana hospitals to 3 percent compared to a national average of 21 percent. "This is a rare opportunity to apply the same principles we've applied in hospitals to longitudinal care for the patient. We're looking at longitudinal care for these complex patients as an extended hospital stay in some aspects," says Snell.

So, how does the HIE fit in? The HIE has all the disparate patient information from multiple sources that can be fed into the customized care plan, especially information from the multiple providers outside the hospital that will never reside in a single EHR.

"I see the customized care plan with role-based viewing rights and permissions. The clinical and other patient information is delivered through a portal, embedded into the customized care plan and viewed on mobile devices—current, updated, refreshed," he says. That longitudinal care plan describes the patient problem list, the medications she's taking, how compliant she is and if she understands her chronic disease. It can also highlight the highest areas of need for the patient such as transportation to provider appointments, access to low cost or free medications through various programs.

Traditional HIEs have been about results reporting, but when an HIE becomes more sophisticated and adds CDS, it becomes the tool to package and manage all the information about a unique patient. "Now it can feed into the customized care plan to really assist us in managing the patient, which involves the patient's participation as never before. An important way we need to move forward now is engaging the patient and her family. She will be assigned questions to address every day and content such as videos to view regarding her specific conditions and self-management. We're doing that with the Beacon Community project now," says Snell.

Part of that involves patients understanding their care at a level that's not as technical as the care-team professionals. "All of this will help keep the patient more independent and at home. How do you measure whether

the patient is compliant? In the past we've given them paper handouts. How do you know they read them or even understood them? It's about engaging patients in their decision-making. We've typically viewed CDS from a provider perspective. What I'm promoting is to take evidence-based CDS content into the home," he says.

In summary, notes Snell, "we need to have CDS backed by evidence-based content and used across the continuum of care, to manage longitudinal care but also patient education and engagement. As HIEs mature they are the best source of all reporting for a patient who receives care from multiple providers. HIEs are becoming more involved with the consumer or patient. A consumer can see five or six doctors if she has chronic diseases. An HIE could populate the Personal Health Record to help the patient and family members collect all the important information they need. PHRs have not achieved great acceptance because they have been almost entirely reliant on patient-entered data. But if you have provider-entered data from an HIE, then the patient should become more engaged."

Conclusion

Clinical decision support is a critical tool in the astute treatment and management of individual patients and patient populations in a reformed, value-based healthcare world. However, it is a complex, expensive and difficult undertaking and health systems do not have to go it alone. As CDS begins to mature and spread from the acute-care hospitals into the ambulatory world, health systems should take advantage of published guides and industry collaboratives to share best practices. SI has played a leading role in establishing and fostering such initiatives, and is eager to work with members and others to cultivate them.

"We've typically viewed CDS from a provider perspective. What I'm promoting is to take evidence-based CDS content into the home."

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Joseph R. Swedish, FACHE, President & CEO, Trinity Health

Anthony Tersigni, CEO, Ascension Health Alliance

Kevin Wardell, President, Norton Hospital, Norton Healthcare

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Adventist Health System, Winter Park, FL

Advocate Health Care, Oak Brook, IL

Ascension Health, St. Louis, MO

Avera, Sioux Falls, SD

Banner Health, Phoenix, AZ

BayCare Health System, Clearwater, FL

Beaumont Health System, Royal Oak, MI

Bellin Health System, Green Bay, WI

Billings Clinic, Billings, MT

Catholic Health Initiatives, Englewood, CO

Centura Health, Englewood, CO

Children's Hospitals and Clinics of Minnesota, Minneapolis, MN

CHRISTUS Health, Irving, TX

Cincinnati Children's Hospital Medical Center, Cincinnati, OH

Dignity Health, San Francisco, CA

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Metro Health, Wyoming, MI

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New York City Health & Hospitals Corporation, New York, NY

NewYork-Presbyterian Healthcare System, New York, NY

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Scottsdale Healthcare, Scottsdale, AZ

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Spectrum Health, Grand Rapids, MI

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Sutter Health, Sacramento, CA

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