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COVER STORY

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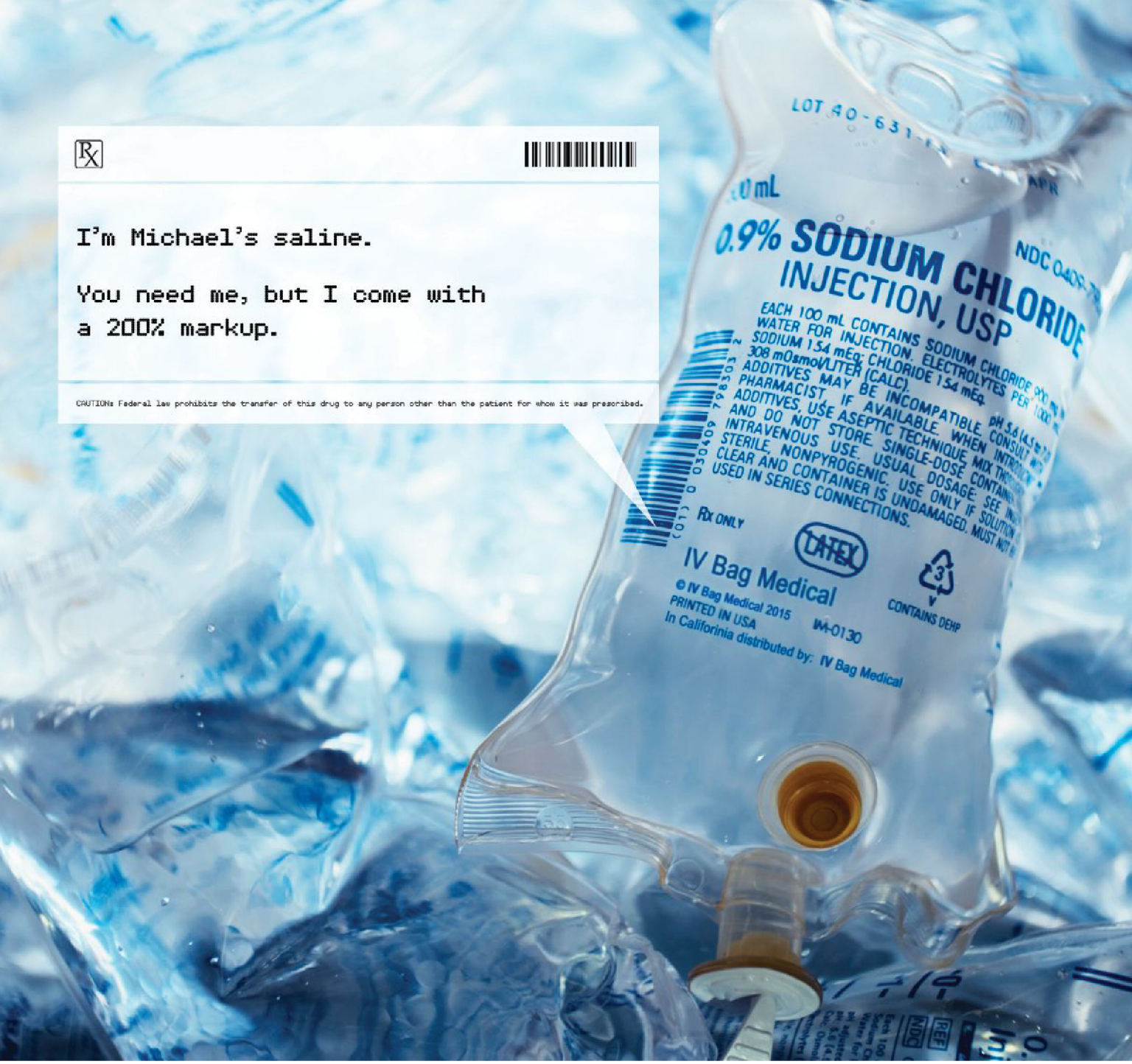

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How Travel Became a Global Business-and How Imaging Informatics Might Become Globalized, Too


Mark Hagland

I am reading a fascinating book, *Overbooked: The Exploding Business of Travel and Tourism,* by Elizabeth Becker, a former foreign correspondent for *The New York Times* and former senior foreign editor for National Public Radio. Its title immediately caught my eye, as someone who travels very frequently on business, and often hears, upon arriving at my gate, the announcement that "We are oversold on this flight, and are asking for volunteers… " As someone who is regularly outraged by the airlines' avarice in overselling flights as a standard business practice, I thought that *Overbooked* would offer an investigation into such practices.

As it turns out that, while the book barely touches on that topic, it does offer curious readers fascinating reportage on the global travel and tourism industry. It delivers well on some of the promises of its book jacket copy, including the following: "In 2012, the number of tourists traveling the world reached one billion…. Becker travels the world to take the measure of the business: France invented the travel business and is still its leader; Venice is expiring of over-tourism. In Cambodia, tourists crawl over the temples of Angkor, jeopardizing precious cultural sites," and many other promises.

The book does provide numerous very unpleasant, but useful revelations, including the horrific wages under which cruise ship employees work. Writing about a cruise down the eastern coast of Mexico, Becker and her husband find themselves dismayed to discover that their all-inclusive, $1,200-per person cruise's price is so low precisely because cruise employees, including two waitpeople they meet from Turkey and India, are paid $50 per month, with no time off. Such case studies certainly will raise readers' awareness of the exploitation of travel workers, as well as physical landscapes, and other "collateral damage" inflicted on humans and on earth's natural environment, by this industry.

But I also found the book fascinating in its explanations of how global travel and tourism, following World War II, became a commoditized industry. Fundamentally, lots of very disparate elements—people, process, business, and technological—came together over a period of several decades to create a global system of interlinked processes that is the $3 billion daily global tourism industry (and that figure does not even include the business travel industry).

There is an analogous set of processes evolving forward right now around imaging informatics in U.S. healthcare, though, to fully pursue the analogy, imaging informatics is probably closest to what the global travel and tourism industry was like in about 1950. Most diagnostic images in healthcare remain locked in siloed, often still purely departmental, systems (radiology PACS, cardiology PACS, etc.). We are just beginning to robustly incorporate diagnostic images into enterprise-wide data and information systems, and to incorporate image-sharing into meaningful health information exchange.

Yet the visionaries in this area, including Rasu Shrestha, M.D., of UPMC, and the supremely knowledgeable Joe Marion, see things moving forward towards a new dawn, one that will see images truly becoming part of a bigger whole in healthcare, benefiting patients and communities.

This issue's cover story (p. 8) includes interviews with pioneering leaders and organizations helping to move the U.S. healthcare system forward in this area. Not surprisingly, it's going to take a number of years to fully incorporate diagnostic images into broad data and information systems that will help propel the healthcare system forward in this critical area. In the meantime, it will be fascinating to see how a new, comprehensive system of images and other data will evolve forward, just as the interconnected global travel system became a huge business and consumer ecosystem. ◆

Mark Hagland, Editor-in-Chief

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Shifting Landscape:

In The Imaging Informatics World, *Everything Is Changing*

Healthcare system reform, consolidation on all fronts, and changing technologies are combining to create an unprecedented landscape of questions and instability in imaging informatics. How should healthcare IT leaders proceed? Strategically and thoughtfully, say industry experts **BY MARK HAGLAND**

It has become a truism that the U.S. healthcare system is going through a time of rapid, jarring change. With healthcare costs continuing to rise at unacceptably high rates of inflation, and with demographic changes, including the aging of American society and a massive explosion in the incidence of chronic illness threatening a tsunami of cost and care burdens, the public and private purchasers of healthcare are pushing providers hard to shift to new payment models focused on value rather than volume. As a result, consolidation is everywhere: hospitals and health systems are busy merging with and acquiring each other and physician practices; physicians, too, are consolidating into larger multispecialty groups, while even specialist groups like radiology groups are becoming larger and more consolidated. And in the radiology area, even the remote-read companies and contracted groups are consolidating.

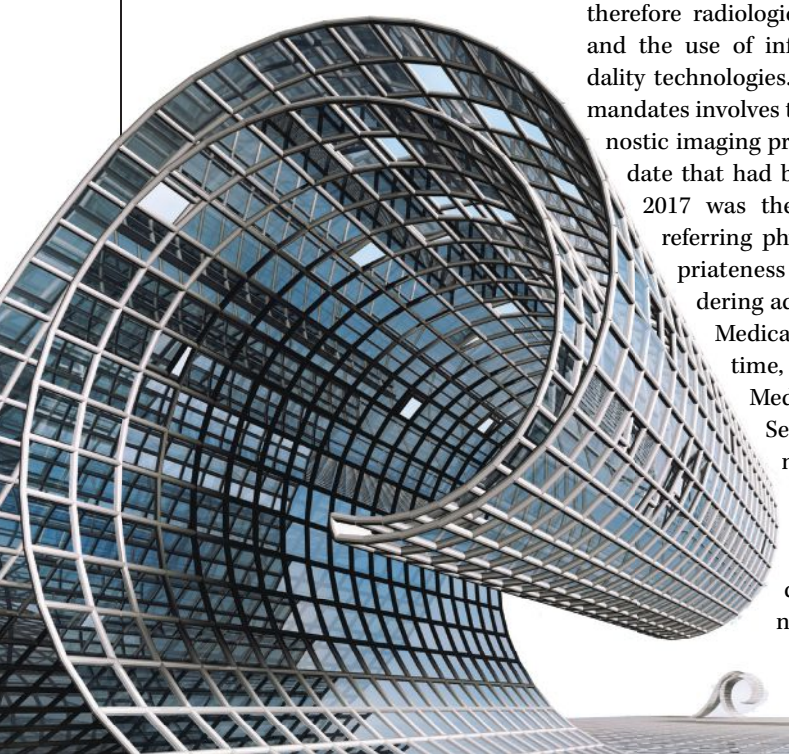
Then there is the phenomenon of vendor consolidation, which has been accelerating of late. Just consider the following examples from this year:

• In May of this year, the Stamford, Conn.-based Fuji Medical Systems USA announced that it was acquiring the Wauwatosa, Wis.-based VNA software firm TeraMedica.

- Also in May, the Minneapolis-based vRad (Virtual Radiologic), one of the largest remote-read radiology physician services companies, announced that it was being acquired by MEDNAX, a provider of maternal health, newborn, pediatric, and anesthesia services, for $500 million in cash.
- In August, the Armonk, N.Y.-based IBM announced it was acquiring the Chicago-based Merge Healthcare for $1 billion, in one of the biggest deals of its kind to date. IBM senior executives cited the potential to leverage analytics that would encompass imaging procedure patterns among patients as one of the benefits of the acquisition for IBM customer organizations.
- Dwarfing the IBM-Merge deal was the announcement in early October that the Round Rock, Tex.-based Dell Inc. was acquiring the Hopkinton, Mass.-based EMC Corporation for a whopping $67 billion in cash and stock. Of course, both Dell and EMC are companies whose enterprises span many industries. But healthcare industry observers agreed that that deal would have ripple effects across healthcare.
- Many smaller deals have taken place as well, including the acquisition of the Garner, N.C.-based Viztek in early October by the Japan-based Konica Minolta.

At the same time, imaging informatics vendors are responding—albeit primarily in reactive mode—to the shift in care delivery and payment systems towards payment for value, including to the development of accountable care organizations (ACOs), population health management initiatives, and the forward evolution of health information exchange (HIE). The concept of the vendor-neutral archive, which just two or three years ago was considered leading-edge, is coming close to becoming a standard architecture, at least in the ideal, for those now crafting enterprise-wide storage and sharing strategies for imaging.

What's more, expanding policy mandates are set to strongly affect diagnostic imaging ordering patterns, and therefore radiologic practice patterns, and the use of information and modality technologies. One of the biggest mandates involves the ordering of diagnostic imaging procedures: one mandate that had been set for January 2017 was the requirement that referring physicians use appropriateness criteria when ordering advanced imaging for Medicare patients (at press time, the Centers for Medicare & Medicaid Services had just announced a delay in the effective date of that requirement, with a new effective date to come in the near future). While championed by the American College of Radiology, that mandate is proving worrisome for many practicing radiologists.



Rasu Shrestha, M.D.

"FROM MY PERSPECTIVE, THERE ARE AT LEAST TWO MASSIVE DYNAMICS IN THE HEALTHCARE INDUSTRY RIGHT NOW THAT AREN'T JUST ALTERING THE LANDSCAPE; IN FACT, OUR TOMORROW IN TERMS OF HOW WE PRACTICE MEDICINE AND OPERATE WILL BE DIFFERENT FROM OUR YESTERDAY."

– RASU SHRESTHA, M.D.

So what does this pace of change mean for imaging informatics? Above all, say healthcare IT leaders and industry experts, it means that CIOs, CMIOs, imaging informatics directors, and radiology and other medical specialty leaders must think more broadly and strategically than ever before about the next few years in healthcare. Simply replacing an aging legacy PACS (picture archiving and communications system) or RIS (radiology information system) solution just no longer makes sense. Instead, all of those interviewed for this article agree, healthcare IT and imaging informatics leaders must skate to where the proverbial puck is headed, and lay plans for an integrated, interoperable, specialty-agnostic, enterprise-wide-plus, imaging informatics future, one in which diagnostic images (from all specialties)

will be shared in the same the way that all forms of healthcare data are shared across enterprises and beyond. And they must look to a time when images really are shared across the breadth of the U.S. healthcare system.

"From my perspective, there are at least two massive dynamics in the healthcare industry right now that aren't just altering the landscape; in fact, our tomorrow in terms of how we practice medicine and operate, will be different from our yesterday," says Rasu Shrestha, M.D., chief innovation officer at the 20-plus-hospital, 3,600-plus-physician UPMC (University of Pittsburgh Medical Center) health system in Pittsburgh. "Healthcare reform and consolidation are those two dynamics," he says. "So there's a massive amount of consolidation going on among providers, practices, payers, and vendors—Merge bought by IBM for over a billion dollars, for example. And this consolidation brings challenges of interoperability, efficiency, the need for us to do more with less. Then with healthcare reform, the train's left the station. And it's critically important to us: it brings challenges of volume to value. It particularly challenges to us practicing radiologists, because we've been so volume-focused," says Shrestha, who continues to practice part-time as a radiologist himself.

"With regard to how we're meeting change here at UPMC," Shrestha says, "we look at consolidation and healthcare reform as offering us opportunities, first, to engage in patient-centered care; and second, to focus on newer care models. And as a payer and provider organization, we're not just talking about it; we're living and breathing it today. So these newer care models we're developing and incentivizing our physicians, that's real for us. And third, embracing new technologies—we've been doing that for three decades now. And it's time for us to double down and really leverage technologies, and eliminate the silos."

So what does all this mean for imaging informatics? "Imaging data is different from wave-form data, which is different from other forms of data," Shrestha says. And working with all of those image and data forms at once requires that everyone, including radiologists, participate in re-visioning how to store and share data, including images, of all kinds, across and beyond the enterprise."

IN PHILADELPHIA, A MASSIVE OVERHAUL UNDERWAY

At Penn Medicine, which encompasses the University of Pennsylvania Health System, based in Philadelphia, senior vice president and CIO Michael Restuccia, and Jim Beinlich, associate CIO of entity operations, have literally been mapping out a future in which, as they see it, images are a normalized part of the health system's data ecosystem, just like any other form of data—and of course, that is a revolutionary concept to execute on, given how departmentally-focused imaging informatics has been (and in most places still is) until recently.

Jim Beinlich

Michael Restuccia

With regard to the sweeping changes taking place in healthcare IT over the past few years, Beinlich notes that "Folks have been pretty preoccupied with things like ICD-10, meaningful use, getting their EHRs [electronic health records] installed, but the thing in the background has been enterprise image management, and that's what precipitated us getting an enterprise-wide VNA"—vendor-neutral archive. Penn Medicine's VNA technically went live this spring, he says, but it has been an ongoing process to "move people to the technology" since then.

"I remember Jim coming into my office 18 months ago or so," Restuccia says, "and saying to me, 'You know, Mike, I'm going to *imagize* your electronic medical record.' And I said, 'What do you mean by that?' And he said, 'We have six or seven PACS systems, we've got dermatology and cardiology systems, and they're all managed differently and are on different platforms.'" In other words, standardization and normalization onto a single platform had to be the goal in their heterogeneous system. "So the VNA fits perfectly into the model of the three Cs: common systems (the one common VNA), centrally managed (managed out of corporate IS), and collaboratively installed. That's our special sauce," he says.

The bottom line is conceptually simple, even as it is monstrously hard to execute on in practice, Beinlich says, and that is this: "What I think is going to happen is that the expectation will be that it will be just as easy to get to images, and information about the images, as it is the EHR, so I should be able to access it from a smartphone, anywhere, anytime, and patients will want access, and then we'll start to perform informatics work on images, to understand information we have on digitized images and the EHR, so that I can look at protocols, treatments, stratification of populations that we're limited to right now based on the image report." In other words, images of all types, and data (including radiologists' reports), including EHR data, will all become

more liquid and will become universally available, as appropriate, to clinicians across integrated health systems, and beyond—through HIEs and clinical messaging, and via other means.

LAYING THE FOUNDATION IN TEXAS

The challenges of getting to that vision are many, and even some integrated health systems that have made advances in many areas are just beginning to take up this challenge in earnest. That is the case at the 24-hospital Texas Health Resources, based in Arlington, Tex., where Luis Saldaña, M.D., the health system's CMIO, is working with his colleagues to strategize forward in this area.

"We're trying to ensure value and reliable incomes," Saldaña says. "And with regard to imaging, we're trying to deliver value. So we're looking at bundled payments, and are doing care redesign, to make sure we're delivering reliable outcomes, and we're trying to deliver efficient and effective outcomes," as facilitated by reliable image storage and transfer. Saldaña notes that "We're not there yet" in terms of having an enterprise-wide VNA. "We have HIE capabilities, and we've started to leverage those, but we're not there yet. Meanwhile, we're working on both the VNA and HIE sides of this, and we're probably going to look at a solution that combines the ideas of VNA and HIE."

Luis Saldaña, M.D.

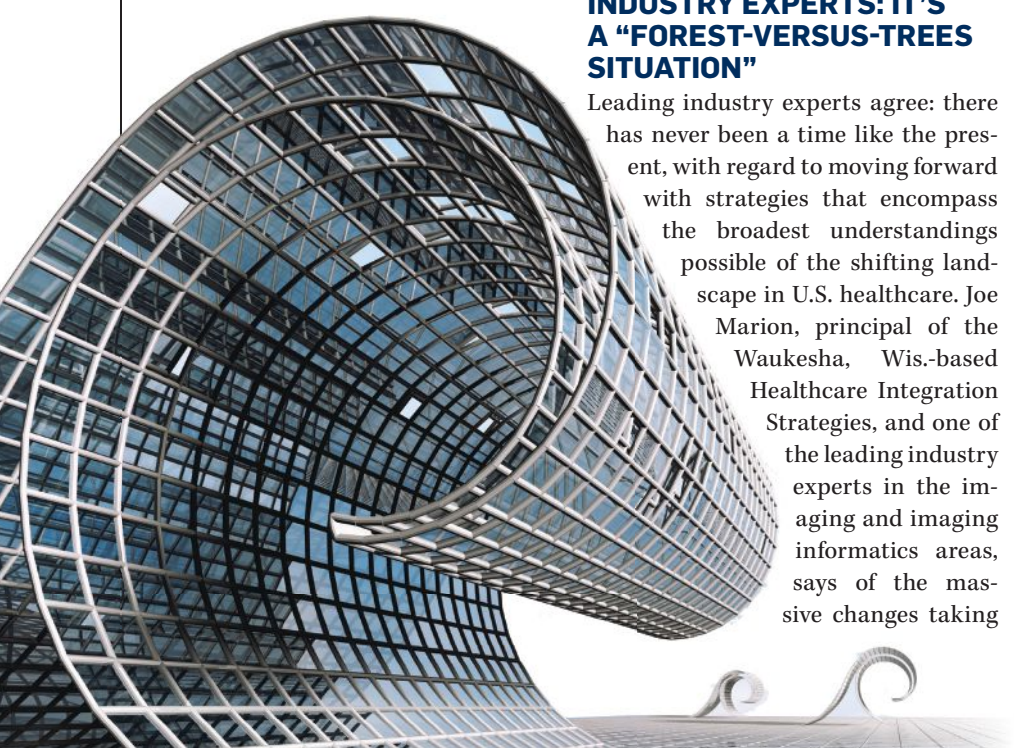
Speaking of issues facing the broader U.S. healthcare system, Saldaña says, "We get caught up in talking about the technologies, whether VNA or HIE, but they're all workarounds to barriers around interoperability. Let's say you're a trauma surgeon who's accepted a patient from a rural hospital. You just want to see the images from the CT scan. You don't care how you see them. Nowadays, we often see a CD disk. That's such a shortcoming, and we have to get around that. We shouldn't be spending a fortune to do that. There's no excuse for someone today to have repeat imaging. It used to be standard practice, because that shouldn't be happening any longer."

"WE GET CAUGHT UP IN TALKING ABOUT THE TECHNOLOGIES, WHETHER VNA OR HIE, BUT THEY'RE ALL WORKAROUNDS TO BARRIERS AROUND INTEROPERABILITY. LET'S SAY YOU'RE A TRAUMA SURGEON WHO'S ACCEPTED A PATIENT FROM A RURAL HOSPITAL. YOU JUST WANT TO SEE THE IMAGES FROM THE CT SCAN. YOU DON'T CARE HOW YOU SEE THEM."

– LUIS SALDAÑA, M.D.

INDUSTRY EXPERTS: IT'S A "FOREST-VERSUS-TREES SITUATION"

Leading industry experts agree: there has never been a time like the present, with regard to moving forward with strategies that encompass the broadest understandings possible of the shifting landscape in U.S. healthcare. Joe Marion, principal of the Waukesha, Wis.-based Healthcare Integration Strategies, and one of the leading industry experts in the imaging and imaging informatics areas, says of the massive changes taking place in U.S. healthcare, "It's a forest-versus-trees situation. Healthcare IT leaders have got to think about what they've got now [with regard to technology], and how they'll tie into ACOs, bundled-payment contracts, population health, everything, and what they'll bring to those arrangements. And with hospitals and larger physician groups buying up medical practices and such, that is affecting everything, too," says Marion, who has spent decades consulting in the imaging and imaging informatics areas. And one of the key areas of concern, he says, is making sure how to read the vendor landscape correctly. "Large vendors are in this mode now where they're saying, from a sales perspective, how do we structure, how do we address the client? It's no longer, I go to Hospital A, Hospital B, Hospital C, and sell them



"THERE'S BEEN AN OVERABUNDANCE OF VENDORS OUT THERE, PARTICULARLY ON THE PACS SIDE. NOW, WITH HEALTHCARE IT LEADERS LOOKING AT THINGS FORM A LARGER, ENTERPRISE-WIDE, PERSPECTIVE, THAT ENTERPRISE EMPHASIS IS GOING TO INFLUENCE BUYING AND CONTRACTING DECISIONS."

– JOE MARION

Joe Marion

each a CT scanner. Instead," he says, "imaging and imaging informatics vendors are working towards signing strategic contracts," wherever possible, with large integrated health systems, contracts that will encompass both modality and imaging informatics technology and services. Indeed, he says, "It may even go to the point of onsite equipment support, and even to the point of [contracting around technologists and radiologists."

Marion, who has followed the imaging informatics vendor scene for many years, believes that the mergers taking place now at an accelerating rate are very important. "Certainly, Merge/IBM and other mergers and acquisitions are significant," he says. "I spoke with someone at Merge last week, and a person there says they'll operate as an independent subsidiary with an influx of people to assist with Watson integration, but otherwise will beat their own drum. But," he says, "I'm wondering what the benefit of that arrangement is. I'm still wrestling with that idea, because, looking at past acquisitions of the sort, how long will IBM allow the Merge folks to act in an independent way? And Dell acquiring EMC could prove significant, too," in altering the competitive and contracting landscape around vendors in imaging informatics.

The reality, Marion says, is that "There's been an overabundance of vendors out there, particularly on the PACS side. Now, with healthcare IT leaders looking at things from a larger, enterprise-wide, perspective, that enterprise emphasis is going to influence buying and contracting decisions," he says. A very important element in all this, Marion says, is what he calls the "decomposition of PACS. The Visage people use that term," he notes. "And what it means is, let's say I had been using Vendor A as my PACS vendor. Years ago, if I needed an upgrade, most people would have replaced the entire system. But now, people are taking new pieces of functionality, and adding them in. And in fact, if you go to a vendor-neutral archive architecture, and a universal viewer on an enterprise level, what's left for PACS to do? The acquisition of images, workstation display and workflow. And so if you see it that way, you might only want certain new functionalities—and most importantly, you may no longer want to purchase an entire dedicated radiology PACS. And given that, how do these little guys survive in the market, when people are trying to take a bigger-picture view?"

Even the larger imaging and imaging informatics vendors are having to shift strategies in this rapidly evolving competitive market, says Jay Backstrom, a partner in the Atlanta-based consulting firm Subsidium Healthcare. "We're seeing fewer and fewer independents out there," says the Scottsdale, Ariz.-based Backstrom. "These larger vendors are wanting to add VAN to their portfolio of solutions, if they're coming from the PACS space. That's what was behind Fuji's acquisition of TeraMedica—even though they ended up buying a partial competitor and a threat to their own core solution. But it was a way to try to maintain their existing installed base."

Importantly, Backstrom says, "We're seeing a trend towards consolidating enterprise and diagnostic viewing all on one workstation, so that physicians don't need a dedicated PACS system. If you have a VNA and a viewer, do you need a whole PACS? If you have a viewer that can do diagnostic and enterprise reading, and a VNA for storage, you could replace a PACS system." Will traditional PACS vendors disappear in the next few years? Backstrom says he wouldn't go that far. "I don't think they'll be gone," he says, "but they'll be forced to change their game. Traditional PACS systems are built on legacy technology that is years old. So their solutions are going to have to change, or you're at risk of losing their market share."

So CIOs, CMIOs, CTOs, imaging informatics leaders, and other leaders in this space need to think very strategically and very pragmatically about their technology choices in the next few years. Still, says UPMC's Shrestha, "I think it's really important for us to understand at the end of the day that it's really about the patient. And it's easy to say that. But those who have endured frustrations in their own care or the care of loved ones, really understand that. In the meantime, we must achieve interoperability and adherence to standards; and ultimately, it's less about technology, and more about leadership. We have to make this happen." ◆

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TECHNOLOGY INSIGHT SERIES

"You Need to Know Where Your Data Lives and Breathes."

A conversation with Allscripts Kevin Ritter on Security and Meaningful Use Stage 3

by Kayt Sukel

Meaningful Use Stage 3 requirements are coming—and this new set of rules is poised to be more detailed and challenging than those that came before. Kevin Ritter, Vice President of Managed Services at Allscripts, has been working with healthcare organizations, both domestically and internationally, on meaningful use requirements for years. And with stage 3 on the horizon, Ritter contends that provider organizations need to start thinking about their security programs now.

Ritter talks with *Healthcare Informatics* about why it's not enough to simply have security policies in place, why good security doesn't have to interfere with patient engagement or mobile healthcare practices, and why every healthcare executive needs to be able to answer, "Where does your data live?"

How are most healthcare organizations responding to the meaningful use stage 3 requirements? What are the biggest concerns?

Kevin Ritter: In one sense, many organizations are feeling quite relieved. They've done what they needed to do to make it to this point, if you will. It's nearly the finish line. And it wasn't easy. There's been a lot of time, a lot of work, and a lot of investment to get to this stage. Stage 1 was all about getting the infrastructure for electronic records in place. Stage 2 was having the electronic record and showing that it works in that infrastructure. And now there's this last stage—and organizations are thinking hard about how to best implement this new round of objectives.

I think there are really four points that are key to success at this stage. One, and perhaps most importantly, is the security piece. Protecting patient health information (PHI) and making sure there is a corrective process to continue to provide protections based on the measures that are out there. Second, there is an interoperability piece here with the use of public exchanges. Third, you are going to see increased computerized physician order entry (CPOE) and clinical decision support rules. And then, finally, there will also be a consumer healthcare aspect to this. People are thinking about how to make records easily and efficiently accessed by patients.

What are some of the biggest misconceptions concerning security as it relates to stage 3?

Ritter: In stage 1 and stage 2, providers got accustomed to doing static security tests—these kind of one-off, check-the-box kind of measures. But stage 3 is going to require an ongoing risk and security assessment program. So the big misconception is that provider organizations are going to be able to continue to do the same kind of assessments and meet the bar. And that won't be the case this time around.

How does that misconception intersect with increased use of mobile and telehealth programs?

Ritter: Mobile is a huge concern. Physicians, caregivers, and even patients have so many devices now that can access PHI. So healthcare organizations need to be very, very diligent about establishing the right procedures and policies around PHI and how to best protect it. And they have to do more than just come up with these policies. They have to find ways to enforce them. And that can get a little tricky.

There's no doubt that organizations have made tremendous investment in security within healthcare organizations over the past four or five years. But security officers have to be aware that physicians and caregivers need to have the right types of technology on hand. Because too often physicians who don't have secure text messaging will take matters into their own hands and start sending PHI over less-than-secure channels. And then we have the cloud, which has tremendous benefit from a technology perspective. But you need to make sure any PHI that resides in the cloud is protected. The simple truth is when you have data in motion, it becomes much harder to protect. And you have to be very cognizant of that.

We talk a lot about interoperability in healthcare these days. But what comes along with interoperability is data flowing all over the place—and more security risks to PHI. So you need to create the right safety parameters to protect all that data. And figuring out those parameters, and then using them to build a comprehensive security program, starts with an inventory of where your data is and where it can go.

What are some of the biggest challenges provider organizations face moving forward? How can they best meet them?

Ritter: The biggest challenge, first and foremost, is knowing where your data lives. Having that inventory in place. So many provider organizations have tons of systems they are using for one-off requirements—and most of them contain some level of PHI. So doing an inventory, taking the time to identify where all the PHI lives is the first step in moving forward and meeting some of these challenges. You need to know where your data lives, plain and simple. Second, you have to make sure your systems are up to date. Many systems have a lot of new security patches and upgrades. And while there is a bit of fatigue with the amount of work that has to be done concerning meaningful use, organizations have to keep updating systems that contain vital information. And finally, it comes back to that policy enforcement piece. Your security policy is no good unless you are actually enforcing it and making sure you are being diligent about protecting your organization's PHI.

Every healthcare executive, in every healthcare organization, should know where their PHI lives. They should be able to tell you what kind of applications and systems are capturing PHI.

What should healthcare IT executives consider when partnering with vendors for stage 3?

Ritter: When you look at vendor organizations, you want someone who can do a certain level of consulting work around security, certainly. But stage 3 has several key requirements to be met so you want a reputable, credible vendor that has shown they can get the job done in both stage 1 and stage 2. They've shown good outcomes and they are prepared to help you implement these next steps. What you don't want is a vendor who is just getting started with stage 3.

What is the most important thing that healthcare organizations should be thinking about as they approach stage 3—and associated security measures?

Ritter: If I have to distill it down to just one thing, it goes back to understanding where your PHI lives and breathes. Every healthcare executive, in every healthcare organization, should know where their PHI lives. They should be able to tell you what kind of applications and systems are capturing PHI. They should understand what policies and procedures are in place to protect PHI—and what corrective action is taken when there is some sort of breath. There needs to be a certain level of ownership at the executive level or else any policy you have isn't going to get the job done.

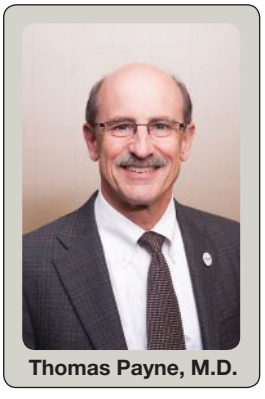
The Physician Waiting Game (Room): Documentation Burdens Mount for Clinician Leaders Nationwide

As EHRs have become commonplace, physicians are left wondering when documentation within them will become simpler

BY RAJIV LEVENTHAL

On May 29, the EHR-2020 Task Force of the American Medical Informatics Association (AMIA) issued a report with recommendations on the status and future directions of electronic health records (EHRs). In the report, several of the recommendations, including the very first one, target cutting down on the amount and complexity of documentation clinicians have to do.

Undoubtedly, as more continues to be asked of physicians now than perhaps ever before, clinical documentation remains a huge burden for them. At the time of the task force report, Thomas Payne, M.D., medical director of IT services at University of Washington Medicine and chair of the task force, told *Healthcare Informatics* that the reason the report focused on that area is because it is causing a great deal of problems in practices. "Providers are very vocal in describing the burden this poses to them. And people who go to see those providers are also noticing that they don't get the attention and focus that they used to," Payne told *HCI*. "They see their doctor and nurse staring at a computer screen. It is lengthening the days of providers, interfering with the interaction that people have with providers and taking providers away from what they do best. That is why it is in the first set of recommendations."


Thomas Payne, M.D.

Indeed, the report's first recommendation was to "simplify and speed documentation." The report noted, "Although medicine requires an entire team to care for patients and to document the care patients receive, Centers for Medicare & Medicaid Services (CMS) requirements have placed the primary burden of office visit documentation on physicians. Information entered by other care team members and patients should be as valued as information entered by the physician."

In a more recent interview with *Healthcare Informatics*, Payne expands on this thought, noting that other people, including patients, are qualified to enter information into the note. "The patients are the experts on how they feel that day, and other providers [other than the one in the room at the moment] are on the care team also," Payne says. "They should be entering information that they know best and have that be sufficient for that part of the documentation. This way the burden is not solely on the provider who is in the room with the patient for that moment." Payne's driving point here, as outlined in the AMIA report, is that physicians' time investment in patient care documentation has doubled in the last 20 years, by some measures, possibly consuming up to half of a physician's day.

TECHNOLOGY FLAWS

What's more, the introduction of EHRs has only magnified these problems and the amount of time providers spend on documentation, Payne says. In one large survey, the task force noted, staff internists reported that EHRs take an extra 48 minutes of their time per day compared to manual systems.

Indeed, while EHRs can facilitate and even improve clinical documentation, their use can also add complexities and challenges. The "single most common issue that most physicians and other providers have about the current EHR state today is documentation," Payne

says. He gives an example of when a cancer screening is needed. He says that often the documentation for the screening—that has occurred somewhere else—is entered by the provider in the exam room when it could have flowed from the source of the screening test directly into the EHR without any requirement for re-entry. "We need to return the patient visit to its value, which is to listen to a person's concerns, perform the relevant exam, and take the relevant history down," Payne says.

At the same time, many physicians have argued that the quality of the systems being used for clinical documentation is inadequate. To these points, earlier this year, the Medical Informatics Committee of the American College of Physicians (ACP) outlined seven recommendations related to clinical documentation within EHRs and five suggestions related to EHR design. While many of the ACP recommendations are broadly based, atop its list was that "patient care support and improvement of clinical outcomes should be the primary focus of clinical documentation software."

Additionally, when the American Hospital Association (AHA), in conjunction with Newtown Square, Pa.-based Executive Health Resources, part of the Optum family, launched a Clinical Documentation Improvement Trends Survey in February 2015, one of its main findings was that the design of some EHRs can turn a physician encounter into an exercise in data entry. Also, the survey found, there are often patient details that are crucial in accurately representing the complexity of a case and delivering quality care but that don't neatly fit into one of the EHR's fields. This design flaw in EHRs can unintentionally prevent that crucial information from being documented in the patient's medical record and instead just noted in the physician's mind. Advancements in technology that leverage natural language processing and computer assisted coding can be an effective solution to address the documentation gaps prevalent in EHR systems, according to the report.


Vivek Reddy, M.D.

As such, EHRs have become a double-edged sword when it comes to documentation, says Vivek Reddy, M.D., CMIO of the Health Services Division of the UPMC (University of Pittsburgh Medical Center) health system. "EHRs facilitate an over-reliance on putting in large sequences of text, or documenting detailed physical exams with a click, and unfortunately, that doesn't force you down the path of why you're documenting what you're documenting in the chart," Reddy says. "EHRs speed to create good billing notes but not good communication notes. They sort of messed up our center points."


Trenor Williams, M.D.

Jonathan Teich, M.D., CMIO at the Amsterdam-based academic publishing company Elsevier, and an emergency physician at Boston's Brigham and Women's Hospital, agrees with Reddy in that EHR tools have been developed around the documentation requirements, so a lot of the details are constrained. "For some elements of the encounter, we need a change in the specifics of the documentation requirements before the EHRs can make changes," Teich says. However, he does note that some EHRs are built much more with clinical workflow in mind; they make it easy to combine putting documentation in with getting information out that you need right away, such as well-organized test results, prior notes, and important new events. Those systems serve the physician as much as the physician is serving them, he says.

Payne says there are lots of other ways to enter information into the system beyond the keyboard and the mouse. "There is ample room for innovation; the use of voice should be greater than it is today, in addition to other technology that we aren't even thinking of now," he says. "There isn't a single solution for everyone, so do what's most comfortable for you. We can solve this problem as we have very bright people who have incredible technical skills and vivid imaginations," he says.

BACK TO SQUARE ONE

The AHA/Executive Health Resources survey further found that the primary barrier prohibiting physicians from being effectively engaged in clinical documentation improvement is a lack of understanding of the importance of strong documentation, as reported by more than 66 percent of survey respondents.

Trenor Williams, M.D., managing partner, Clinovations at Washington, D.C.-based The Advisory Board Company, says that there is an opportunity at the health system level to step back and get clinicians around the table to talk about how they want each other to document to improve patient care. That, he says, will effectively help transitions of care across settings. Williams, a former family practitioner and CMIO, says there is also an onus on physicians to figure out what the right information is about a patient, and what needs to be in the note. "What is absolutely relevant? Why did I make adjustments about the

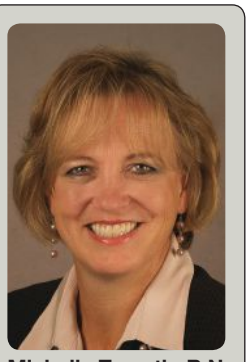
assesment and plan? You need to make sure that clinicians are able to get the story of the information there rather than extraneous information," Williams says.

At UPMC, a pioneer health system when it comes to many physician quality and IT initiatives, Reddy says that when the organization pulled physicians together last year and asked them what their main purpose of documenting was, it quickly realized that clinicians have lost their way in the value of why they write their notes. "The answers gravitated towards reasons such as billing and getting paid. So we needed to re-focus and re-set the bar to say the reason you're writing this note is not for billing, but to document the care you're providing in the best and most specific way as possible," Reddy says. "We used that guiding principle to re-train our provider community on how to write a note and why to write a note. We had to undo the urban myth that the only thing you write notes for is to get paid," he says.

Specifically, Reddy adds, UPMC broke down every type of note a doctor writes, including the history and physical, and the progress note, into individual subcomponents. They then decided what would be the design principles about what sort of data they would automatically import in a note. "What parts of a note did we want? You have structured data and unstructured data, so what would we allow to copy forward day-to-day or note-to-note? We re-configured all of our note templates to meet those standards we set," he says.

By setting those standards, UPMC was able to do a subjective analysis based on the length of notes, and it saw if there was cut-and-paste or copy forward taking place. "We saw some good results, including at least a 33 percent reduction in length of notes just by applying these principles," Reddy says. The clone note problem started to go away; the only sections in the note that were pulled forward from note-to-note, he adds, noting that they also saw active note editing.

Certainly, "note bloat," referring to the overwhelming amount of information in a note that makes it challenging to pull out the key pieces, is a real problem for physicians and significantly impacts documentation quality. According to Williams, what has happened is that progress notes in the hospital setting are now six pages long rather than three-quarters of a page, like they used to be, when printed out. That's because it brings in an entire 36 hours of labs or the entire medication history, he says, and is thus not represented visually and concisely as it could be. "It's good information, but does it need to be part of every progress note? Probably not," Williams says. The impact of note bloat, or copy-and-paste, is simply inaccurate data with the potential of patient safety repercussions, adds Michelle Troseth, R.N., Elsevier's chief professional practice officer. "If you are relying on a colleague's notes with inaccurate data, it could be [dangerous]."


Michelle Troseth, R.N.

THE IMPACT OF NOTE BLOAT, OR COPY-AND-PASTE, IS SIMPLY INACCURATE DATA WITH THE POTENTIAL OF PATIENT SAFETY REPERCUSSIONS. "IF YOU ARE RELYING ON A COLLEAGUE'S NOTES WITH INACCURATE DATA, IT COULD BE [DANGEROUS]."

– MICHELLE TROSETH, R.N.

MORE THAN MANDATES

On Oct. 6, the same day that CMS would unveil its EHR Incentive Program final rules, during a joint meeting of the federal Health IT Policy and Health IT Standards committees, committee members raised concerns about the clinical documentation burden imposed by the plethora of quality reporting programs. For one, as reported by *Healthcare Informatics*, Patricia Sengstack, chief nursing informatics officer at the Marriottsville, Md.-based Bon Secours Health System, said that many nurses in her organization complain that their nursing admission assessments take almost two hours to complete for each patient. "I had a student count how many clicks it took to fill it out, and if you filled out everything, the total comes to 537 clicks," she said. She asked if there were any plans at the federal level to shrink all the required documentation.

Karen DeSalvo, M.D., National Coordinator for Health IT, responded that, among other things, the U.S. Department of Health & Human Services (HHS) needs "to see if there are ways we can streamline quality reporting to make it seamless so there is e-quality measurement and think about the documentation burden component of that

so we are linking these clicks to outcomes." Kate Goodrich, M.D., director of the quality measurement and value-based incentives group at CMS, added that the documentation burden is an issue CMS has heard a lot about. "We have tried to address that in a few ways," she said, "but perhaps we should set specific targets. With meaningful use measures and what is required for documentation, in our proposed rule we have proposed a significant reduction in terms of what has to be documented. We are trying to be responsive to exactly what you are saying," she said.

"On the quality measure side, one of the things we absolutely could have done better in Stage 1 and Stage 2 of meaningful use is to have involved the front-line providers—meaning the nurses who actually do the entry of data as well as the front line physicians and EHR vendors—in development of measures with an eye toward not only having the right kind of measures, but ensuring that the logic relates to the work flow is created in such a way that we minimize that burden, and we did not do a very good job of that in the first couple years. Part of that is because we took administrative claims measures and retooled them," Goodrich admitted.

A nurse herself, Elsevier's Troseth says that when a patient who is discharged comes back in, the nurse has to start the documenting from scratch. As such, in many organizations, Elsevier has implemented a patient intake tool to help with the patient profile. "If the patient was discharged, I can pull it up and build on it, rather than start from

Clinical Leaders Discuss SOAP vs. APSO

For years, clinician notes were written in the logical SOAP (Subjective, Objective, Assessment, Plan) format, which made sense when everything was written on paper. However, clinicians have recently argued that this format translates poorly from paper medical charts to the EHR. As such, a newer design, APSO (Assessment, Plan, Subjective, Objective) has been introduced and since debated in clinical circles. Proponents of APSO say that since the assessment and plan are at the top of the note, and are readily located when the EHR note is opened, it makes for a smoother format. For this story, *Healthcare Informatics* asked clinical leaders their thoughts on the two formats.

Thomas Payne, M.D., medical director of IT services at University of Washington Medicine: The APSO approach puts the thinking of providers' and the recommendations up front. This is a very reasonable approach that some like and others don't. I see a role for it personally, since it helps you get the information you want more rapidly. Another way to reach the same objective would be for notes to be more succinct. If the reporting information you see—the subjective and objective— are to the point and succinct, that makes it easier to read through them and then see the plan and assessment that follow. But really, it's up to the provider.

Jonathan Teich, M.D., CMIO, Elsevier, and ER doctor at Brigham and Women's Hospital: I don't particularly favor a switch to APSO. Understanding the patient context as expressed in the present and recent history and exam is very important to me as an emergency doc; it helps me create a mental image of the patient, so I can better absorb and critically review the assessment and plan when they come up next.

Trenor Williams, M.D., managing partner, Clinovations, The Advisory Board Company: APSO was a reactive response to note bloat and having six-page long notes. The idea is that you ideally want the assessment as the most important thing to see. What do I think is going on with the patient and what's my plan? Putting that assessment in facilitates effective transitions. Most organizations that we work with still are using SOAP more often than APSO, but I see a more continuous lean towards APSO.

Vivek Reddy, M.D., CMIO of University of Pittsburgh Medical Center's (UPMC) Health Services Division: At UPMC, we were legitimately split on this and couldn't come to a decision, so we brought it to our executive steering group. SOAP has since remained our standard. Our notes have become so much shorter by not auto piloting large amounts of content that's already available in the EHR. So by notes becoming shooter, people can get to the assessment and plan without scrolling or hunting for it. So we ended up sticking with SOAP, but we can always revisit it.

"ALMOST ALL OF OUR NOTES ARE OPEN FOR THE PATIENT TO VIEW JUST AS SOON AS THEY ARE SIGNED BY THE NOTE AUTHOR."

– THOMAS PAYNE, M.D.

scratch. It saves a lot of time and is interdisciplinary. It makes the patient feel better and ensures team collaboration," Troseth says.

Nonetheless, UPMC's Reddy says requirements need to be less about capturing a physician note or piece of physician documentation for every visit, and more about good documentation from any caregiver that is participating in the care for patient. "As we move into a population health model of care, episodic notes and counting notes done by doctors as meeting requirements for meaningful use is not where we should focus our energy," Reddy says. "This overemphasis on an X percentage of encounters needing to have an electronic note doesn't add anything to where we're going."

A PATIENT-FILLED FUTURE

In 2010, more than 100 primary care doctors from Boston-based Beth Israel Deaconess Medical Center (BIDMC), Danville, Pa.-based Geisinger Health System, and Seattle-based Harborview Medical Center began sharing notes online with their patients via a secure patient website. Each site was part of a 12-month study to explore how sharing doctors' notes may affect healthcare.

Patients reported feeling more in control of their health, being better prepared for their visits and several other benefits. Doctors saw little or no impact on their work flow. In the five years since the launch of the study, the number of patients who are able to read their visit notes has grown to more than five million nationwide.

While both patients and doctors showed enthusiasm, it should be noted that some doctors also expressed concerns. They wondered if note writing would become vaguer knowing that patients would be reading the notes. The doctors also worried about how patients would define mistakes, how patients would report errors and ultimately, how that process might impact trust.

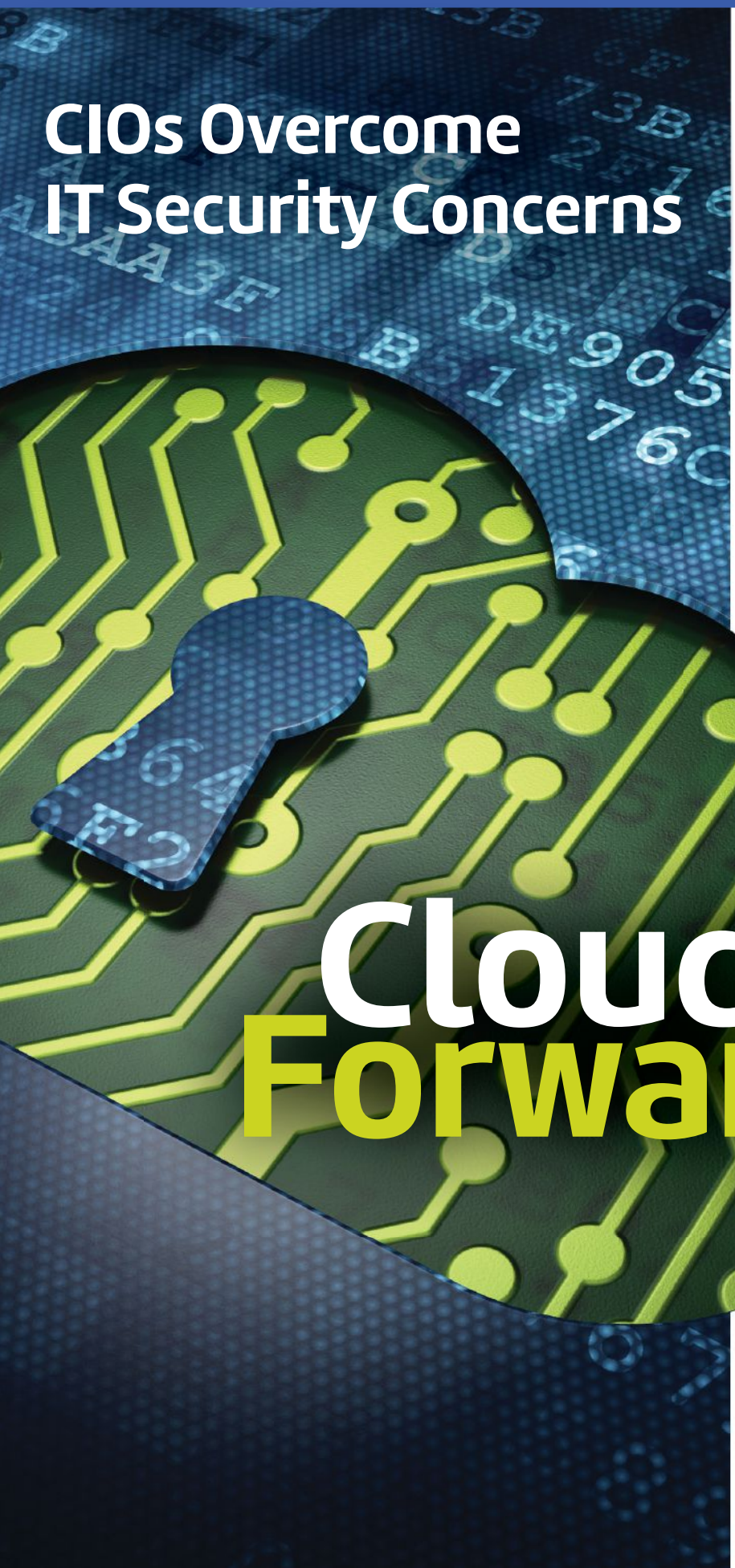
At the University of Washington Medicine, Payne says everyone in the system has been participating in the OpenNotes movement for the past year, and "it's the right direction for the country to move in." He says that there is the option to have certain very sensitive notes, where clinicians might feel that the exposure to the note is more harmful than beneficial, but he adds that this is very rare. "Almost all of our notes are open for the patient to view just as soon as they are signed by the note author," he says.

"WE SEE IT FROM BOTH SIDES. IF WE THOUGHT EVERY DOCTOR'S NOTE THAT WAS GETTING CREATED WAS A VERBATIM SCRIBE OF WHAT ACTUALLY HAPPENED IN THE INTERACTION, IT WOULD BE A WHOLE DIFFERENT BALLGAME."

– VIVEK REDDY, M.D.

Meanwhile, across the country at UPMC, Reddy says that the organization is on board with the movement, but in certain areas, is treading carefully. For instance, he says that the organization has a potential problem when family proxy members who have access to the note want to view it. "Sometimes a sensitive note could be for a patient, but we can't subdivide the content of notes," Reddy says. "Say I am talking about an example of physical abuse or drug/alcohol use, I can't subdivide that micro part of a note to not be seen by a proxy member that has access to it. So for us, the physician community is embracing it in pockets [only] right now," he says.

Reddy adds that one thing that could make OpenNotes even more interesting, which he has seen in other organizations, is when the physician and patient build the note together during the face-to-face interaction. This way, he says, there is no mystery in the content of the note. "In these circumstances, the transparency is complete, the loop is closed, everyone knows what's in there, and there is a joint agreement to put it out there," he says. When doctors are doing delayed documentation or dictation the next day, for example, the challenge becomes not knowing what that content of the note will look like, and that makes both doctors and patients nervous, Reddy adds. "We see it from both sides," he says. "If we thought every doctor's note that was getting created was a verbatim scribe of what actually happened in the interaction, it would be a whole different ballgame. But we're not there yet. We haven't ripped the Band-Aid off across the board." ◆



CIOs Overcome IT Security Concerns

Cloud Forward

Once viewed with trepidation, cloud computing is proving to be a viable technology in healthcare, driven by the need for cost savings, IT staffing challenges, better access to data and even patient engagement.

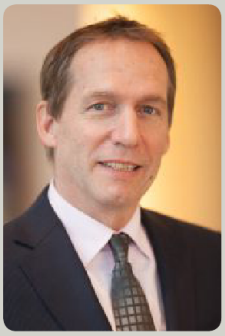
BY HEATHER LANDI

The widespread adoption of health information technology by patient care organizations in the past 10 years has been transformative to the healthcare industry. In 2008, only 9 percent of hospitals in the U.S. had a basic electronic health record (EHR) systems; by 2014, that had increased eight-fold with 76 percent of hospitals using a basic EHR system and 97 percent utilizing certified EHR technology, according to figures from the Office of the National Coordinator for Health Information Technology (ONC) and the American Hospital Association. With this surge in digitized patient data comes the challenge, for hospitals and health systems, to efficiently and cost effectively store and manage that data.

Healthcare CIOs are increasingly moving electronic patient records, including EHRs and diagnostic images, out of the internal data center and into the cloud. The global healthcare cloud computing market is forecasted to reach $9.48 billion by 2020, growing 20 percent from $3.73 billion this year, according to research firm MarketsandMarkets.

And, many industry experts say that the use of cloud services in healthcare is increasing steadily, despite the belief that the healthcare industry lags behind others in cloud use. In fact, results from a cloud survey by Healthcare Information and Management Systems Society (HIMSS) Analytics found that

Cloud Forward



Greg McGovern

"THE NOTION OF INFRASTRUCTURE-AS-A-SERVICE, OR THESE TRUE FULL-TILT CLOUD SERVICES, IS NOT FULLY DEVELOPED IN THE HEALTHCARE SPACE."

—GREG MCGOVERN

83 percent of healthcare organizations use cloud services and only six percent of those surveyed reported having no plans to use the cloud at all.

Additionally, for the majority of respondents who organizations are using software-as-a-service (SaaS) models, the primary uses for cloud platforms are doing the following: hosting clinical applications and data, health information exchange, human resources applications and data and backup and disaster recovery. Three-quarters of respondents reported using either a private cloud or hybrid cloud services.

"Cloud, in general, is not scary anymore and most people either have their toe in the water or are fairly far into it," Greg McGovern, associate principal at the Chicago-based consulting firm The Chartis Group, says.

"Most of the healthcare organizations that we work with, when they talk about the cloud, they are generally talking about software-as-a-service," McGovern says. "The notion of infrastructure-as-a-service, or these true full-tilt cloud services, is not fully developed in the healthcare space," he adds, referencing the use in some industries of infrastructure-as-a-service players such as Amazon Web Services and Microsoft.

A 2014 Dell Global Technology Adoption Index survey found similar cloud adoption rates with 96 percent of healthcare organization respondents using or considering using the cloud, and only 3 percent having no plans to leverage cloud solutions. The Dell survey also found that the majority of healthcare providers use private or hybrid cloud solutions as well.

Many midsize and large physician groups and independent practice associations also are moving to cloud-based EHRs from vendors such as athenahealth or Practice Fusion, due to the speed of upgrades and better data recovery while avoiding costly hardware upgrades and IT personnel costs.

As previously reported in *Healthcare Informatics,* when East Georgia Healthcare Center, a federally qualified health center with nine facilities and 23 physicians, began experiencing slow computing and processing speeds due to the amount of data it was managing, the practice decided to subscribe to eClinicalWorks Grid Cloud.

"It was a smart decision for us financially and with the IT staff we have," Herb Taylor, East Georgia's IT director, says.

Taylor reports that the cloud offers better disaster recovery protection and financial security.

"You may be able to spend that $300,000 to $400,000 to get where you need to be this year, but where are you going to be in five or six years when it is time to upgrade all that hardware again? That was the big factor for me. No matter what happens, I am paying X amount of dollars to eClinicalWorks. It was a no-brainer for us with 23 providers to pay the monthly fee," he says.

Investing up front in IT equipment re-

quires capital expenditures, whereas using cloud services is an operational expense and that has been a big driver for healthcare organizations to use the cloud, McGovern says.

"The ability to pay as you go and purchase capacity as you need it and carry that as an operating expense becomes very attractive," he says.

What many healthcare leaders report about using the cloud echoes the results of the HIMSS Analytics Cloud Survey. According to the 150 healthcare IT professionals surveyed, reasons for using cloud services included lower costs than maintaining the current IT system (56 percent), faster deployment (53 percent), a lack of staff able to maintain on-premise systems (52 percent) and more robust data recovery (50 percent). Other reasons given include the need for on-demand, scalable, always on solutions (45 percent), regulatory compliance (41 percent), better information security (26 percent) and mobility of workforce (26 percent).

The need for technical resources and talent also is driving many hospitals to look at cloud applications as it can allow for better allocation of IT resources.

"If I'm a hospital deploying a Cerner solution, I might not have the technical resources that I will need to bring that up and support that environment. So it's attractive to look at a company that already has those resources and just come online with the application," McGovern says.

Speed to market can be a key benefit of the cloud as well. "If you bring something in house, it takes awhile to build up. So, if I want to bring up 500 doctors on a provider EMR, I might be looking at a six-month implementation as opposed to an 18-month or two-year implementation schedule. A lot of people are attracted to the notion that they can move in an agile fashion," McGovern says.

As previously reported by *HCI* Editor-In-Chief Mark Hagland, Saint Luke's Health System, a Kansas City-based integrated health system with 10 hospitals, 450 employed physicians and 2,440 affiliated physicians, shifted to a community-wide cloud-based information exchange system for diagnostic images and, and according to Deborah Gash, vice president and CIO of the Saint Luke's Health System, physicians now benefit from a streamlined process and a mobile application to pull up images on their iPads. And, the cloud-based information exchange enables better patient engagement.

"We're going to make the cloud image exchange accessible to patients," Gash says, noting that work is being done now to put a URL into the patient portal for access to studies, diagnostic images and radiology reports.

"IS SECURITY AN ISSUE? ABSOLUTELY, BUT NO MORE SO, AND I WOULD ARGUE MAYBE EVEN LESS SO THAN WITH AN INTERNAL DATA CENTER."

—GREG MCGOVERN

Healthcare leaders say an increased interest in the cloud also ties into the need for mobility solutions and data analytics with the shift towards population health and accountable care organizations (ACOs), and the cloud can be a critical building block for information-driven, patient-centered healthcare.

The push for data analytics requires having access to a data warehouse, and building an internal data warehouse is a huge investment, McGovern says. "So the question is, should I build my own data warehouse and bring all that information and cost into my organization, or should I start shopping around for a shared service model? Is there someone out there like a Dell that might offer that sort of analytics or data storage environment that would be most effective? I think folks are looking at cloud services not just on the applications side, but on the infrastructure side as well," he says.

Historically, there have been concerns about data security with cloud-based solutions, case in point, 61 percent of the respondents in the HIMSS Analytics survey who hadn't adopted a cloud solution cited security concerns as a reason for not doing so. But many health IT leaders say those concerns are unfounded, and many CIOs, CTOs and CISOs (chief information security officers) see the cloud as providing more security than on-site storage.

"Is security an issue? Absolutely, but no more so, and I would argue maybe even less so than with an internal data center. Security is always an issue, HIPAA is an issue, privacy and disclosure are issues whether the data is sitting in a server in your closet or sitting out somewhere on the internet. The cloud vendor, in some sense, might be able to provide better security, as they have scale and you have a relationship with them contractually, there are business associate agreements in place. As such, the cloud vendors comply with certain standards for data security and privacy," McGovern says.

And, cloud solutions also provide CISOs and CIOs with a way to "get dollars for security" because the security is "baked into the solution from the external vendor," he adds. With many hospitals and health systems, funding for security, such as intrusion detection systems, is not a priority due to the expense, but outsourcing data storage to a cloud vendor "almost by definition gives you a certain level of security and that security will be maintained on an ongoing basis."

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THE CLOUD MOMENT IN MEDICINE

IN HEALTHCARE, IT'S NO LONGER "WHY MOVE TO THE CLOUD?" BUT "WHEN?"

Healthcare institutions—hospitals, clinics, group medical practices, exchanges and more—have a reputation for being cloud resistant, largely due to fears that highly confidential patient data might be less safe if it is not stored in a client-owned and managed IT infrastructure.

But over the last year, a clearer picture has emerged, showing that while the cloud may have gotten off to a slower start in healthcare, its adoption is following a trajectory seen in other industries; it is now pervasive across a wide range of applications; and, perhaps most important of all, it is poised to assume a dramatically increased presence as the underpinning for the personalized, data-driven, patient-centered models of healthcare that are now coming into focus.

CLOUD DEMAND IN HEALTHCARE TO TRIPLE OVER FIVE YEARS

All of this means that the cloud moment in healthcare has arrived: demand for cloud services in healthcare will triple within five years to nearly $9.5 billion.[1]

This demand is creating opportunities for the entire cloud service provider ecosystem. Established cloud/managed-services providers such as NaviSite have long provided secure services to healthcare providers through its broad portfolio of cloud services for healthcare—from applications hosting to virtualized desktops to business continuity/disaster recovery.

None of this means that security concerns have become any less compelling to healthcare IT decision makers. Rather, given the equally compelling advantages of moving to the cloud, these decision makers are increasingly likely to conduct a more granular weighing of the risks and benefits. As the consulting firm Accenture has noted: "Healthcare is learning from other industries, such as financial services, about unlocking the benefits of the cloud without compromising data security."[2]

CLOUD USAGE ALREADY PERVASIVE IN HEALTHCARE

The fact is, cloud services are already thriving in healthcare. According to a 2014 study from the Healthcare Information and Management Systems Society (HIMSS), the vast majority (82%+) of healthcare organizations currently use cloud services—primarily software as a service (SaaS) and cloud applications. And while 65% of respondents expressed security-related concerns, a scant 6% are rejecting any use of the cloud.[3]

According to the HIMSS survey, the top three reasons for adopting cloud services include lower maintenance costs, speed of deployment and lack of internal staffing resources. This is consistent with other industries where cloud buyers focus their initial efforts on addressing cost and management issues. The situation is arguably even more pronounced in medicine, where scrutiny of costs has nearly every healthcare delivery organization (HDO) looking for ways to streamline business operations, but are often finding a roadblock in IT, where years of underinvestment and industry consolidation have left behind a patchwork of isolated data centers and redundant vendor solutions that can be challenging, even for veteran IT employees.

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STARTING OUT HYBRID

In making the transition to the cloud, many HDOs opt for hybrid approaches—maintaining a mix of on-premises (often virtualized) data center capabilities while moving certain applications and services to the cloud. In a survey conducted by NaviSite, nearly half of healthcare IT executives identified data storage, backup and recovery as top candidates for the cloud. As Chris Patterson, senior director of product management for NaviSite, observed, "We see a lot of our customers coming to us and saying, 'I've got another 10 or 20 terabytes of images.' Or 'We need a parking spot for 500 terabytes, maybe two petabytes of data that my lawyers won't let me throw away.'"[4]

Again, this is consistent with industry-wide research that shows that storage-intensive applications such as medical imaging are among the most prolific uses of the cloud in healthcare. Using a cloud solution for storing and sharing large data files involved in medical imaging saves hospitals, physicians and other organizations in healthcare costs while boosting speed and efficiency.[5]

The current focus on storage is likely just a harbinger of things to come, as healthcare increasingly revolves around the ability to provide convenient, personalized, data-driven patient experiences—requiring HDOs to input and extract more data from more endpoints, including monitoring devices, mobile apps, virtual consultations and more, and turn that data into actionable information. Federal mandates such as Meaningful Use and the transition to the ICD-10 code set are already helping to drive this paradigm shift. In the NaviSite survey, one in three IT executives said they expected to use the cloud for data mining and business analytics.

REAL CONCERNS OVER DATA THEFT

The flip side of the growing interest in data analytics is the very real concern over data theft. During the last five years, cybercriminals looking to obtain personally identifiable information (PII) such as birth dates and Social Security numbers have doubled their attacks on healthcare providers, according to a report from the Ponemon Institute, a security research and consulting firm. Nearly 90% of healthcare providers were hit by breaches in the past two years, half of them criminal in nature, according to the study.[6]

But the long-held assumption that data is always safer inside your own four walls has been shaken by the huge data breaches that have hit the internal IT departments of a wide range of major companies and government organizations. And it is also challenged in the broad-based studies by Alert Logic and Verizon which show that a company's security profile is far more influenced by factors such as its industry, the extent of its online presence and how it interacts with customers than the type of IT infrastructure it uses.[7]

The reality is that protecting data is a costly, ongoing challenge. As Ponemon noted, many healthcare organizations "lack the funds and resources to protect patient data and are unprepared to meet the changing, cyber threat environment." It is also one where it is easy to make costly mistakes. For example, in response to HIPAA and HITECH regulations, the technology research firm Gartner has noted that many HDOs are adopting a default protection stance that includes encrypting "everything," misinterpreting the regulations and potentially wasting millions of dollars.[8]

After a careful review, resource-constrained IT departments could well discover that relying on a third-party hosting provider, with staff and resources devoted to security, provides better protection at a lower cost. The legal aspects of relying on cloud providers for security has also become clearer in the wake of the 2013 addition to the HIPAA omnibus rule, which—among other things—expands the list of companies and individuals who must now be treated as business associates, increasing the information security responsibilities of cloud providers.

ENHANCING SECURITY THROUGH VIRTUAL DESKTOPS

While hackers and cybercriminals grab headlines, the more pervasive threat to information security comes from devices that are lost, stolen or unattended, as well as unauthorized devices that get attached to the network. Internal attacks such as disgruntled employees who use their privileged access to launch attacks on their employers are also very real threats. In the highly mobile world of healthcare, these are ongoing challenges that can be directly addressed by cloud-based virtualized desktop solutions such as Sensitive Data Services for NaviSite DaaS (Desktop-as-a-Service).

Instead of each individual device controlling its own applications and data files, with a solution such as NaviSite's DaaS service it is all done via the cloud. If a device is lost or stolen—or if it is determined that an employee should no longer have access to the network—the DaaS account is terminated. It doesn't matter what happens to the device itself.

In the NaviSite DaaS solution, two-factor authentication for system administrators and encryption of all user sessions provides further protection. NaviSite captures logs on all NaviSite-controlled systems within NaviCloud DaaS, and then stores them in a centralized audit-log repository for eighteen months, on a rolling basis. A solution such as NaviSite DaaS is another possible component of a BCDR (Business Continuity/Disaster Recovery) strategy, as it provides alternative and highly secure ways for employees to access their files and use their daily tools when they are forced to work from an alternate location because of a disaster or something as basic as a storm.

THE CLOUD—LOTS OF OPTIONS

IT professionals tend to be risk averse—IT professionals in healthcare understandably more so. Taking a careful, measured approach to the cloud fits perfectly into this risk-averse posture. As a result, the cloud "moment" in healthcare is likely to last for quite a while. But it has unquestionably arrived, offering new ways to manage costs and risks and address the strategic challenges that face the industry.

Taking advantage of the cloud is not a simple yes-or-no decision. Many variables, such as applications, workloads, skill sets, legacy investments, budgets and market pressures—not to mention risk tolerance, security and regulatory considerations—get factored into the cloud equation. What seems like a black-and-white decision takes on many shades of gray.

After all, moving to the cloud all by itself is not the desired end result. The real objective is an IT strategy that fits the unique challenges of your healthcare organization: a strategy that helps you today, while ensuring that your IT—wherever it is hosted—is future-ready for the amazing world of healthcare tomorrow. ◆

1 http://www.marketsandmarkets.com/PressReleases/Cloud-computing-healthcare.asp
2 https://www.accenture.com/us-en/insight-healthcare-industry-Cloud-computing
3 http://www.himss.org/library/healthcare-privacy-security/Cloud-security/security-survey
4 NaviSite Whitepaper, Why Healthcare Organizations Need a Cloud-Based BCDR Strategy
5 http://www.healthcareglobal.com/tech/1630/How-Cloud-Computing-is-Changing-the-Health-Care-IT-Industry
6 http://www.ponemon.org/library/fifth-annual-benchmark-study-on-privacy-security-of-healthcare-data
7 Alert Logic 2015 Cloud Security Report (https://www.alertlogic.com/resources/Cloud-security-report-2015/) and Verizon 2015 Data Breach Investigations Report (http://news.verizonenterprise.com/2015/04/2015-data-breach-report-info/) both shed extensive light on the actual security challenges facing enterprises today.
8 Gartner Hype Cycle for Healthcare Provider Technologies and Standards, 2014. Published: July 2014.

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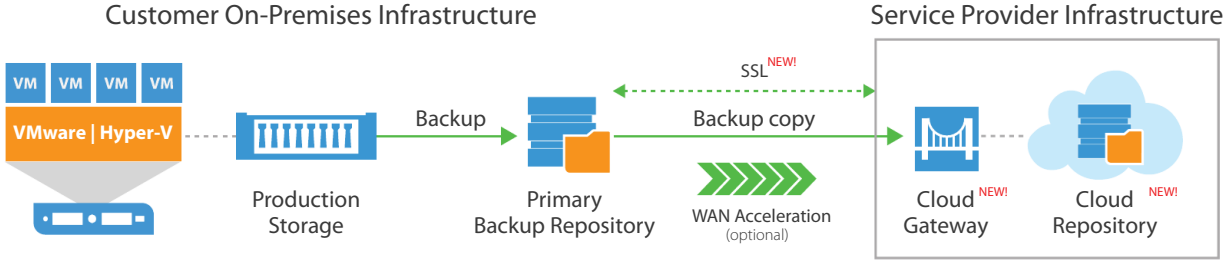

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Former ONC Policy Director Jodi Daniel Reflects on Her Government Tenure, Looks at Future of Health IT Landscape

Now that Jodi Daniel, former ONC Policy Director, is out of government, she looks back at how she helped shape the federal health IT picture and what's next for the dynamic industry. BY RAJIV LEVENTHAL

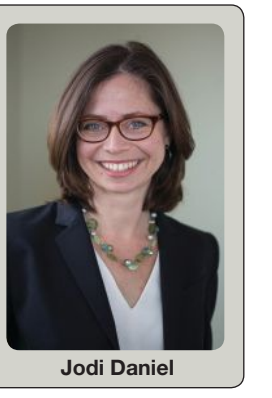
Late last month, Jodi Daniel, then-director of the Office of Policy in the Office of the National Coordinator for Health Information Technology (ONC), announced that she would be stepping down from her post at the agency inside the Department of Health and Human Services (HHS). It was then revealed last week that Daniel would be joining Crowell & Moring LLP as a partner in the Washington, D.C.-based firm's healthcare group.

Daniel served for a decade as the director at the ONC and 15 years at HHS, and according to her ONC bio, she developed the agency's foundational legal strategies for health IT as the first Senior Counsel for Health Information Technology in the Office of the General Counsel (OGC) of HHS. Daniel was responsible for coordinating all legal advice regarding health IT for HHS and was the lead attorney for ONC, so the move to the law firm should be a natural progression for her.

Nonetheless, Daniel was the longest-tenured senior official at ONC, an agency that has experienced mass departures from its senior-level leadership over the last year. Shortly after announcing her decision to leave ONC and join Crowell & Moring, Daniel spoke with HCI Senior Editor Rajiv Leventhal about: her reason to leave the government; what her and other ONC senior–level leaders' decisions to move to the private sector might mean for the agency; the government's proper role in healthcare; how health IT has evolved during her time there; and what's to be expected in the years ahead. Below are excerpts of that interview.

What was behind your reason to leave ONC at this time?

I have been at HHS for 15 years and at ONC for 10; I helped start the office back in 2005. I felt like it was a fabulous opportunity to have a lasting influence on healthcare systems. I have accomplished a lot, the office has accomplished a lot, but it was just great timing for me. ONC just came out with its [2015 Edition Health IT Certification Criteria] regulations that went along with meaningful use regulations, so for me it was time for a new challenge to see things from another vantage point. The government has done an amazing job of kick starting the movement towards health IT in the healthcare sector. The next decade will bring a lot of interesting activity and innovation happening in the technology sector and the private sector. You have new technology companies entering the market. I really wanted to be a part of leveraging that technology for healthcare and health outcomes, so the transition made sense for me.


Jodi Daniel

What do you hope to accomplish at Crowell & Moring?

I hope to build a health IT policy legal practice where I can focus on issues from many different perspectives. Some of it will be helping providers adapt to changes to technology in the regulatory space, and comply and take advantage of opportunities for improving healthcare particularly as we see more changes with payment and payment reform. I also would like to work with organizations that are developing new technologies and figuring out how to improve how healthcare is delivered and how to improve communication between patients and providers, as well as help patients manage their care outside the doctor's office and hospital. It's about trying new things that may not have been contemplated by the current regulatory and policy regime so they understand how they can proceed and do so in a way that's consistent with the policies from a technology perspective and payment perspective.

How does the federal health IT landscape look today compared to a few years ago? What has changed most?

I think the biggest change is one from spotty adoption of health IT to widespread adoption among providers and hospitals. Going back 10 years, there was a single digit percentage of doctors who had EHRs. Now half of doctors and almost all hospitals are using EHRs to take care of patients. So there is a huge shift in the use of adoption and tools.

There is also improvement in the electronic exchange and interoperability of health information using technology. The goal is that information will follow patients when and where they need. I don't think we are there yet, but we do see pockets of interoperability in regions or among different healthcare systems, and in some cases nationally through things like The Sequoia Project. And then we have almost universal e-prescribing usage across healthcare providers and the exchange of prescription information between providers and pharmacies. That was a wish when I started, now it's a reality. We wouldn't have seen these changes if not for incentives and a push from the federal government.

With adoption, we have already hit the tipping point and passed it, so in that space, the real challenges and opportunities are focusing more on usability and the ability of systems to help improve efficiency and effectiveness to help providers care for patients. We are also seeing more adoption of technology outside providers who were eligible for incentives, such as in behavioral health communities. They are so critical to the overall health of patients.

What would you say is the proper role of government in health IT?

That's a really good question. I think the government had a critical role to play over the last decade in pushing the industry to adopt technology. Healthcare was the last holdout for this. The government was successful in starting that movement and pushing it forward. Now it has gotten harder to figure out the most important pieces. I have always thought that the government's role is focusing on consumer protection and where the market isn't solving the problem. That's what we had in the last decade where there was a need for moving healthcare systems into the 21st century, and it wasn't happening organically in the market, so that's where the government stepped in.

They are also focusing on privacy and security; we have seen some improvements in interoperability and folks are coming together to work towards adjusting operational challenges for health information exchange. Government could play a role in bringing together stakeholders to bridge those gaps if it doesn't happen organically in the market. There will be ongoing critical roles for government to play in, and a lot of it will be in the dynamic environment in technology development. I think the government will have a role to play in making sure that the existing policies keep up with the technology innovation and help promote that innovation that could lead to better care—or at a minimum don't interfere with that innovation.

Considering your expertise with HIPAA and governing health IT, where do you think we stand regarding privacy and security in healthcare today?

Overall, one of the biggest challenges we have in healthcare is that the federal rules do not apply to all entities that have identifiable health information. HIPAA privacy and security rules only apply to covered entities. As we have different kinds of ways that people are getting healthcare services, as we see more direct-to-consumer tools and the like, it raises concerns about the protection of that information differently depending on who is holding that data. That's a real gap that needs to be filled. On the security side, I think we will continue to see breaches as we have a lot of information in electronic format. It's a matter of mitigating the risks, not eliminating risks. But we see this in every industry; it's not unique to healthcare. The government does have an important role to play here in advancing security practices and standards. Individual organizations also need to be more diligent about identifying security risks and mitigating those risks in the best way so that we have limited harm in breaches or a reduction in the number of them.

There's been significant change in senior-level leadership at ONC in the past year. What does this potentially signal?

There is a natural cycling of folks coming in and doing public service, and then leaving. When I was at ONC, there were five national coordinators in 10 years there, so it's not a real recent trend. Because it's a dynamic field, folks will come in and they help share the expertise they have, and then some point bring that back to the private sector. I think it's a natural state of things in particular in government, particularly in an office that is working in such a dynamic market. I had been there from the beginning, and folks who were there when I started 10 years ago are still there. I don't think it's a sign of anything, but more of a reflection of the dynamic nature of the health IT space right now and the diverse opportunities that are available in the area.

Related to that, would you say there is any uncertainty regarding Karen DeSalvo and her current juggling of two high-level government positions?

She has been juggling those two roles for about a year now, so she is getting good at it. There is always uncertainty in

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government and political roles. With Karen, I will say one thing—I have only been gone for a few weeks, and she was 100 percent engaged in the key priority areas that ONC was working on. She works twice as hard to be able to do two jobs well. If anything, her HHS role [Acting Assistant Secretary for Health] has helped elevate the profile of the office.

How would you respond to the criticism that federal leaders aren't appropriately positioned to make such impactful health IT policy decisions?

I would say the folks at ONC are among the brightest and most dedicated folks I see in all of government. I can't say enough positive things about my former colleagues. It's why I stayed as long as I did. Policymaking is really hard. There are hundreds and thousands of comments depending on what we put out, and everyone has a different position. Figuring out the right balance is hard between different competing positions as well as the position of the government to advance policy goals, advance benefits for consumers, and advance benefits for the federal programs. The role of policymaking is not to make everyone pleased, but try to listen to all the diverse positions, understand the implications of the choices we make, and weigh all of that in making the best push forward. It's a very hard job. Sometimes we get it exactly right, sometimes folks are unhappy, sometimes we make mistakes and we fix it down the road. It's based on very helpful conversations with stakeholders, review of their comments, analysis of different options, fact finding, and thinking through different approaches to challenging problems. I think the office has done a fairly good job of balancing different perspectives as well as advancing policy at the same time.

I have to get one question in on the meaningful use final rules. Providers seem confused about the aligning of Stage 3 and the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA)/ Merit-based Incentive Payment System (MIPS). What insight can you provide on this?

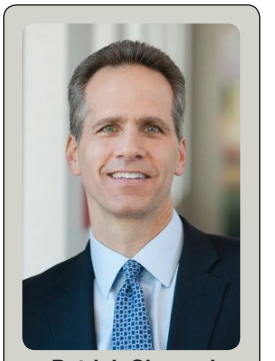
The MACRA/MIPS provisions came out not too long ago, and there are a lot of folks at HHS who are working hard to take the meaningful use program and consider it in light of the new MIPS requirements. CMS will work their magic and put something forward to help provide clarity to help bridge that gap from the prior regulatory regime to the new one that HHS has been asked to create by Congress. ◆

Connecticut Collaborative Moves to Mine Clinical Data

Patrick Charmel, chairman of the Value Care Alliance and CEO of Griffin Hospital, talks about the challenges of building a data repository across seven independent hospitals

BY HEATHER LANDI

Many hospitals and health systems are looking at ways to improve the quality and efficiency of healthcare delivery. Rather than go it alone, seven Connecticut healthcare organizations have banded together to build a data warehouse combining claims data with electronic health record (EHR) data in order to harness the capabilities of real-time analytics to address gaps in care for effective population health management.



Patrick Charmel

The Value Care Alliance formed in December 2013 and is comprised of St. Vincent's Medical Center, Lawrence and Memorial Health System, Griffin Hospital, Middlesex Hospital and the Western Connecticut Health Network, which is comprised of Danbury Hospital, New Milford Hospital and Norwalk Hospital.

In August, VCA partnered with Burlington, Mass.-based Arcadia Healthcare Solutions and is currently deploying the Arcadia Analytics platform to all member hospitals, unifying claims data from local and national health plans and hospital and ambulatory EHRs, to support real-time analytics which will be utilized by both VCA and hospital executives for strategic quality and cost improvement planning. The analytics also will be used by care management teams for patient monitoring, such as coordinating the care of diabetic patients.

The VCA anticipates the first results of this analytics work, which began earlier this month, in about 60 days. The Arcadia Analytics platform will serve as a central utility and dashboard capabilities will be used to compare cost, quality and efficiency metrics at the aggregate and individual hospital level, allowing VCA members to identify and share best practices between members.

Patrick Charmel, chairman of the VCA and CEO of Griffin Hospital, recently spoke with *Healthcare Informatics* Assistant Editor Heather Landi about the need for sophisticated data analytics in a value-based healthcare environment and the challenges of building a data repository with claims and EHR data across seven independent hospitals. In the second part of this two-part interview, Charmel shared the specific quality measures, what VCA will do with the results and how they got physicians on board.

How did the Value Care Alliance come together?

A number of hospitals were going through internal analysis and review looking at what kind of capabilities they were going to need in the future as healthcare began to shift from being volume-oriented to value-oriented. If we are going to take responsibility for a population of patients, we need to know a lot more about them, so we knew that we would have to develop more sophisticated information technology and capabilities. We would have to begin to gather both claims history data and medical records data to understand that population, to look at the underlying needs, or the chronic conditions that the population has, their claims history and then risk stratify them and develop strategies to intervene and try to manage the care of those patients more closely and more effectively. So that took a data repository and advanced analytics. Most of those traditional systems didn't have that capability, and many still don't. So, then the question is, how do you go about doing that? Do you do that as an individual hospital or do you come together with others? It's a big investment. And that gets back to the question of what constellation of providers are you going to come together with? Are they efficient and are they producing good outcomes, meaning quality in terms of patient experience?

All of that analysis led us to say, let's look for those high-performing hospitals that are capable and can execute, and that understand how the environment is changing and are willing to embrace it, because not everyone is willing to embrace it. So, we tried to identify those organizations that were relatively low cost, producing high quality, forward thinking and wanted to come together in a less traditional manner that allows them to preserve their independence. There is a danger of bringing together fiercely independent people as they may not want to work together with others, so it's a combination of being independent and also collaborative. Those were the kinds of folks that we were able to find and made sure we had a common vision with. We wanted to make sure that we all shared a philosophy and a common set of principles and then we set out from there.

Were there any challenges to getting this started?

Yes, I think there were. It took us a little while to understand that sometimes we have to subordinate the interests of our individual organizations to the interests of the larger organization to really get the collective benefit of coming together. You have to get a few successes for organizations to believe that doing it together is more beneficial to doing it on your own; but once we get some early wins, it builds confidence that coming together was the right thing to do.

How did you choose a vendor?

So, within the alliance, there is a fairly formal structure. There are a series of advisory committees that are populated by our membership and content experts in each of our member organization. We had one looking at our information infrastructure needs, so that addresses the issue of the repository to collect claims and medical records information and then a set of analytical tools in order to use that information for decision making and turn that information into something that is actionable from a population health management standpoint. So, we're talking about CIOs and population health data analytics experts, and each of our members coming together and looking at what each of the member organizations already have, because some have already made investments in infrastructure. And then we looked at the products available in the marketplace and did a fairly detailed evaluation of the available options. At the end of that process, Arcadia was selected.

What are your goals with this partnership?

Our members have moved into a number of advanced payment arrangements with payers, with the Medicare program and the Medicare Shared Savings Program and now in relationships with commercial payers. [Editor's note: VCA joined a co-branded ACO with Aetna and Hartford HealthCare last month.] So most of those arrangements have been upside only, but very quickly, probably as soon as next year, there will be upside and downside. So now we have risk for outcomes of care and we have risk for the cost of the care, and that means we have to develop new capabilities to manage cost and quality. That is what motivated us to build a data repository and to find a set of advanced analytical tools that could help us put all of our attributed lives, or those that we are responsible for, in various buckets by underlying disease, so to develop a disease registry—so we know who all the asthmatics are, who all the diabetics are, those patients with congestive heart failure and lung disease and then develop tailored interventions to help manage their disease more effectively. And then we focus on keeping them healthy. Next, we try to predict with advanced analytical tools who is likely to use resources in the future and, again, try to intervene to reduce the resource consumption. And, beyond that, we look at care variation. For example, of the orthopedic surgeons practicing in our alliance hospitals, look at the variation in terms of cost and quality, and then see if we can bring about more standardization around best practices. And, in order to do all that you need pretty sophisticated information tools and you need to have linkages through each of the hospitals' electronic medical record systems and each of the participating physicians' EMR systems to pull that information into a repository so that you can analyze it.

"ALMOST ANYBODY CAN BUILD A REPOSITORY THAT DUMPS CLAIMS DATA FROM THE PAYER INTO THE REPOSITORY BUT ACTUALLY BEING ABLE TO PULL IN MEDICAL RECORD DATA AND THEN MERGE THAT WITH CLAIMS DATA, THAT'S REALLY CHALLENGING." *—PATRICK CHARMEL*

Going back to choosing a vendor, how did that impact your criteria?

That is where Arcadia shines. Almost anybody can build a repository that dumps claims data from the payer into the repository but actually being able to pull in medical record data and then merge that with claims data, that's really challenging. I think our advisory committee that did this evaluation came to the conclusion that Arcadia has the best demonstrated ability to do both, be able to make those interfaces with disparate EMR systems, to normalize that data and be able to analyze it so that it becomes actionable by our providers. I think we see Arcadia as a real strong partner that understands the transformation that needs to happen and has developed some really unique capabilities, but it's more the thought leadership that they provide and the partnership they can form with us to help build the capabilities, I think that's pretty unique.

What is the timeline for building your data asset and getting actionable data?

The repository is built and so the data is now being populated with claims data from both commercial payers and from Medicare, so the analytical tools are in place and we are beginning to do that analysis and create dashboards for providers so they can see the gaps in care, both at individual hospitals and across the VCA. So, the next step is to create those medical record linkages, which requires interfacing with each of the hospitals' information systems, and more importantly, their affiliated physicians and their office EMR systems. Many of them are on different systems, if they were on one it would be really easy. Arcadia is making those connections with all of those EMRs, and [combining the claims data and EMR data] will likely occur over the next nine months to a year. ◆

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CHIME Fall Forum: CIOs as Change Agents Going into the Future

Presenting the results of a unique survey of CIOs and their non-CIO fellow executives, two healthcare IT leaders urged healthcare CIOs to embrace change BY MARK HAGLAND

Today's CIOs and their fellow executives in the c-suites of hospital organizations do not always see eye to eye; but they are agreed that healthcare CIOs will need to be profound agents of change in their organizations in the next decade. That commonality was among the findings of a survey conducted by leaders at the Ann Arbor, Mich.-based College of Healthcare Information Management Executives (CHIME), as presented on Oct. 15 by two healthcare IT leaders at the CHIME Fall Forum at the JW Marriott Grande Lakes Resort in Orlando, Florida.

Tim Zoph and Donna Roach, well-known healthcare IT leaders, presented the findings of a survey that began with CHIME's board of directors a year ago, and was then deployed to 123 CIOs across the U.S., and ultimately also to some of the CEO and other c-suite-executive colleagues of those CIOs, in their same organizations. And the findings hold numerous implications for healthcare CIOs nationwide.

Zoph, who served as senior vice president and CIO at Northwestern Medicine in Chicago from 1993 through 2012, and who is now consulting in healthcare IT, and Roach, the CIO at Via Christi Health in Wichita, Kan., presented those findings during a session entitled "The Evolving Role of the CIO: Aligning CIO Perspectives with the Executive Team."

In his opening remarks before presenting with Roach the results of the survey, Zoph said, "One of the most important learnings of this enterprise was that achieving alignment with the senior team is fundamental. If you don't have alignment, you're going to have problems developing strategy. Technology is a team sport." As he and Roach explained it, the survey, which looked at the top leadership attributes that will be required of CIOs going forward in U.S. healthcare at a time of intense change, was given first to the CHIME board's members to complete, then to the 123 CIOs, and then to a few dozen CEOs and other c-suite leaders, by their organizations' CIOs.

Among the two most important overall findings: both CIOs and other c-suite executives agreed that one of CIOs' core responsibilities in the next several years will be as change agents within their organizations; and, c-suite executives especially perceived—more than CIOs themselves did—that CIOs will need to be emerging technology innovators, moving their organizations forward proactively to push healthcare forward via technology, and not simply fulfilling the required operational tasks that have been theirs throughout the history of healthcare IT in patient care organizations.

After the session, Zoph told *Healthcare Informatics* that "It was really interesting to compare and contrast those two results. On the one hand, both CIOs and other c-suite executives agreed that CIOs need to be change agents; on the other hand, the non-CIOs had a heightened awareness of the need for CIOs to be real technology innovators, to really proactively lead through technology."

In his introductory remarks in the session, Zoph laid out the top leadership attributes included in the survey. They were: change management (the ability to manage, lead and achieve results in a constantly shifting healthcare environment); talent management (the capability to acquire and mentor the requisite talent needed to make patient care organizations successful going into the future); senior management

leadership (CIOs becoming true partners with other c-suite executives as leaders of their overall organizations); knowledge management and analytics (deploying technologies to continuously improve clinical and operational performance); emerging technology and innovation (as stated above, the capability of CIOs to become true leaders in proactively pushing their organizations to adopt technologies that will transform healthcare); and operational management (achieving ongoing high levels of reliability in day-to-day operations).

"[T]HEY WANT A STRONG COLLABORATOR WITH OTHERS, AND THEY'RE LOOKING FOR SOMEBODY WHO HAS THE SKILL SET OF THE CEO, INCLUDING BEING ABLE TO ATTRACT DIVERSE IDEAS AND MODEL COLLABORATION. AND COLLABORATION IS GREAT, BUT IF ALL IT DOES IS CREATE DEBATE, THAT'S NOT GOOD ENOUGH."

—DONNA ROACH

Commenting on the survey results, in which change management topped the list of most important attributes, among both CIOs and non-CIOs, Roach noted that "When you talk about change management, it's not the change management we typically engage in, in IT: [non-CIO] leaders are really looking for the CIO to be a change agent, creating strong personal networks, and making sure those networks are used effectively, including knowing if someone is a resister or fence-sitter in an organization. But also, how you might be bridging the gap between the clinical folks and others in the organization? This was clearly, in all the dialogue, the one thing where leaders felt the CIO really needs to step up to the plate."

With regard to the concept of senior management leadership, she said, "This is the one that got tied for second. There's alignment" between CIOs and non-CIOs on the importance of senior management leadership attributes among CIOs, she said. "But here's what they [the non-CIO executives] said: they want a strong collaborator with others, and they're looking for somebody who has the skill set of the CEO, including being able to attract diverse ideas and model collaboration. And collaboration is great, but if all it does is create debate, that's not good enough. They want someone with a strong hand in making people accountable. They also felt it was very important for the CIO to have this ability to reach across the table with other members of the executive team and create that collaboration. They expect that out of us." ◆

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However, as with any outsourcing relationship, there are a number of issues that health IT leaders need to consider when using cloud solutions, and doing due diligence with regards to service level agreements and contracts is critical, McGovern says. "We've had people go into an outsource relationship for the cloud or remote-hosted services and three to five years down the road, the CFO says, 'Our costs are astronomical, why is it costing so much?' And it turns out there are all these things outside the scope of the agreement, so they might have committed to 99.9 percent uptime and then demanded more, or they have expanded and added more providers and that incremental cost was unexpected."

"It's probably going to be a 10-year marriage with that vendor, so you really need to have foresight and think about how is this going to grow and how is the world going to change and then try to build in those considerations into your contract," he says.

According to the HIMSS Analytics survey, 65 percent of healthcare organization respondents said a cloud services provider's willingness to enter a business associate agreement was an important factor when selecting a vendor.

There are also concerns around certain performance issues with cloud services, such as slow responsiveness and downtime. According to the same survey, 32 percent of respondents reported problems with slow responsiveness with cloud applications and 23 percent of respondents reported downtime and unavailability of data and applications.

"The concern around availability and uptime has been a valid concern, but internal networks go down too. The connectivity and availability of cloud services is very high and again, that gets back to the contracts and the need for good due diligence when talking to the vendor," McGovern says.

Integration services can be an issue when using cloud-based solutions as most hospitals and health systems want an integrated user experience and workflow. "The integration of the user interface and all those back-end services is a challenge, but that doesn't mean it can't be managed, it just means that it needs to be thought through so you don't end up with a bunch of siloed broken workflows," McGovern says.

Many industry experts also warn against "all-or-nothing" cloud service providers. "In this population health and ACO world, you never know who you're going to be partnering with, so locking yourself into an all-or-nothing vendor could be prohibitive," he says.

Cost savings and IT staffing challenges will likely drive continued growth of cloud solutions, and, indeed, most adopters report that they will expand their use of the cloud in the future, specifically for archived data, disaster recovery and operation apps and data, according to the HIMSS survey. ◆

For One Iowa ACO, Patient Engagement Goes Beyond Clinical Goals

In Iowa, "true" patient engagement digs far deeper than setting clinical goals.

BY RAJIV LEVENTHAL

For many healthcare organizations nationwide, patient engagement efforts are focused around healthcare consumers being more involved in their own care by setting clinical goals such as losing weight or controlling blood sugar. The idea is simple in that, if these goals are met, health outcomes will be improved. For leaders at the Des Moines, Iowa-based Mercy ACO (accountable care organization), however, proper patient engagement involves drilling down multiple more layers to truly find out what motivates patients.

Formed in 2012, the Mercy ACO is part of the Medicare Shared Savings Program (MSSP), but with a number of commercial contracts also. According to David Swieskowski, M.D, chief accountable care officer at Mercy ACO, in the first year in the Shared Savings program, it had 27,000 lives at risk, and the ACO saved 3.3 percent, or about $10 million dollars, while receiving a $4.5 million dollar payment for those savings it generated. In year two, Swieskowski says, the lives at risk grew to 60,000, and while Mercy saved another $10 million dollars, the organization didn't receive any payment due to not hitting the minimum savings of 2.2 percent.

Swieskowski chalks this up to Medicare wanting to make sure that payments given are not a random variation, meaning that it wants a significant improvement in cost reduction. "We're in a one-sided [risk] model where you don't ever have to give anything back to Medicare," he says. "Medicare now has a [two-sided risk model] where with one of their tracks they will let you choose your savings rate, but it goes both ways. So if you lose a half a percent, you have to pay it back rather than having to lose 2 percent before you have to pay anything back," Swieskowski explains. As such, it's "just very difficult to bend that cost curve," he adds. "You have to change patients' behavior and change physicians' behavior. That's difficult to do. It's something that takes a long time—you can't do it in a year or two. But I think we have an effective strategy for doing that, at least for patient behavior," he says.

That strategy was actually developed 12 years ago, Swieskowski says, when Mercy leaders were invited to a pilot program on self management support funded in part by the Institute for Healthcare Improvement. "[The program] got involved in self management support and teaching patients to manage their own diseases. Part of the program was about motivational interviewing and goal setting as well," he says.

To this end, a key component of Mercy ACO is the health coach program. Mercy health coaches are licensed, registered nurses stationed within the Mercy primary care clinics. Health coaches work in conjunction with primary care physicians to provide personalized, one-on-one care to help patients set and achieve their healthcare improvement goals. Health coaches are also responsible for following up with patients who may be at higher risk for developing chronic illnesses and will also work with healthy patients to provide

reminders for regular health care screenings. Swieskowski says when Mercy's patient engagement strategy began in 2003, there was one coach employed; now there are 80 of them, located physically in physicians' offices.

The concept behind the health coaches is broadly to help people achieve their goals. But there is nothing "broad" about the coaching itself, notes Swieskowski. "The goals are personalized and they are not necessarily clinical goals. That's what is unique about this strategy," he says. "It's not about controlling blood pressure or losing 10 pounds, because we don't think that's what patient goals are about. Patients want to control blood pressure or lose weight to achieve something in their lives. That's what you have to figure out. What do you want to achieve by doing these things? What motivates them?" Swieskowski asks.


David Swieskowski, M.D.

"THE GOALS ARE PERSONALIZED AND THEY ARE NOT NECESSARILY CLINICAL GOALS. THAT'S WHAT IS UNIQUE ABOUT THIS STRATEGY."

–DAVID SWIESKOWSKI, M.D.

He adds there are anecdotal results about improving outcomes, recalling a story a Mercy coach just told him a few weeks ago regarding a patient who was in with diabetes. The patient had been talking about weight loss for a long time, and finally the patient contacted the coach to start working on it, Swieskowski says. "She set goals to lose weight, and the coach said 'Why do you want to lose weight?' The coach then drilled down to the reasons, to which the patient said she wants to feel stronger and walk better. The coach drilled down even more, and found that the patient was very worried about losing her independence and being dependant on other people. Maintaining your independence is the goal that will be motivating someone; it's a much deeper goal than feeling stronger. Drilling down like that is the key," Swieskowski says. "We are not imposing our clinical goals, but instead finding out their goals. For them to achieve their goals, they always have to improve their health anyway," he adds.

MORE THAN JUST TECH

Interestingly, while Swieskowski feels that patient portals are a big part of engaging patients, the infrastructure at Mercy isn't currently conducive for working portals. "Unfortunately we don't have patient portals in our ACO practices right now as we have run into a lot of problems with our EMRs and getting them working," he says. In Des Moines, Mercy is connected with Colorado-based Catholic Health Initiatives (CHI), so its EMR is a large project that is part of CHI's national implementation. "We have to rely on what they give us, and they haven't given us a patient portal yet," he notes. Similarly, Mercy is also connected with Catholic Health East/Trinity Health, located in the mid-Atlantic region. "They are changing their EMRs, from NextGen to Cerner, so it's the same deal," Swieskowski says. "We just don't have our EMRs installed in a way that allows us to change the way we practice medicine at this point."

Swieskowski adds that he in "no way happy" with the data systems to measure and track what the ACO is doing. "It's not anywhere near what I think we could be doing. By this I mean with our data warehouse, we're getting the billing information well, but we're not getting clinical information, such as 'Is your blood pressure or blood sugar controlled?' We just are not getting the data in the way we wish we were. If we were, we'd be able to feed it back to the physicians and offices, and make an impact on performance improvement. If you don't have the metrics to see if you're making any progress, it's hard to make progress," he says.

As such, Mercy has built disease registries. It has a data warehouse where clinical data from EMRs and billing data are married together in one database to try to understand clinical quality and cost for the patients the ACO is taking care of, Swieskowski explains. "The warehouse is used to measure ourselves and improve quality. We probably have 15 EMRs across our ACO, so we get an electronic feed from those, and we then standardize them so we all have a standard measurement across the entire ACO. So we use that for our quality improvement, not the meaningful use reports that come out of the EMRs."

Another challenge that leaders at Mercy face is engaging physicians to engage patients. Swieskowski says that when a patient comes into the office, it's easy for a physician to literally walk him or her down to the health coach. While that can be a powerful approach, some clinicians remain hesitant still, he says.

"Not everyone wants to buy in. But we tracked the data on the physicians, and we found that those who utilize health coaches had better quality outcomes and higher productivity. There were also increased revenues in the practice because you are doing all these ancillary tests and medically-necessary tests that don't get done. Due to the way offices are designed, you can't address them in a 10-minute visit," Swieskowski says, adding that the increased revenue came out to more than $600,000 per coach per year that is generated in the office setting when you have a coach in there. "Quality scores also got better, so based on that physicians have accepted this strategy, and are even paying for the coaches out of their pockets." ◆

Full-Court Press on Population Health

At Crystal Run Healthcare, the senior leaders are committed to a population health strategy BY MARK HAGLAND

Scott Hines, M.D., chief quality officer, Jonathan Nasser, M.D., chief clinical transformation officer, and Gregory Spencer, M.D., CMIO, of the Middletown, N.Y.-based Crystal Run Healthcare, a multispecialty group practice with 35 locations and 375 providers (300 of whom are physicians), are helping to lead a full-court press into population health management at Crystal Run, and are leveraging IT to facilitate a broad range of activity.

In that context, the three physician leaders spoke with *Healthcare Informatics* Editor-in-Chief Mark Hagland this summer, as he interviewed medical group leaders for the magazine's September-October cover story. Below are excerpts from the interview they gave to *HCI* this summer, for that story.

Tell me about Crystal Run Healthcare's overall strategy around population health?

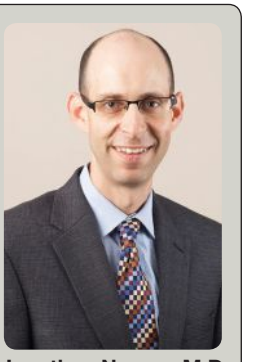
Scott Hines, M.D.: When we first really started leveraging data to improve outcomes, our first steps were looking at creating registries to identify patients who had gaps in care, and then distributing those registries to every doctor and their nurse, to try to close those gaps in care. But we realized over time that primary care doctors in particular were becoming overwhelmed by tasks, and that that approach wasn't the best use of their time. So we took a step back and what we could take off their plates.

So we developed our Care Optimization Team, led by a nurse and staffed by four non-clinician staffers. And each person on the team is assigned to one or more patient-centered medical homes, and their job is to reach out to patients with gaps in care for process measures, such as immunizations, breast cancer screenings, necessary labs, etc., so we leverage the data from the EHR or reports from payers, so we can reach out to patients as soon as possible. We built our Payer Quality Scorecard, which allows us to track internally what we're doing in terms of quality performance for measures for each payer we have a risk-based contract with.

The other is through our Variation Reduction Program. We've developed a tool that tracks charges per patient per year by physician for a particular diagnosis. So for endocrinology, let's say we look at thyroid cancer, so it would show for each endocrinologist what their charges per year for patient are, based on professional, lab, imaging, and procedure charges.

"WE ARM PHYSICIANS AND TEAMS WITH DATA, AND ASK FOR SUGGESTIONS FOR IMPROVEMENT AND WE TRY THINGS OUT THROUGH PDCA CYCLES OR MEETINGS; AND THEN WHEN PATIENTS AREN'T IN FRONT OF US, WE'RE ALSO INVOLVED IN THEIR CARE THROUGH CARE OPTIMIZATION."

—JONATHAN NASSER, M.D.



Jonathan Nasser, M.D.

And there's always a four-fold variation among docs when you begin, and we've shown it has nothing to do with the quality of care or sickness of patients, but the degree to which quality of care guidelines are being adhered to. So John and I meet quarterly with each division to perform on a guidelines adherence exercise. And ahead of time, we ask the division which diagnosis they want to tackle, and then we assign one or two physicians in that division to research what guidelines or evidence exist in the literature, and so they come to that meeting armed. So we walk away from those meetings with a guideline we've developed, and over time, we see improvement in quality outcomes, and improvement in access to care because we're standardizing follow-up intervals based on consensus or evidence in the literature. And you wind up having fewer visits per patient which then allows more access for more patients to be seen. And the last outcome is that overall cost per patient goes down, because you're eliminating unnecessary tests, procedures, and visits.

How do you manage the people processes involved in these initiatives?

Jonathan Nasser, M.D.: There are sort of two ways we divide

this up. One is the things that happen outside our physician group, such as hospitalizations and ER visits, and the care in nursing homes and reducing readmissions—that's one group; and then there's the care delivered within our organization; and both have different ways of using data. And we also try to accomplish as much as possible for the patients who are in front of us. And we arm physicians and teams with data, and ask for suggestions for improvement and we try things out through PDCA cycles or meetings; and then when patients aren't in front of us, we're also involved in their care through care optimization, and we also utilize care managers who help to facilitate care for our sickest patients, and looking at telephonic outreach etc. We've got large utilization events we're looking to improve upon that happen outside the practice, and then there's the care inside the practice, which is easier for us to impact.

What have been the biggest challenges in these processes?

Gregory Spencer, M.D.: Always, the biggest challenge really at the end of the day is getting the patients to take your advice and get the test or do the thing, the patient engagement piece is always something people struggle with. Other than that, we're starting to get the pieces together to have the organizational infrastructure to be able to identify the cohorts of patients, the list of patients who need to be worked with to close the gaps in care and identify the rising-risk patients. There are a lot of different ways to do that and it's a matter of building the system, hiring the people, etc., but at the end of the day, nobody's exactly got the patient engagement thing down yet.

And are you finding out what the ROI is in population health work?

Hines: Slowly, yes. I think it's challenging. Some contracts pay for quality independent of shared savings, while others require shared savings, and quality is just a gate to shared savings, so we have to look at tools to impact utilization. But overall, and we have our own insurance license; and if you're at a percent of premium with commercial payers, it takes time to see a return on investment in quality, because you're not going to see a return on investment in reducing long-term complications of diabetes in a year, so how do you monetize and value that?

What have some of the key lessons learned been around the blessed cycle of data gathering, sharing, use in performance improvement, and cycling back to data collection and analysis?

Spencer: I don't know that any of our learnings have been terribly profound. Getting the data as right as you can at first is important; getting all the stakeholders in early to participate in the overall process, is really important. And having an iterative workflow so that people can see that there's an end to the means, showing that you're picking things that make a difference, so there are tangible real, a sense of purpose and gravity; those are the most important things. And, the variation reduction process that Scott alluded to is a really good example of that.


Scott Hines, M.D.

"SOME CONTRACTS PAY FOR QUALITY INDEPENDENT OF SHARED SAVINGS, WHILE OTHERS REQUIRE SHARED SAVINGS, AND QUALITY IS JUST A GATE TO SHARED SAVINGS, SO WE HAVE TO LOOK AT TOOLS TO IMPACT UTILIZATION."

—SCOTT HINES, M.D.

What is it like for physicians to examine their practices and really engage in assessing their clinical and other performance?

Spencer: You're really alluding to the fact that we're on our Lean journey. We're replicating Lean on a number of levels, and are getting consistent results. With regard to the push-back that happens with some people around standardization of practice, you have to bring them back to the question of what value they add [to the care delivery process]. You have to bring them back to the whole concept of modern medicine and scientific thinking, because people do get defensive when they feel their autonomy is threatened; so making sure they buy into the process is essential. It's nothing magical, and it takes time.

What advice do you have for your peers nationwide?

Spencer: Involve doctors early and often in the process. Get started with something, and don't wait 'til the thing is perfect. Use whatever you have in your systems now: you don't have to invest in some large analytics platform; there's probably a lot of stuff you can do with what you have.

Hines: I would say that you need to spend the time to explain to physicians why you're doing it; that's important upfront, because if they understand why it's important and better, you're more likely to help them get it done. ◆

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Consequences of Performance Improvement Plans

It's crucial to understand your options when it comes to performance improvement plans BY TIM TOLAN

When you ask a member of your team to sign a performance improvement plan (PIP) you are essentially telegraphing to them that their performance is not meeting the standards you've set for that role. While some employees may view this as a plan to help them get back on track, most will simply view this as a preview of what's about to happen to their employment status. The outcome is usually not very good.


Tim Tolan

It really depends on how you, the CIO, present and package this performance plan to the employee you are hoping to turn around. If done properly you can really help an underperforming team member improve—and in some rare cases become a superstar. Conversely, if presented incorrectly, it sends a loud and clear message that you are simply crossing your "T's" and dotting your "I's" and documenting their poor performance. In some cases the PIP is required because the leader has failed to document performance issues previously, and the PIP is simply a last ditch paper trail required by the HR or legal team to initiate a termination.

Let's look at the employee viewpoint for a moment. When an employee signs a PIP, he or she may think you are there to help them get things back on track when in reality you are asking the employee to agree that you've actually identified them as a non-performer. During the one-on-one meeting, many times a manager/leader simply wants to get the document signed. Just check the box so you have proof that the employee read it, not necessarily that he/she agrees to the details of the document. I've been there many times in my former life as an executive and it's an awkward and uncomfortable meeting at best.

Occasionally, I get phone calls from candidates or people who know I run a search firm asking for my advice. I usually tell them that it's a bad idea to sign a PIP unless the terms are favorable to the employee.

Net-Net: If the PIP gives the employee a specific timeline that is reasonable (okay—enough time to find another job) it may be reason enough to sign the PIP. On the other hand if the PIP is fraught with a bunch of legal mumbo-jumbo and you are uncomfortable, you should take pause. You have a few options at this point.

You could verbally agree to perform the duties requested in the document and to make positive changes but refuse to sign the PIP.

You could lawyer-up and indicate that you simply can't sign the PIP without consulting with your attorney (that usually ends the meeting).

If you are forced to sign the PIP, or threatened with termination, then you could sign it, but include the words "under duress" next to your signature. What this means is that, since you were threatened with termination, you were not free to decline the PIP, and therefore your signature is meaningless.

Whether you sign the PIP or not, you are probably going to be terminated anyway, unless you get another job before the sand runs out of the hourglass. Not signing it doesn't make it impossible for them to fire you—just a bit more difficult. It also makes your remaining time with that organization less than comfy.

WHETHER YOU SIGN THE PIP OR NOT, YOU ARE PROBABLY GOING TO BE TERMINATED ANYWAY, UNLESS YOU GET ANOTHER JOB BEFORE THE SAND RUNS OUT OF THE HOURGLASS.

—TIM TOLAN

So why is it harmful to sign it? First, you want and need time. The longer you have to look for a new job while being employed with the old employer, the better. Depending on your role it could take months for you to land a new job. Second, you want to get your severance if you don't find a job in time and do get fired. Severance should never be your end game, but it's far better for your career, your family, and for you if you get another job first—so you bridge your income without dipping into your savings or retirement account while you are looking for your next gig.

If you are ever in this career predicament make sure you take pause and understand your options and their intent. ◆

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