



**BECKER'S
HEALTHCARE**



MOTOROLA SOLUTIONS

The age of efficiency

9 must-reads on data and practical innovation for C-suite leaders

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Introduction

The COVID-19 pandemic has upended the “business as usual” mentality in healthcare. No longer can hospitals tolerate the operational inefficiencies that have plagued the industry for years, and most organizations are already sitting on the key to their salvation – data.

Hospitals and health systems don’t have a data shortage problem. They have an actionable information problem. To optimize operations, healthcare executives must find a way to unlock the wisdom within their data surplus and use the insights within to support pragmatic, waste-eliminating solutions.

This ebook contains nine must-read articles focused on data and innovation. The insights contained in these stories can help hospital CIOs and CEOs drive change and usher in an age of efficiency at their organizations.

Proactive security in action: How health systems demonstrate the ROI in risk prevention

The role of the healthcare security team has changed, and technology solutions must keep pace. Security officers no longer sit at a post for eight hours. They make rounds, protect staff and build rapport with patients and visitors. When security does its job well, that directly translates into quality patient care.

While hospital and health system security teams are expected to support the broader mission of patient and be more present across an organization's campus, they often experience challenges when seeking access to the kind of resources and technology that can best help meet these goals. This is partly due to security's reputation as a cost center. It's incredibly difficult for security teams to pinpoint potential return on investment necessary in technology solutions. This forces security leaders to detail hypothetical, costly events avoided with the aid of a specific type of technology. The adverse business impact of these potential events needs to be well understood by decisionmakers.

Sinai Chicago and St. Louis-based SSM Health are examples of health systems whose leadership believes investment in security is crucial to the health of the organization's business.

Interoperable communications and proactive security – Emergency response transformation at Sinai Chicago

As COVID-19 hit, Sinai Chicago worked quickly to respond to the mounting crisis. Leaders quickly realized the organization needed to advance its communications capabilities in order to support an incident command and response framework that included additional screening facilities, alternative care sites and separate care areas within the hospitals to deal with the expected influx of patients. Additionally, the situation was evolving rapidly as state, city and federal health department directives were being continually updated – from instructions on how to handle visitor restrictions to guidance on personal protective equipment.

Amid this volatility, the need for rapid communication, and interoperability across the health system's hospital campuses and newly opened alternative care sites became critical. The incident command centers the hospitals needed to be able to communicate seamlessly in order to coordinate care efforts and stay-up to date on changing directives.

In response, the health system deployed MOTOTRBO digital radios at both hospital campuses to facilitate more streamlined communication. Leaders also opted to integrate the Motorola Solutions WAVE PTX broadband

push-to-talk application, which extends interoperability beyond radios to smart phones for secure, flexible and integrated communications across devices. For hospital staff who are not always on campus, the ability to connect when not carrying a radio was a critical new communications function. For the first time, Sinai staff was able to communicate and coordinate from off-campus locations.

"Our hospital incident management team isn't on-site 24/7. We can't stay at the hospital all day, every day," said Doug Buchan, RN, Emergency Management Director at Sinai Chicago. "We've had incidents this year – power outages, weather events, mass casualty events. Every single time we've been able to use WAVE to communicate from off-campus until we are all able to get to the facility and coordinate."

With new capabilities, Sinai Chicago is reimagining their security operations across multiple facilities and transforming their operations with efficiencies not previously available. And these capabilities are now extending beyond disaster operations to impact different aspects of daily hospital incident and emergency operations.

"It's actually getting built into our day-to-day response framework and not just the massive disasters or emergencies that we deal with," Mr. Buchan said. "We're also including those communications in our day-to-day, like a missing child or infant. All radio users across both campuses are flooded to one talk group and manage that together instead of divergently."

Analytics and proactive security in action at SSM Health

SSM Health recently invested in a new security system for nine of its hospitals, all of its St. Louis regional buildings and several off-site medical buildings. SSM Health is a nonprofit, Catholic health system that operates in Wisconsin, Illinois, Missouri and Oklahoma. Todd Miller, regional director of security, shared how the organization selected its security solution, as well as the role that analytics and technology integration played in the decision-making process.

"Our old system used proprietary hardware that lacked smart technology and analytics," Mr. Miller said. "One of the biggest shortcomings was the inability to provide law enforcement partners with quality video evidence."

Without the technology required to respond quickly and conduct thorough investigations, the security team's morale was low. The officers didn't feel effective because they didn't have the resources to reliably do their job.

After SSM Health experienced a security incident, the organization decided to reevaluate the security platform. The team met with and evaluated several well-known system manufacturers before selecting Avigilon, a Motorola Solutions company.

Avigilon's robust analytics capabilities appealed to SSM Health. Analytics allow the team to create digital boundaries around and within facilities. Using digital trackers, the system can identify direction violations, objects leaving an area, objects crossing a beam and more. Security officers receive proactive alerts about incidents and anomalies. "In our behavioral health area, one of our best practices is deploying cross-beam analytics one foot below the ceiling or in other areas that can be ligature risks," Miller said.

SSM Health is also using analytics to monitor exit-only stairways, as well as to ensure that beds and laundry carts aren't blocking hallway fire exits. Although analytics can't replace rounding completely, the use of analytics reduces the time that officers spend patrolling where no threat exists. "When two officers cover a 150-bed hospital, they can't be everywhere at once," Mr. Miller said. "Analytics have allowed us to reassign officers to high-risk areas."

Conclusion

These two health systems exemplify organizations committed to protecting staff and patients with sophisticated approaches to risk management. As Chicago's largest safety-net health system, and one of the busiest trauma centers in Chicago, Sinai encounter challenging care and operational scenarios every day. With a robust communications framework, Sinai Chicago now has the flexibility and adaptability to address the demanding situations that arise in an urban hospital environment.

While security isn't a revenue-generating function, security technologies can provide a clear return on investment, as exhibited by SSM Health. "We routinely capture and investigate incidents that result in reclaimed property or identification of fraudulent claims," Mr. Miller said. "Slip-trip falls, for example, are an almost weekly occurrence and the average insurance payout for a fraudulent claim is \$30,000. In the St. Louis region, Avigilon is now the system standard at all our buildings."

The benefits of a proactive approach to security are numerous. During this difficult moment in healthcare, it's clear just how important it is to keep patients and providers safe and get the right tools to the right people so they can get the job done. ■

Motorola Solutions is Helping Your Hospital to Reimagine its Safety and Security Operations

Motorola Solutions delivers integrated security and operations platforms that maximize your hospital's voice communication, video security, and operational data to improve daily operations and prepare your personnel to deliver continuity of care in emergencies.

The company's Safe Hospitals technology ecosystem can transform the way hospitals assure their local communities of a safe and secure healthcare environment, while also delivering new efficiencies, improving productivity and generating better patient outcomes.

These solutions combine a growing and diverse portfolio of Motorola Solutions companies that each represent best in class technological capability in their product category.

Safe Hospitals integrated technology ecosystem will help your hospital:

- Unify security and operations technologies for greater intelligence, faster decision making and seamless communications
- Utilize analytics and artificial intelligence to more accurately DETECT threats, ANALYZE their impacts, COMMUNICATE across teams and RESPOND in unison for safer outcomes in daily operations
- Extend the reach of your technology across multiple facilities to achieve economies of scale and facilitate reach back when capacity is stretched
- Assure resilient operations and reduce downtime of hospital operations when major incidents occur

Offering a Complete Portfolio of Products and Services

- **Radios:** Use radio for all calls for service
- **Smartphones:** Smartphones for non-emergencies
- **Mass Notification:** Interconnectivity across facilities within the Health System
- **Access Control:** Ensure patient, staff and visitor safety
- **Video Security and Analytics:** Secure high-risk and common areas
- **Incident Management:** Report for anything that involves patient, staff or crime
- **Cybersecurity:** Patching, Security Monitoring, Penetration Testing

Pragmatic innovation: CIO Dr. Andrew Rosenberg's approach to new tech investment

By Laura Dyrda, Becker's Healthcare

Innovation in healthcare often requires a technology component and significant cultural change. As a result, it's not always possible on a tight timeline.

However, new initiatives focused on solving real and immediate problems in the healthcare space will gain priority and the necessary resources to get the job done. Andrew Rosenberg, MD, CIO of Michigan Medicine, has first-hand experience making large scale innovative changes at his academic health system.

Here, Dr. Rosenberg discusses how he views innovation in healthcare and the most important aspects of engaging with pragmatic transformation.

Question: How do you separate the truly useful and innovative technology from the hype when new tech crosses your desk?

Dr. Andrew Rosenberg: When my colleagues and I look at new technologies and pitches brought to us we want them to solve existing problems. They have to be grounded in solving a problem as opposed to a higher, more abstract or conceptual idea. Both are reasonable ways of approach technology development, but I find it more pragmatic to do so based on solving real problems than a theme, such as 'mobility' or 'blockchain.'

I find that there are so many existing workflows and investments, that even if I decided we wanted to become a cloud-based system and move everything to the cloud, it wouldn't happen for a long time. I tend to ground innovation discussions in problems that can be solved, and that we need solved, in the near term.

Q: How do you set innovation discussions for your team?

AR: I'm big on frameworks to help my team have complex discussions. For example, we may discuss how to view IT investments across all domains. We use an IT maturity framework to figure out which servers we are working on systemwide and which need to be replaced, which every CIO has to think about. If we decided we want to move to the cloud, I wouldn't go to the CEO and say we should make that move and push it as an innovation. Instead, I would point out that we don't have to be cloud-first, but we could move things incrementally to the cloud as it makes sense, like using the cloud for our supply chain or enterprise resource planning.

Then I would take that idea and recognize that for our research, we have huge storage needs, especially with imaging. That is truly big data and we can't keep up with something as mundane as storage for it. As a result, our research data is an area where we have a problem and we can solve it by taking an innovative approach with the cloud-based storage system.

A further example is cybersecurity. The problem is that we are trying to secure protected health information. I'm looking at the new techniques that fundamentally may innovate in the way we think about data. There are a few firms that we are working with that previously only existed with secret government agencies but now they are becoming public. We are looking for technologies that can help us secure PHI and manage data differently. Instead of just implementing better and better encryption and mobile device management, all of which are not innovation, we are trying to develop a way to make the devices U of M employees use quantum resistant. This is encryption that is scalable across of their devices and the first we are going to work with are absolutely, fundamentally innovative in what they do to solve a real problem.

Q: What are the best examples of companies that really provide an innovative edge for you?

AR: I want to see healthcare organizations trying to disrupt themselves. Virtual care is a good example of that because technology can help us provide care at home in a way that we have never done before. We can combine new data types in healthcare, digital imaging, molecular diagnostics and genomics for more personalized healthcare. Those are areas where we find very specific new ways of providing care in our pilots and experiments.

There aren't massive fundamental changes in the healthcare space for us. We still have a lot going on in health IT right now to solve specific problems. At many of the IT meetings I attend, there is a lot of talk about digital transformation, which is easy when you have a mobile field where everything is based on disruption, but large organizations still have a lot of legacy technology. We need leaders that can be innovative but also translate between the clinical and IT worlds to execute on those initiatives.

Q: What is a good example of a pragmatic innovation?

AR: One example that comes to mind is communication and notification for physicians. Many health systems are still deeply dependent on paging. Yet, paging is an antiquated but cost-effective technology. We are moving away from that and more toward unified communications that include secure modern mobile devices like iPhones and secure texting with alert notifications and Wi-Fi-based security. All of those themes have an element of innovation, but the idea of switching the pager for the iPhone isn't innovative; there is a huge amount of change we have to do.

The idea of the pager is one part of the multidisciplinary communication platform that requires a lot of infrastructure across a large health system as well as workflow change, which can be complicated. Most people don't think of using their iPhones or Androids

as a single communication system as innovative, but it's transformative and we are spending millions of dollars on it.

Q: Are there any clinical innovations you're supporting?

AR: We are doing experiments in genomics and making that data available in the EHR. Additionally, there are innovations to the infrastructure that support new technology on the back end for things like logistics or storage. If we want to keep up with the advanced artificial intelligence for imaging radiology, we need vendor-neutral archives. We have to figure out how to move from a vendor-specific pack workflow infrastructure to a vendor-neutral archive so we can view a larger amount of data, which also includes OR imaging, tele-imaging, ophthalmology imaging and other types of tele-care. ■



The modern CIO's challenge: More tech spending without adding to overall organizational costs

By Laura Dyrda, Becker's Healthcare

The role of a healthcare CIO today is changing. As most health systems have EHR systems implemented and integrated, the CIO now oversees the tech aspect of many projects and innovations and must negotiate financial investment appropriately.

Here, CIO of Michigan Medicine Andrew Rosenberg, MD, outlines his strategy to ensure responsible technology spending, which can lead to big savings in other areas of the organization.

Question: As CIO, how do you make sure you're a good steward of the dollars spent on technology?

Dr. Andrew Rosenberg: That's usually the most important question. I'm doing what I can to promote an increased percentage of the health system's expense to be used toward IT than we have done in the past. The idea is to be cost effective and find opportunities to reduce costs in non-IT areas that use technology to amplify that work. An example is robotic process automation for back-end transactional work. In my mind, we can and should be spending more in automation and bots in this case to not only replace more expansive and less efficient work, but free up people to do new types of work or allow us to grow without growing our backend infrastructure.

Distributed call systems, the command centers, are incremental investments in IT. My argument is that if you look at our balance sheet, there should be slightly increased spend in IT relative to other portions of healthcare, but you can keep expenses the same or lower by supporting growth without increasing traditional expenses. That's where telehealth potentially comes in.

The IT service desk is a small example of that. We have started to add the chat ability, which allows a single individual to manage sometimes four customers at one time, as opposed to one-on-one customer management through the traditional phone call. We are trying to add more chat ability to our service desk and then we can make a larger investment in our servers to support research. Incremental investments in new technologies should not be viewed as a zero-sum game to the overall IT expense. There needs to be an increase in IT expenses relative to other expenses in the healthcare system to take advantage of new technologies and replace legacy technologies, as well as expand capabilities in overall efficiencies without adding cost to the organization.

Q: How do you negotiate this with your executive team?

AR: That is the skill of the modern CIO. We have to navigate the challenge of promoting our ideas successfully and spending on technology to promote overall efficiencies and lower costs. Otherwise, we will be faced with cutting IT costs, and it becomes challenging to purchase new technologies to replace the old ones. My argument is that the modern

CIO should expand tech and costs to advance the institution without adding overall costs, but it's not a zero-sum game.

Q: How do you measure return on investment for tech purchases? What benchmarks do you use?

AR: Benchmarks can help. We could benchmark ourselves against other institutions on what they spend for health IT, comparing traditional organizations to new ones. A brand-new technology implementation with a new firm could take up a large percentage of the IT expense. There are some projects that are core IT focused and others that are business needs with an IT component. Telehealth is a good example. Telehealth programs shouldn't be run by the CIO, but the CIO is instrumental in supporting the technology and networks.

Q: What challenges are you facing when deciding which IT to invest in?

AR: One of my challenges is how much IT should be centralized and how much should be distributed. At U of Michigan, we have so much innovation, and much of the innovation is occurring at the business level with a central core of IT. That's where we can try things out to see what works for a particular business unit. As things move to the cloud, the process becomes somewhat easier.

Q: From your perspective, what risks are worth taking when making new IT investments and partnerships? Are you concerned about the potential for data misuse when partnering with big tech companies?

AR: My view is I don't subscribe to the concern that these big tech companies will take over healthcare. They will be involved in it, and that will be a good thing since they know the marketplace of social interaction. It's kind of like gravity; don't fight it.

The issue then becomes which problems are they trying to solve. If you look at the partnership between Google and Ascension or Google and the University of Chicago, I think the press was unfair to both the health systems and big tech companies because they were trying to solve important problems. The issue of privacy is important, but in order for these health systems to provide better care, they need to join data and information from an unbelievably disparate organization. They aren't totally unified organizations like Kaiser Permanente; they have to work with big, innovative technology companies in order to solve the complex problem of unifying data across disparate systems.

Most patients are OK with health systems using their data to improve how we take care of them, based on surveys we've done. Patients say we can use their data and share it with others in the system if it will help other patients. But they don't want their data sold and used outside of the system. There is trust we have in healthcare with our patients' data. ■

During the coronavirus pandemic, 'innovation isn't optional, it's required': Key insights from UPMC Enterprise President Tal Heppenstall

By Laura Dyrda, Becker's Healthcare

Hospitals and health systems across the country are focused on their response to the coronavirus pandemic. In hot spots like Seattle or New York City, hospital CEOs are already in the midst of responding to the crisis; in other communities, executives are developing protocol to prepare for more cases.

With all the focus and resources devoted to caring for COVID-19 patients, will healthcare innovation departments suffer? Not necessarily, says UPMC Enterprises President Tal Heppenstall. Now more than ever, health systems are relying on the technology and consumer innovations infrastructure to ramp up community education, telehealth capacity and data analytics to track COVID-19 cases.

"The pace of innovation at UPMC around digital solutions and telemedicine to improve the patient experience remains swift," Mr. Heppenstall said. "There is research happening at Pitt to help us care for our patients that is moving much faster than it did three weeks ago. Some of our research and developments have allowed us to develop our own coronavirus tests that we can provide to patients. We are also working on several different ways to prevent or provide a vaccine to help solve this problem. I think innovation is really driven by need, and the need created by the coronavirus pandemic will drive innovative solutions that can move quickly and be distributed around the world."

Before the first cases of the coronavirus emerged, UPMC was already focused on telemedicine as the way of the future and developing an infrastructure around it. The outbreak accelerated the pace of that development alongside the consumer interface, or patient portal, that allows patients to connect with their care providers. Some physicians have been advocates for the telemedicine process while others were less excited about it prior to the outbreak.

"The outbreak is nothing to be happy about, but it has forced a lot of conversations that would have taken years to happen otherwise," said Mr. Heppenstall. "We need to figure out how to keep all patients safe and realizing that the situation is changing by the hour, we

want to try to stay on top of it and provide the resources that UPMC's community needs."

UPMC has seen an increase in virtual visits and expects that trend to continue. He sees payment systems around telemedicine changing to reimburse an adequate amount for telemedicine visits as the solution becomes more customary.

Another key technology investment that the outbreak accelerated is the infrastructure for working from home. The health system has invested in that infrastructure over the past several years, and now it's being put to the test so that 33,000 employees can do their jobs remotely.

"That investment has paid off," said Mr. Heppenstall.

Looking ahead, Mr. Heppenstall sees the biggest opportunity to disrupt healthcare as being about to provide clinicians with data to make the best decisions for their patients at the lowest cost. "We aim to develop technology to do that over time, and that remains top of mind for us right now to make sure we are supporting our physicians and preparing to take care of the patients in our region," Mr. Heppenstall said. "The federal government and regulators are enabling a lot of entities, whether it's large companies or small startups, to be more innovative. There will be some successes and some failures; it's all part of the process."

One key example of technology that could meet these goals is natural processing language development, which makes sure that unstructured data contained in the clinician notes is gathered, prioritized and displayed appropriately for clinicians and patients. UPMC has been working on that for many years and is working on getting it into the clinical care space.

"Whether it's the healthcare we are delivering in the U.S. or whether it's something we are rolling out internationally in China or Italy, where we've been for 25 years, our goal is to be the resource that our communities need and then build things that are distributed around the world," said Mr. Heppenstall. "It is a difficult time for us all, but innovation isn't optional, it's required." ■

HBR: Relying on data will improve decision-making – 10 steps to foster a data-driven culture

By Laura Dyrda, Becker's Healthcare

If done properly, collecting and utilizing patient data promises to streamline business operations and strategies and boost engagement, but very few organizations have unlocked the full potential of the data they have amassed.

A new [article](#) in the *Harvard Business Review* posits that “the biggest obstacles to creating data-based businesses aren’t technical; they’re cultural. It is simple enough to describe how to inject data into a decision-making process. It is far harder to make this normal, even automatic, for employees – a shift in mindset that presents a daunting challenge.”

To overcome those challenges, then, the article offers 10 guidelines to ensure organizations are building a culture that will allow for the most effective use of the vast amounts of data they are collecting.

1. Understand that a data-driven culture starts at the top levels of an organization.
2. Be careful in choosing what data, exactly, to collect.
3. Allow data scientists to work in close proximity to business operations.
4. Address data-access issues as quickly as possible.
5. Be prepared for a certain amount of uncertainty.
6. Pursue analytics projects that are simple and viable, rather than flashy and exciting.
7. Don't overwhelm analysts with unneeded additional training.
8. Use data and analytics to help employees, too.
9. Build consistency across the organization.
10. Ask teams to explain every analytical choice. ■



Healthcare CIOs in 2020: 3 key priorities & how the role is evolving

By Laura Dyrda and Mackenzie Garrity, Becker's Healthcare

Only a few weeks into a new decade, CIOs from across the country have a lot on their agendas. While some are focused on transitioning to a new EHR or advancing data analytics and software infrastructure, all initiatives lead back to improving the lives of patients.

These same CIOs are also juggling the changing demands of their role. In the past decade, the CIO's role has transformed from a siloed tech leader to an integral member of the executive team. At one time, CIOs spent much of their time in data management and leading the EHR implementation. That's not the case anymore.

During an advisory call hosted by Becker's Hospital Review, four CIOs shared insight into their priorities for 2020, differing thoughts on emerging technologies, the benefits and challenges of going digital, the changing healthcare landscape and how it affects their roles, as well as three necessary skills to be successful.

Priorities for CIOs

The 2010s saw the rise of outside competitors infiltrate the healthcare ecosystem, including Amazon and Walmart. These disruptors are being closely watched by CIOs, whether it be for inspiration, a source of caution or a potential partner. Tom Barnett, the CIO of the University of Rochester (N.Y.) Medical Center is not turning a blind eye to the technology endeavors of Silicon Valley, Calif., no matter how grandiose they may seem.

"Silicon Valley is definitely rising and innovating and introducing new competition into the marketplace. I think finding the appropriate places where you can partner or make sure that you are offering a similar experience is going to be critical going forward," Mr. Barnett said.

1. Digital solutions for patient engagement. Hospitals and health systems continue to look at outside forces in order to improve the patient experience, which is a high priority for CIOs. Similar to how consumers can shop online or make payments through an app, hospitals want to leverage digital solutions to improve patient engagement, including mobile apps and digital front doors for patients to interact with clinicians.

Creating digital solutions for patients can improve engagement and outcomes. Danny Scott, the CIO of Good Samaritan Hospital in Vincennes, Ind., credits the increased utilization in the patient portal as one of the reasons outcomes have improved. But hospital CIOs cannot just rely on patients being engaged to improve quality. Rather, hospital executives need to get smart with the data collected and applied.

2. Data management and security. Now more than ever CIOs from across the country are focused on improving their data, including how they are keeping it secure. For example, Los Angeles-based Martin Luther King Jr. Community Hospital is building out a data analytics team to support population health initiatives, said Chief Information and Innovation Officer Tracy Donegan.

To improve analytics, data collection and digital solutions, some hospitals are turning to outside vendors for assistance. Others are looking to improve their resources internally, including Mr. Scott who plans to work with his IT department to complete updates throughout the entire hospital. At Good Samaritan Hospital, Mr. Scott is working towards digital transformation activities to expand digital solutions and services.

Hospitals and health system leaders may also be considering outside partners to improve data security through cloud and endpoint security providers. However, when making these partnerships, hospitals must keep patient data security at top of mind.

"As I've often said, we are stewards of the data. The patients' own that data. We need to be making sure that we're doing the right surveilling and blocking of exit points and making sure that protected health information is utilized in a safe and effective way," said Mr. Barnett.

Mr. Barnett knows that patient data is a high-value commodity, with outside players looking to get their hands in the \$3 trillion healthcare industry. Keeping patient data safe also comes with a high price tag. Randy Davis, CIO and vice president of CGH Medical Center in Sterling Ill., views the price of cybersecurity as just a cost of doing business.

"I'm scared to death of the bad clicks. We spend a fortune protecting our systems, but I don't have any real illusions about how vulnerable we still are," Mr. Davis said.

3. Artificial intelligence. CIOs are split in terms of experience with and opinions about artificial intelligence. Ms. Donegan is leveraging AI to improve administrative tasks and organize large datasets. She cites AI as a benefit to Martin Luther King Jr. Community Hospital for the greater level of accuracy it can bring in detecting and categorizing medical findings. However, Ms. Donegan also acknowledges the drawbacks, including the lack of human touch.

For others on the call, AI initiatives had not proven their worth. Particularly, smaller, independent hospitals attribute cost barriers as a reason for choosing to pursue other projects rather than AI.

"It seems like all of us CIOs are supposed to use that buzz phrase once a day to be able to somehow say, 'Hey, we're current on it.' But I have yet to see a firm concrete case study that tells me that this is something that drives enough value to be worthy of the time that the press seems to think we should be spending in AI," Mr. Davis said.

Echoing Mr. Davis, hospital CIOs are slowly exploring the possibilities of AI without throwing their entire budget into initiatives. At University of Rochester Medical Center, Mr. Barnett noted UPMC is using AI to assist with certain types radiology image reading. He is trusting that AI will evolve, becoming more trusted with a greater presence. To prepare, Mr. Barnett is ensuring the hospital collects clean and quality data. He is also developing operational boards and conducting data quality reviews.

What the CIO position looks like today

Because technology is so pervasive throughout healthcare organizations, the executive team is relying more than ever on the CIO's expertise to make key business decisions.

According to Mr. Scott, "The CIO should have a seat at the senior leadership table and be a part of that decision-making because [technology] is so critical. That is where I see the role going. It's not just a tech role, but really the CIO has become a business enabler."

The CIO is now responsible for the health system's data storage and management, cybersecurity, revenue cycle platforms, telehealth initiatives and the digital patient experience, which touches every aspect of the organization. CIOs receive pitches daily for new and expensive technology promising to improve patient care, boost operational efficiency and guard against cyberattacks. When the tech leaders decide new technology is worth investing in, they must become proficient with a new skill: marketing.

"A huge part of my job as CIO is really marketing," Mr. Scott said. "I'm constantly marketing what [information services] does and what we can do for the organization. ... We have to constantly be out marketing, showing what we can do, how we can bring value to the business [and] how we can drive the business. A lot of it is just getting people to understand why we're doing what we're doing."

Developing a healthy, effective IT team

Mr. Scott described a meeting with the entire senior leadership team at the beginning of January where he outlined his department's strategy for the year and introduced a new five-year digital transformation plan, requiring significant financial investment. By the end of the meeting, his CEO enthusiastically supported the plan and gave the go-ahead to present it to the hospital board and then begin moving forward.

Ms. Donegan agreed her role required sharp communication skills and, being from a smaller hospital, she finds it easy to obtain buy-in from leadership and staff because they see how technology can solve big issues or make their jobs easier. In some cases, the staff members drive technology initiatives because they understand the potential benefits, and Ms. Donegan's team provides support. For example, Martin Luther King Jr. Community Hospital's nursing leadership identified a startup with a mobile tool that standardizes the nurse handoff protocol.

"Our physician hospitalist got wind of it and he became interested, and now we're partnering with the vendor to develop a tool for our hospitalists as well as a tool for care management, and patient transfers from surgery and from the ED," she said. "These weren't our ideas. These were from the clinicians that wanted to do a better job."

Mr. Barnett also sees identifying the best technology as a new aspect of the CIO's role. He is mindful to ensure any department proposing new technology has a clear business case and will advance the system's five-year plan. He warned against "chasing technology for technology's sake" when making key investment decisions.

The CIO's team often includes members with a technology background, but increasingly health systems are also bringing on individuals with data scientist, analytics, innovation or design backgrounds who need to communicate with each other as well as clinicians and frontline staff members effectively. Recruiting and retaining elite team members is a challenge in all industries, including health IT.

As the CIO of a small, rural system, Mr. Davis said his system's strategy is simple: hire someone with the right background and critically evaluate that person shortly after they're hired to make sure they're a good fit for the organization. Then, when the team is in place, do everything possible to support them with training and career development opportunities.

Ms. Donegan employs a similar strategy. "You really have to have the right person," she said. "They better be connected to your mission and have the right cultural fit within the team... On the practical side, it's helping them manage the demand and their work-life balance. I bet everybody here can attest to the fact that their team works very hard... Just help them and encourage them to keep their work-life balance, but also involve them in the decision process, in development of the IT strategy and in their own personal growth with their careers." ■

Keck Medicine of USC's IT investment strategy: Key thoughts on taking risks and big opportunities in 2020

By Laura Dyrda, Becker's Healthcare

Health systems across the country are carefully evaluating potential technology partnerships to meet the needs of physicians and patients.

T.J. Malseed, chief health information officer at Keck Medicine of USC in Los Angeles, has more than 20 years of experience overseeing IT operations in healthcare. He currently manages technology support across Keck Medicine of USC's hospitals and ambulatory sites, as well as its partnership with Apple, which allows patients to track their daily health information. On Dec. 19, the health system announced patients could download their data by directly connecting to Keck Medicine's record system and sync their user accounts so they will receive updates, such as new lab results or prescriptions.

Here, Mr. Malseed discusses the big trends affecting health IT today and where he sees the most beneficial partnerships headed.

Question: As healthcare moves more toward value-based care, health systems across the country put an emphasis on spending wisely. What is your strategy for selecting the best technology to invest in?

T.J. Malseed: As healthcare moves towards further transparency on pricing and quality, we continue to focus on the customer. The technology that keeps us relentlessly committed to improving our quality of care is what creates the best customer experience we can deliver. We are continuing to broaden the suite of products that empower our customer and care providers through the five rights of CDS. We also strive for advancements in provider productivity and in establishing our place as a data-driven organization through machine learning and AI.

Q: What risks do you encounter when considering new technology? What risks are worth taking?

TM: The vast majority of healthcare innovation occurs in small to midsize businesses. When considering the risks of adopting new technology we have to assess the stability of the vendor as a means of protecting our investment. When the solution requires significant disruption of workflows or there are multiple constituencies involved, our enterprise is less inclined to embrace unproven technologies. If we can easily pilot something in a small facet of the organization, there is less change management, which in turn reduces risk and fosters early adoption.



Q: How do you approach IT partnerships? Are there any big opportunities for you in 2020?

TM: Currently through partnerships with both small and large vendors we are looking to impact change in areas from patient engagement to cyber security. Startup companies often require more support from us because their processes are not as mature, and we need to evaluate their financial solvency as well as security posture more thoroughly. If the software is in its Alpha stages, it needs a significant differentiator for us to engage. The level of investment we are being asked to make drives what we are looking for on our end to spin up the partnership.

Q: As more health data becomes available, how do you ensure your patients' data is secure and used appropriately?

TM: This is always a balancing act. While research supports that the patient experience is improved with more robust access to their data, helping them keep that data secure is a complex undertaking. We exclusively partner with companies with renowned cyber security reputations, like Apple, utilizing the most current standards for data exchange and integration. We are in the early stages of implementing patient education around cyber hygiene, which would include showing patients how they can protect themselves after downloading their health records. ■

The IT roles health systems added in 2020 and the focus for next year

By Laura Dyrda, Becker's Healthcare

The IT departments at hospitals and health systems are evolving, especially as institutions shuffled strategic priorities during the pandemic.

Some organizations have reduced their IT workforce in the past year. Notably, St. Louis-based Ascension [eliminated](#) a few hundred IT jobs after shifting some technology functions to third-party partners in August. Others [cut](#) IT positions among larger layoffs due to the pandemic.

However, other systems have added to their IT teams and created leadership roles to execute major strategic projects. For example, Stanford (Calif.) Health created the new role of vice president and chief enterprise architect to focus on developing a contemporary architecture to enable initiatives for the health system and school of medicine.

"This person is also developing advanced strategies for data and system interoperability to enable us to connect and trade with any organizations we would like to collaborate with," said Stanford Health Care CIO Eric Yablonka. "We also added an executive director of our program management office. She is centralizing and developing a new PMO for us that will drive value through the organization in the execution of our strategic initiatives and the alignment through best practices in IT governance."

Scripps Health in San Diego also focused on implementing a technical leadership position across key verticals including enterprise architecture, analytics, ambulatory and acute care, access and revenue cycle.

"The principal architect position partners with senior IS leadership to incorporate clinical and business strategies and initiatives into multiyear technology roadmaps intended to support the role of IS as a partner to operations," said Shane Thielman, corporate senior vice president and CIO of Scripps. "They also play a key role ensuring Scripps Health is unlocking the full potential of existing assets and tools across the various portfolios and coordinate as a collective unit to ensure efforts are complementary and feasible."

New roles in digital health and telehealth have been crucial to many health systems during the pandemic and will likely become permanent fixtures across health systems. Senior Vice President and CIO of Yale New Haven Health and Yale School of Medicine Lisa Stump created a telehealth adoption team to offer direct patient-facing support for video visit participation. Yale also hired a director of telehealth and communication and collaboration director to bring together formerly distinct teams in email, web collaboration platforms and mobility.

UChicago Medicine added a director of support services, a program director of digital health and a program manager of digital health. Over the next year, Senior Vice President and CIO Heather Nelson said the health system plans to add a director of infrastructure services, a program director of IT

strategic projects and business system analysts for clinical ancillary systems.

Evanston, Ill.-based NorthShore University HealthSystem is also focused on expanding digital health. The system recently formed a digital innovation and consumer experience team within its health information technology department. The team is seeking a lead technical architect to help define strategy for digital patient engagement, telehealth, remote monitoring and personalized navigation.

In California, despite competing with big tech companies for IT talent, Los Angeles-based Cedars-Sinai has bolstered its data analytics, cybersecurity and clinical systems / EHR analyst teams, bringing on individuals with backgrounds implementing and optimizing complex tools for care delivery as the enterprise continues to digitize.

"We will continue to invest in many areas as we continue to depend on technology as an enabler to our mission," said Darren Dworkin, senior vice president of enterprise information services and CIO of Cedars-Sinai. "We will see growth in data analytics, bioinformatics and in particular roles that will deepen our expertise in the visualization of complex information. Cyber will continue to be an area of growth as we expand our efforts in the face of growing threats. And last but not least, we will see growth in our investment in digital consumer talent as we move faster to expand our patient facing offerings."

Peter Merrill, CIO of Lebanon, N.H.-based Dartmouth-Hitchcock Medical Center, was also focused on cybersecurity this past year. His team added two senior security engineer positions and one risk analyst. However, he does not have any plans to add additional positions in the coming year.

Although many health systems faced steep financial losses in 2020, there is continued investment in IT to develop more efficient and patient-centric organizations. Some of that investment will be in personnel. Mr. Yablonka said Stanford plans to add data scientists, architects and others to address the health system's top priorities.

Yale aims to bring on more expertise in the cloud and artificial intelligence. Scripps also will likely focus on digital healthcare solutions and executing on the multiyear roadmaps to deliver those solutions. As a result, the information services department at Scripps will be a technical guide and solution advisor to foster the system's transformation.

"Helping our team deepen their knowledge and comprehension of challenges in the clinical environment will enable them to operate as an information and insight resource and support operations in understanding how software and data science can be leveraged to deliver meaningful improvements," said Mr. Thielman. ■

Health IT one year from today: 8 CIO predictions

By Laura Dyrda and Jackie Drees, Becker's Healthcare

The pandemic has spurred a major shift in the importance of IT to healthcare organizations and their priorities.

Here, eight hospital and health system CIOs discuss what will be different about health IT one year from today and what will be the same.

Lee Carmen. CIO of University of Iowa Children's Hospital (Iowa City): A year from now I expect health IT will be focusing significant resources on improving support services for a remote workforce that isn't returning to on-premise work activity post-pandemic. These efforts will be trying to use technology to improve communication and collaboration among a geographically dispersed workforce, while also building and supporting organizational culture. Similarly on the care delivery side, health IT will be advancing technology and services to continue the growth of telemedicine, expanding the use of technology to reach patients in their home and enhancing the ability to collect data regarding the conditions in which people live and work that might impact their clinical care.

J.D. Whitlock. CIO of Dayton (Ohio) Children's: One year from now, we will be 10 months into the brave new world of Cures Act interoperability regulations. I expect that app developers will be fully ramped up with offerings to help patients manage their chronic diseases; patients will be requesting FHIR-based access

to their EHR data; and provider organizations will be busy enabling that access. It will be a great leap forward in patients' access to their ePHI, and hopefully this enables better care. It may also mean a hot mess for providers that have not prepared well and for patients that share their ePHI with fly-by-night app developers that sell their data and are not beholden to HIPAA. Either way, fasten your seatbelts!

Tara Matthews. CISO and CIO of Einstein Healthcare Network (Philadelphia): The biggest and greatest positive impact coming out of the pandemic is healthcare will finally meet the patients where they are. This has been on roadmaps for years, and only a select few achieved, and only for a small percentage of outcomes. The increase in technology, innovation, regulations and needed culture shift has pushed this initiative over the tipping point. Those on the bleeding edge have forged the way for others, and the spontaneous collaboration efforts forged during this pandemic will lead to mission-focused positive outcomes for everyone.

Randy Davis. CIO of CGH Medical Center (Sterling, Ill.): OK, is everyone ready? Hold on to your seat. My answer is ... not much. We deal with change year in and year out, so be honest here, what we face today isn't all that different. We too often try to impress others with how progressive our hospital system is. The truth seldom matches the words. The reasons could take a couple pages to adequately explain, I'll try to summarize:



1) Most hospital systems have invested millions in their primary systems (Meditech, Cerner, Epic). So for 'progressive' changes we, for the most part, have to sit back and wait on these vendors. That's nothing new for us, we've always relied on them.

2). Too many systems react to declining revenue with mandates to cut staff and expenditures. It's hard to try new things and make ourselves more accommodating to patients when budgets are being cut. In such an environment, status quo is just hoped to be maintained.

3). Governmental mandates continue to take wind out of the sails of many IT departments by consuming time. They always have and will continue to do so. Again, not a change from what we have today.

4). Hospitals, left to their own accord, take forever, years at times, to act on good ideas. Too many committees, too many competing interests and silos, too many people unwilling to try new things. It reinforces inertia aside from the typical upgrade cycles.

Movement to the cloud? Old news, nothing different there. 'Tele' initiatives? Despite the hype, once of the easiest things for hospitals to implement, not exactly something to take IT in a different direction.

OK, I'll come up with just one thing here that could fundamentally change the priorities of health IT. That change is the underappreciated consumerism that should finally wash over our industry. Consumers are fed up with inadequate apps and portals, tired of having to actually dial a number to communicate with someone, unable to access records when they move from a CareQuality provider to a Commonwell provider. They want multichannel communication, online form completion, virtual waiting, drop-in video at the bedside for both caregivers and relatives. They can't understand how they can track a package from Washington to Maine, but healthcare can't answer phones and communicate with them to give them the assurances and answers they seek.

Walmart can see when you pull up to a delivery spot and walk out with your order. Healthcare, representing nearly 20 percent of GDP in America, still has people checking in at the front desk. If I had to pick one thing, it would be health IT figuring out how to integrate all the features consumers have wanted for years into the infrastructure of their care-delivery system and do so without dealing with 30 different vendors.

Mark Lauteren. CIO of El Centro (Calif.) Regional Medical Center: One year from now, HIT will have moved on from the day-to-day problems of COVID-19. However, HIT will integrate many of the lessons and innovations we have learned. For example, the use of telehealth will continue to grow with certain populations

of our patient base. HIT will bring back many of the projects that were put on hold by the focus on COVID-19.

HIT will be looking for ways to further integrate the advanced analytics implemented to manage during the COVID-19 surges. The use of robotic process automation will continue to grow at a rapid pace as machine learning is applied to more processes within the healthcare continuum of care. Due to the need to track COVID-19 patients, population health outcomes tracking will be expanded significantly. Clinical trials will expand significantly into populations of diverse ethnic backgrounds. This will bring clinical trials to parts of the country that have not had much exposure to them.

This will be a new set of HIT challenges for those organizations that had not been exposed to the HIT needs of clinical trials in the past. With the expanded library of genomic mapped outcomes data, HIT will be pressed to find ways to present more patient genetic-specific and relevant outcomes research to caregivers at the point of care.

John Hendersen. Vice President and CIO of Children's Hospital of Orange County (Orange, Calif.): A year from now, IT organizations that have not been considered a strategic partner in their organization will be viewed in that way, or will have made greater progress toward that type of status in their organization. I believe IT organizations will have the opportunity to lead or co-sponsor enterprise operational initiatives that are not necessarily technology-focused, based on how IT demonstrated its leadership during the pandemic. I think that, depending on how IT leads and transforms service delivery during COVID-19, will position them as individuals that can lead any type of initiative.

I think IT will be expected to be more nimble or agile in terms of technology acquisition and delivery based on what their organizations experienced during the pandemic; however, there may need to be some level setting on this; as it is always easy to be nimble when you have a singular focus like a pandemic. The hard part is continuing to be nimble once the major, unplanned event is over, and that leads to whether your organization takes advantage of the opportunity to fundamentally change its operating model.

Additionally, I think remote work will become a more standard operating model in healthcare, where there has been such wide variation in its adoption, pre-COVID. The addition of tools to enable reserving on-site workspace, various collaboration options, such as virtual whiteboards, virtual ergonomic assessments and methods for remote support, will be in place and provide a tremendous benefit to efficiency and value post-pandemic.



I believe health systems will be forced to rethink their approach to employee engagement and create virtual programs that support not only their remote workforce, but also those that remain on site. Finally, I believe that health systems that have not embraced diversity, equity and inclusion as a core part of their values in a structural way will have to make that transition, as the current climate of social justice that has been supported in such a multicultural and diverse manner will require it.

Ellen Swoger. CIO Applications in the Department of Information Systems at the University of Mississippi Medical Center (Jackson): Based on what's happened this year, I believe there will be an increase in the number of IT staff that will be permanently working from home or remote settings. This will allow health organizations to reduce space requirements and thus expenses for health IT. This new work ecosystem will require newer or more

robust project management and communication tools, or better use of the existing tools. We in health IT will need better ways to motivate and manage remote staff.

Amelia Marley. Vice President of Information Services and CIO of Bassett Healthcare Network (Cooperstown, N.Y.): One year from now we will have settled in completely to our teams working remotely in an agile manner to deliver and use digital tools focused on taking care of patients where they live, work and play. It's about friction-free access and patient self-service 24/7. Within the hospital walls, it's about complete and accurate information delivered to a mobile care team, using devices that are pocket size, personal and easy to use. It's all about complete patient and staff safety while creating the best patient experience possible. And we will wonder, why didn't we do this years ago. ■



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