Executive Summary

The Scottsdale Institute convened 12 Chief Medical Information Officers (CMIOs) in Chicago for the 2018 CMIO Summit on September 27-28. These executives gathered to explore “The Clinical Practice of the Future,” with specific focus on intelligent clinical decision support, how to organize informatics, components of the clinical practice of the future, the clinician within the health system of the future and innovation structures with the clinician in mind. Participants represented large academic medical centers, multi-regional health systems, rural hospitals and clinics from across the nation.

Summit Participants

Kris Berkery, MD, CMIO, AMITA Health
Qammer Bokhari, MD, VP & CMIO, Adventist Health System (FL); Advent Health effective January 2019
John J. Campbell, MD, Associate CMIO & Medical Director of Community Services, Northern Light Health
Jordan Dale, MD, Hospitalist & Associate CMIO, Rush University Medical Center
David Liebovitz, MD, Executive Medical Director for Informatics Education and Innovation, University of Chicago Medicine
Steve LoBue, MD, Physician Director Ambulatory Informatics, Northwestern Medicine

David Mohr, MD, VP, Clinical Informatics and Transformation, Sentara Healthcare
Thomas Moran, MD, VP & CMIE, Northwestern Medicine
Mike Olgren, MD, CMIO, Mercy Health Saint Mary’s (Trinity Health)
Jim Schweigert, MD, CMIO, Spectrum Health
Jeffrey Sunshine, MD, PhD, CMIO, University Hospitals
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Introduction

This gathering of medical information executives began with an overview of issues that are currently high priority in their organizations. Among the common themes that emerged were:

» EHR optimization and governance;
» Informatics organization, and planning for the future; dealing with clinician “happiness;”
» CMIO’s role as the “glue” that connects clinicians, management, and the IT tools they use in daily practice.

The consensus: we’re in a challenging time as the focus has turned from EHR implementation to EHR optimization to improve patient care.

Initial discussion centered on provider satisfaction and the best ways to measure it. Some members have been using the KLAS Arch Collaborative Survey while others prefer to use the Mayo Clinic Physician Wellness Survey to measure provider satisfaction. They also use tools embedded in the EHR itself to track efficient and effective use of the systems. Physicians know what they want, a CMIO noted, and it’s typically the informaticist’s role to translate that into what they need, ultimately enabling doctors to feel greater satisfaction with the way they care for patients. The CMIO’s challenge is to determine how to reduce the cognitive load of complex EHRs while harnessing the knowledge embedded within them to promote evidence-based care.

INTELLIGENT CLINICAL DOCUMENTATION

The CMIO’s original role was to ensure the clinician’s input into clinical computerization, and then show physicians, nurses and other professionals how to use it. CMIOs are critically responsible, Summit participants agreed, for simplifying information tasks, reducing variation and eliminating traditionally bloated and opaque documentation. And with electronic medical records the norm—and an increasing burden of quality and regulatory documentation tasks—old pre-electronic documentation patterns complicate physicians’ ability to find information.

“Our data-presentation layer should be as simple as possible—this is the template of your patient, you can just glance at it and know what they have,” said Dr. Thomas Moran, VP, CMIE, Northwestern Medicine. Instead clinicians scroll and click through an online thicket the way they used to leaf through paper charts. “What physicians and nurses do is, they ‘find Waldo’ in the chart,” he said, conjuring the character hidden within a mass of humanity. “They’ve got to search all over for him. And then they give up: ‘I can’t spend any more time figuring out what the plan is going to be.’ ”

Two ripe opportunities to apply intelligence toward better clinical decision-making: automating out the non-clinical components of documenting; and perfecting the utility of the basic building block—the physician note.
Proliferating demands to generate measures of clinical quality, supply data for billing codes and comply with government regulations have obscured the clarity of documentation. “The reality is there are mandates, insurance-payment requirements, and myths around what needs to be embedded in documentation resulting in ‘note bloat’ with ‘garbage in, garbage out,’” said Dr. Qammer Bokhari, VP, CMIO, Adventist Health System.

Initiatives at Adventist have aimed to clarify the purpose of documentation—including what absolutely has to be in for insurance and regulatory requirements—and display what is clinically relevant for other clinicians and hide the rest while still providing the option of an expanded view, Dr. Bokhari explained.

Rather than view the physician’s note as a static document from which the physician harvests relevant information, we need to reimagine it as a source for users to extract only the information to meet their specific need. “CMIOs need to think about how to provide the relevant information on a patient from wherever it is originally entered, organize it well and then generate from a framework that’s still evolving what is clinically meaningful and have other necessary documentation materialize as a byproduct,” said Dr. David Liebovitz, executive director for informatics education and innovation, University of Chicago Medicine.

That means working with informatics pros on rule sets, Dr. Liebovitz said, that seek only what’s typically needed in certain settings like the emergency department, as opposed to contending with the entire mass of information in a patient’s chart. It’s “a finite list, not short, but not an impossibly long list, either.” Rules then “target the sifting tools, to look for the presence of those specific items and tee them up.”

Dr. Bokhari agreed: “Documentation needs to be generated from the patient perspective and physician perspective, and then use clinical intelligence at the back end to parse it for claims submission.” Other recommendations: develop templates based on experience to capture relevant information and bring it forward for the physician to view instead of a manual order-based approach. Cues from physician actions and notes should bring up three-to-five options instead of the 15 or 20 available.
The difficulty of sifting and collating such data is exacerbated from the start by bulky, verbose and unfocused physician notes. CMIOs were unanimous in the urgency to clarify the note’s purpose, establish who it’s written for and why, and to pare it down. Unfortunately, the quest to simplify note text via templates or cut-and-paste from other sources has backfired with “note bloat” which further complicates fast, intelligent data search, said Dr. Kris Berkery, CMIO, AMITA Heath.

A foundational obstacle for many physicians is they were trained that the more information in the note, the better. “Maybe the most valuable note is three lines,” Dr. Berkery offered. “Put in what you need for coding, documentation and billing, but also to truly translate the patient’s clinical condition such that someone can take an actionable next step in [a patient’s] care process. Keep it short, simple, what’s relevant for other care providers to see.”

“We’re literally regurgitating stuff into the note,” said Dr. Moran, and, consequently, many clinicians find it unreadable. He asserted to physicians at Northwestern Medicine that most of what they “stuff” into their notes is already somewhere in the record. But doctors are deploying notes as collators of information, because “it is the only way they know how to get it all in front of them so they don’t have to look all over the place.”

**ORGANIZING INFORMATICS**

CMIOs tackled the topic of how to improve EHR usability, emphasizing the importance of inculcating in users that the EHR is like other tools fundamental to medical practice—the stethoscope and scalpel—but they need to be mastered. Just as savvy use of those tools is not measured by their frequency and intensity of use, “optimized” use of the EHR doesn’t mean every feature is fully used, but that doctors deftly use it for only what they need, when they need it.

CMIOs are the bridge among clinicians, management and IT professionals to determine how best to add, subtract or modify information contained in the EHR to foster great care without requiring unnecessary burden. “Are there people who hate the EHR, or do they hate what they have to do with it?” asked Dr. Steve LoBue, physician director, ambulatory informatics, Northwestern Medicine. “We’ve piled on the requirements the EHR is counted on to solve all of the things we have to do, the quality measures, and government regulations, and the coding requirements that came in back in the ‘90s—all these things that previously didn’t exist. How are you going to do all that without an EHR?”

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Besides easing the chores of coding and regulatory compliance, clinical instruments such as alerts, order questions and data-entry forms must be tamed and restrained. This can only be achieved through an organized process that scrutinizes new requests and sunsets functions no longer relevant to clinical workflow.

Alerts are too often inserted into a clinical process because of individual physician passions than because of sound data science, generating unintended consequences, said Dr. Bokhari. IT systems also are used to “police” administrative actions, and have nothing to do with clinical care. “Somebody has to say no.” And when clinically justified, “if you're going to put an alert in, you need to take two out.”

“I like that whole simplicity thing,” said Dr. Mike Olgren, CMIO, Mercy Health Saint Mary’s (Trinity Health). “I would love to decimate the number of fields our nurses have to enter data into. We can cut it in half, they enter way too much data.” When the number of data fields to click through began to multiply in the initial Trinity Health EHR implementation, the story was that they all were needed to power analytics efforts. Recently he asked, “Have we, since 2004, done any analytics with that information? [Answer:] No.”

In addition to lightening the sheer load for all clinicians, a delicate balance is at work to fine-tune informatics for real-life physician demands without accommodating too-narrow views of what EHRs are supposed to accomplish. “You just have to say, ‘Don't tell me your solution, tell me your problem,’” Dr. Moran related. A problem statement, with metrics associated with it, presents something for CMIOs to reflect on. “Tease out the nature of the problem,” adds Dr. Bokhari. “It’s cumbersome. What does cumbersome mean? It takes too long? Too many clicks?”

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Virtual care is certain to shape the clinical practice of the future.

“We've focused on mobile digital health for a year,” said Dr. David Mohr, VP, Clinical Informatics and Transformation at Sentara Healthcare. “We're considering the Cloud, MS Azure and Epic's MyChart as components of an application environment in which we could put a branded mobile application.” As far as virtual visits, Sentara, with 12 hospitals plus many ambulatory sites, launched an initiative to open up eVisits and standardize them across medical practices. “e-Visits are a good vehicle to start with. Epic is doing a good job of making APIs available. Regarding future ways of navigating electronic health information, Epic is incorporating ‘The Patient’s Story’ into their EHR,” which accounts for a much more holistic view of the patient, including social determinants of health, he said.

Going forward, the question for physician practices is not whether to implement virtual care strategies but how. The starting point should not be the technology options, Dr. Moran emphasized, but rather the operational roadmap for much different allocations of staff, space and time that practices have to make in a virtual-visit world. “We have to give them ideas on how to make that work. Do you take the same people and make them do virtual? Do you take a [separate] team and do virtual? How do they actually schedule these things?

“That's a different service-line agreement between organization and patient, and how you manage it. And that's where we stumble a little bit. We have grandiose plans that we want to do this, but we haven't actually engaged with operations on how we're going to do it,” he said.

Moving to virtual begs the question of what the primary problem is that an organization is trying to address via telehealth strategies, said Dr. Jordan Dale, hospitalist and associate CMIO of Rush University Medical Center. “We look at it as a magic bullet for access, patient experience and maybe clinical outcomes as a third objective. And I think it's a struggle [to determine] which one we prioritize as the key objective with that strategy. If it really is access, then we have to rely on an operational partnership, and IT might not own that solely. And so that's what makes it difficult.”
While Rush has begun offering virtual visits to pediatric patients, it hasn’t seen an uptick in use yet. “I think it’s because we haven’t messaged exactly what problem we’re trying to solve,” Dr. Dale said.

A common theme in the CMIO discussion was the use of digital technologies to make the continuum of care more seamless. Adventist Health’s strategic initial step is to stratify consumers into four groups, Dr. Bokhari explained. Service approaches differ for wellness programs, prevention support, treatment both for chronic and curable conditions, and terminal hospice. Strategies include telehealth between providers, telehealth between provider and patient, and digitally-enabled transition care from the point of discharge. Depending on the situation, the latter may emphasize maintaining wellness, preventing relapses in vulnerable patients or getting treatment early on for condition flare-ups, he said.

Whether it’s a patient visit or end of a hospital stay, healthcare organizations need to help patients manage their own illness or health, assisted by digital options, Dr. Moran said. Treatment plans should incorporate in-home transmission of factors like vital signs and recovery milestones as well as feedback rating the patient’s standing.

Hospital discharge—currently viewed as the end of treatment—should be the beginning of self-management, added Dr. Moran. “We discharge patients in a way that’s like, ‘Go with God.’ We have to build up the function of, ‘You’re now going to stop and get plugged in.’ ” For example, set up a MyChart link if the patient doesn’t have one. Explain how to use it. Dispense a blood-pressure cuff, a cost-effective expense over time.

Ideally, we would support patients as much as possible without the need for in-person visits, Dr. Liebovitz proposed, “and it’s only when there really is a need that there is additional engagement with providers in the healthcare system. We don’t want to do healthcare for healthcare’s sake, we’re doing it so patients can live their lives outside the healthcare environment—not come here to generate revenue just to sustain the organization.”
One option outside traditional care venues is to station nurses, for example, in public schools so they can not only perform in-person vaccinations and tests but manage telehealth consults as well, said Dr. Bokhari. Digital-health services could facilitate well-child visits at a school, freeing up pediatricians to focus on more acute care, he said.

A convenient way to distribute virtual-care technology to patients might be to emulate the Amazon kiosk or Redbox video dispenser, suggested Dr. Berkery. “There’s not necessarily a person there, but there’s a lot of value you can get from that location. What if we could supply a digital box—that means thinking inside the box—that could be located in a place where consumers already go for other things, but while they are there could sit down, get blood pressure checked, heart rate, maybe type in a PIN associated with the health system’s EHR.” Measured vitals go straight to the health system, without setting up equipment at home, which would be useful in areas where it’s difficult to get to the doctor, and digital devices aren’t affordable, she added.

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**CLINICIAN AND HEALTH SYSTEM OF THE FUTURE**

Using IT and informatics to ease, not increase, the cognitive load weighing on clinicians is a high priority, the CMIO participants agreed. New processes should focus on bypassing billing tasks and, at times, bypassing physicians altogether.

Healthcare systems have to decide on the core skill sets that physicians will need, which should not include acting as clerk or order-placer but as decision-maker, Dr. Bokhari said. He related how he tried to deconstruct the EHR’s administrative burden at Adventist Health by focusing on the top non-value-added things physicians have to do. Physician complaints included having to do data entry previously done by unit secretaries and doing what they viewed as coding arising from new emphasis on clinical documentation improvement programs.

A major opportunity to decrease the burden on physicians involves engaging patients to contribute to their own medical records, said Jim Schweigert, CMIO, Spectrum Health. “Patient
Patient engagement is vital to optimal patient care and satisfaction. It also helps the provider be more efficient with charting and thus allows the provider and patient to have a better experience during the visit. Physicians would have time to assimilate the information prior to greeting the patient.”

– Jim Schweigert, MD, CMIO, Spectrum Health

Proliferation of multidisciplinary care teams should feed new kinds of information to physicians performing complex care while those teams shoulder more routine tasks that don’t require vetting by the doctor. “Instead of forcing [tasks] on doctors and nurses all the time, there are other parts of the team that probably are better suited to doing that,” Dr. Moran asserted. He recalled a recent study in which vaccination rates jumped to 98 percent from a mediocre level when medical assistants were given “full ownership and rights” to give those shots.

Transferring selected duties to other team members has proved cost-effective at Mercy Health where a nursing team is dedicated to care-plan development for complex-care patients. These care plans provide time-constrained ED physicians a summary of the patient’s condition and a clearly defined care path for that patient, said Dr. Olgren. “This team of nurses, four FTEs that our hospital was convinced to gradually build, saved the hospital over a million dollars a year—we’re a 280-bed hospital—based on fewer return visits. And once we get into fully value-based care it will be even more.”

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– Jeffrey Sunshine, MD, PhD, CMIO, University Hospitals

The rise of team care changes the physician role, said Dr. Jeffrey Sunshine, CMIO, University Hospitals. “If your role as a doctor is to supervise and double-check the easy stuff, and get pulled in only to things that are hard, then you need a different workday when everything is the hard stuff, or it will burn you out, because you cannot see the same volume and turnover.” Informatics tools will be needed for physicians to both double-check and take more time with cases, he said.
PREPARING THE PHYSICIANS OF THE FUTURE

“Never before have we had such a need to assimilate so much knowledge in such a short period of time. In the future, knowledge management and data literacy will be paramount in medical practice,” said Dr. Robert Whitcomb, VP & CMIO, Advocate Aurora Health. “Physicians will need to quickly assimilate reference information that is high quality and accurately curated. They will also need to understand what the data tells its user and how to work with that data.”

Medical schools will ultimately adapt to the technology imperative the same as they have to other profession-changers over the years, said Dr. Mohr. “The classic definition of physician training still holds pretty well. Twenty years ago, evidence-based medicine was a big advance in evolution, and then team-based care was another. Quality-metric-related care was another piece that has been very important to integrate into medical school curriculum.”

The challenge in teaching to the technology will be in training medical students to see past the particulars of the EMRs they use to the bigger pictures they provide, so students aren’t too wedded to the specific approaches of the EMR they used in a school setting, internship or residency, Dr. Mohr observed. “There should be some level of theoretical foundation that we can teach in the medical schools that isn’t quite so technical.”

Medical schools will have to prepare new physicians better for the data onslaught by teaching them the familiarity with technology required to find, take in and use electronic information. At Rush, Dr. Dale said technology is not relied upon sufficiently; students still are expected to use their cognition to connect the elements of data gathering. Technology should aid that process, not just store the data, he maintained.

Teaching remains traditional, on a case basis, so Dr. Dale tries to embed the case as much as possible in the EHR so students are aware of the difference in cognitive process depending on the case, and the several places they have to hunt for essential details. “We need to introduce these concepts much earlier than we have been, to prepare people for the future, even if we succeed in simplifying the cognitive process.”

That doesn’t mean steeping students in technology detail. The most important trait is “to be a serious, continuous learner” keeping up with changes that will typify any future medical career. “Just that curiosity to want to go out and explore new things,” is critical to the clinical practice of the future, he said.

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INNOVATION STRUCTURES

The pace of change, both in technology and the—now inevitable—march toward value-based care, calls for new approaches to innovation, including tapping the value of an organization’s own staff and its deep stores of data.

Dr. Whitcomb described an Advocate Aurora collaboration with Matter, a healthcare incubator and innovation hub in Chicago. Their first initiative is a nationwide competition called HealthTech Venture Challenge, which invites IT startups to address problems in primary care delivery. The Challenge will offer the winning startup a $10,000 cash prize.

Dr. Moran proposed to Northwestern Medicine’s investment team an initiative to fund good ideas advanced by entrepreneurial physicians and staff. “We know how to get research grants to do true research, we know how budgets are built within the organization, and we know how leaders really want to try something but there’s no budget for it. So I went to the investment team to say, ‘How about investing in the people of our own organization?’” He argued such an initiative would offer a highly likely return on investment in revenue volume, satisfaction from physicians and nurses, and improving operational effectiveness. “Those are meaningful metrics for investment.”

A fundamental driver for funding internal ideas, Dr. Sunshine observed, is “revenue compression” as the industry remakes itself from an acute-care revenue base to ambulatory care, and prevalent plans center around building smaller and smaller domains of care, including services to the home. Leaders need to be on the lookout for revenue diversification, and that includes “paying attention to where our data is, what form it’s in, how it’s flowing,” and be keenly aware that “aggregation of data has extraordinary value” not only for outside software entrepreneurs but also internal applications, he said.

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Conclusion

CMIOs from 12 leading healthcare organizations across the country shared their progress and visions regarding electronic systems in healthcare. They highlighted that, although adoption of EHRs was nearly universal, barriers to efficient use remained. High among the concerns raised was the burden created by forcing providers and nurses to capture data for regulatory, quality or other reasons outside of patient care. Critically evaluating and ameliorating this practice was a priority in a number of organizations. In addition, there was a shared recognition that, although EHR documentation is accessed by many users, providers continue to structure notes for their own use, not for the use of others. Rather than embracing a truly shared EHR, the moderator, Dr. Mark Snyder from Deloitte Consulting, noted that providers were engaged in something more like “parallel play.” The ability to extract information from the chart and provide the information that a provider needs based on the provider’s specialty and the clinical situation was a goal for many CMIOs.

The conversation also focused on the healthcare systems of the future. There was agreement that a strategy of digital engagement needed to begin with the problem to be solved rather than implementing technology because it is available. The contribution of each member of the healthcare team must also be considered. A small cadre of case managers who develop and document a plan of care for complex patients was found to be beneficial and cost effective. CMIOs also shared their concern that as patients are able to access self-care for simple problems, physicians will spend a larger percentage of their time seeing sicker and more complex patients. Unless physician schedules account for this change in case mix, burnout may result. As they wrapped up their conversation, the CMIOs discussed their vision for medical training in the years to come. Rather than seeing technology as the differentiator, they voiced that curiosity and the ability to learn new things was the key trait for the physician of the future.
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The **Scottsdale Institute (SI)** is a not-for-profit membership organization of prominent healthcare systems whose goal is to support our members as they strive to achieve clinical integration and transformation through information technology (IT). SI facilitates knowledge sharing by providing intimate and informal forums that embrace SI’s “Three Pillars:”

> Collaboration
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