SCOTTSDALE INSTITUTE 2019
CMIO/CNIO ROUNDTABLE
Reducing the Cognitive Burden of the EMR
April 11 | SI 2019 Annual Conference | Scottsdale
Eighteen chief medical information officers (CMIOs), chief clinical information officers (CCIOs) and chief nursing information officers (CNIOs), convened April 11 during the Scottsdale Institute 2019 Annual Conference in a roundtable to tackle the vexing problem of how to reduce the cognitive burden of the EMR, often cited as a primary cause of clinician burnout. A pre-conference survey generated 20 responses from 18 SI organizations which ranked the top three focus areas:

- Training and Education
- Clinical Decision Support
- Display of Information.

In a lively 90-minute session, participants shared how their organizations were addressing these as well as related issues like documentation, data quality, search capabilities, ordering processes and billing and coding. Participants were encouraged to not only identify sources of cognitive burden from the EMR but to share best practices, improvements and solutions to these problems. The goal: to apply these best practices to their respective organizations’ workflows and processes and share lessons learned—how they worked or didn’t work—at the upcoming Fall CNIO Summit, Sept. 18–19, and CMIO Summit, Sept. 19–20, in Chicago. A one-day combined CMIO/CNIO session will be held on Sept. 19.

**EXECUTIVE SUMMARY**

**ROUNDTABLE PARTICIPANTS**

Ranjit Aiyagari, MD, CMIO, Michigan Medicine
David Bensema, MD, Healthcare Executive, retired
David Bates, MD, Chief, Division of General Internal Medicine, Partners HealthCare System
David Classen, MD, CMIO, Pascal Metrics
Darby Dennis, RN, VP, Clinical Systems & Informatics, Houston Methodist
Nicholas Desai, MD, Enterprise CMIO, Houston Methodist
Sherri Hess, RN, CNIO, Banner Health
Kim Jundt, MD, CMIO, Avera Health
Shaun Miller, MD, Associate CMIO, Cedars-Sinai Health System
Tom Moran, MD, VP & CMIE, Northwestern Medicine
Craig Norquist, MD, CMIO, Honor Health
Christopher “Topher” Sharp, MD, CMIO, Stanford Health Care
Pete Stetson, MD, Deputy Physician-in-Chief & CHIO, Memorial Sloan Kettering Cancer Center
Alan Weiss, MD, VP & CMIO, BayCare Health System

Gianna Zuccotti, MD, CMIO & VP Digital Health Transformation, Partners HealthCare System

**MODERATOR**

Jeffrey Rose, MD, SVP, Clinical Strategy, Hearst Health

**HOST/SPONSOR**

Hearst Health
John Chang, MD, SVP, Hearst Health
John Doulis, MD, VP, Hearst Health
Scottsdale Institute
Chuck Appleby (Writer), Director of Publications & Communications
Janet Guptill, FACHE, Executive Director
Gordon Rohweder, Director of Benchmarking Services
Cynthia Schroers, Director, Affinity Groups
Shelli Williamson, Senior Advisor
INTRODUCTION

Moderator Jeff Rose, MD, SVP, Clinical Strategy, Hearst Health, kicked off his third annual CMIO Roundtable by welcoming CNIOs and CCIOs to the discussion together for the first time, as their intertwined clinical informatics functions within the EMR create a natural affinity group. In reference to the discussion’s title, he asked: Is the term “cognitive” comprehensive enough to describe the EMR burden on clinicians? Aren’t there workflow, usability and time burdens that contribute to the EMR burden as well? The entirety of the following discussion answered that question in the affirmative.

PRE-CONFERENCE SURVEY

Dr. Rose cited the pre-conference survey results, noting that that the top three factors cited in EMR-related clinician burnout were: training and education, clinical decision support (CDS) and display of information (see Figure 1 below). “I was surprised the top factor wasn’t the EMR functionality itself, but rather the way we’ve been trained and educated in its use,” he said, noting recent articles like “Death by a Thousand Clicks: Where Electronic Health Records Went Wrong” (Fortune, March 18, 2019 http://fortune.com/longform/medical-records/) have indicted EHR vendors and their software products as riddled with design gaps and inconsistencies to the point of causing patient injury and death.

FIGURE 1

<table>
<thead>
<tr>
<th>Focus Area</th>
<th>Urgency and Importance</th>
<th>Note: There was no commonality among the “Other Focus Areas” reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training and education</td>
<td>4.47</td>
<td></td>
</tr>
<tr>
<td>Clinical Decision Support</td>
<td>4.35</td>
<td></td>
</tr>
<tr>
<td>Display of information</td>
<td>4.06</td>
<td></td>
</tr>
<tr>
<td>Documentation capabilities</td>
<td>3.93</td>
<td></td>
</tr>
<tr>
<td>Data quality</td>
<td>3.76</td>
<td></td>
</tr>
<tr>
<td>Search capabilities</td>
<td>3.71</td>
<td></td>
</tr>
<tr>
<td>Ordering processes</td>
<td>3.67</td>
<td></td>
</tr>
<tr>
<td>Billing and coding</td>
<td>3.39</td>
<td></td>
</tr>
<tr>
<td>Other Focus Area</td>
<td>4.33</td>
<td></td>
</tr>
</tbody>
</table>

Vendors took their licks in the discussion to be sure, but the group was more circumspect in its approach to how the EMR relates to physician and nurse burnout.

While each focus area itself could occupy a day-long discussion, the 90-minute roundtable tackled the first three priorities of training and education, CDS and display of information.
Roundtable participants were passionate and thoughtful about the issue of training and education.

Ranjit Aiyagari, MD, CMIO, Michigan Medicine, wasn’t surprised by the ranking in the preconference survey. He gave the training and education flaws a solid nod, but added configuration to the mix: “Think about it. When we had home-grown systems and controlled code we just told people to reprogram it. Now we have systems we’re invested in and cannot easily get vendors in a room and tell them how to configure the EMR.”

Tom Moran, MD, VP & CMIE, Northwestern Medicine, asserted that training and education are two different things and should be separate. “We focus on training but not on education,” he said. Education is more about workflow and policy (why we work on certain things). That can’t be taught in the classroom.

Nick Desai, MD, Enterprise CMIO, Houston Methodist, said how you engage clinicians and keep them engaged is the critical element. “We focus on training and then stop. Then we wonder why they don’t come back.” We should focus on “restorative efficiencies.” Know what a doc needs for day one, for rounding for example. Then keep them engaged and “restored” as we add more clicks to their workflow.

“Training and education from a nursing perspective,” said Sherri Hess, RN, CNIO, Banner Health. Nurses are hourly employees and we need to acknowledge they should be paid overtime for training, give them time away from patient care. “We’re not spending adequately on the largest workforce,” she said.

Alan Weiss, MD, VP & CMIO, BayCare Health System, noted BayCare has rolled out an EMR mastery program that among other things involves observing physicians on the EMR—and it has resulted in reduced clicks and increased physician/patient time—but has not extended the program to nursing yet.

Dr. Aiyagari said Michigan Med has adopted a physician-to-physician EMR mastery program that it borrowed from Stanford Health Care. “It’s had the highest net-promoter score, 85,” among Michigan’s training programs, he said. The challenge, however, is scale. It can only take 15 people during each two-day session and Michigan Med has 5,000 doctors.

“Half our docs are burned out,” said David Bates, MD, Chief, Division of General Internal Medicine, Partners HealthCare System. “So this is a priority for us. I have salary at risk” based on mitigating this issue. What works for Partners: One-on-one sessions between Epic experts and physicians. “Have peers get together, show people tricks.”

“Training and education from a nursing perspective. We’re not spending adequately on the largest workforce.”

– Sherri Hess, RN, CNIO, Banner Health
EPIC SIGNAL: VALUE IN THE EYE OF THE BEHOLDER

Shaun Miller, MD, Associate CMIO, Cedars-Sinai Health System, wondered who was using the Epic Signal tool. “We’ve been sitting down with docs in small, controlled settings to see if there’s value.” One of the many issues with training is to identify who needs training the most; then develop training programs to fit those individuals, he said. “Who’s struggling? Who’s burned out?”

Partner’s most successful training program, noted Gianna Zuccotti, MD, CMIO & VP Digital Health Transformation, Partners HealthCare System, “is a home-grown, site-based program that allows each institution to develop its own flavor of training.” Partners also has a centralized provider-improvement program that uses Epic Signal as a pre- and post-assessment tool, but has not been able to prospectively identify clinicians who need training.

Generally participants thought Signal overestimated a user’s actual proficiency. At the same time the tool has value within the right framework.

“Our experience with Signal over the past two-and-a-half years,” said Dr. Zuccotti, “is that we’re growing into it. She added that it’s not just about provider training but also quality and safety,” which are important drivers of continued EMR use and satisfaction.

GRADING THE USER?

Craig Norquist, MD, CMIO, Honor Health, said HonorHealth uses Signal for ambulatory but not inpatient assessment, but it may just be another bright, shiny object of tenuous use. Most important to reducing burden he emphasized: “It’s all about how doctors treat patients. It’s not about just giving you more data and information. Unless we can radically change what’s required in a note (billing complexities), we’ll have to struggle for those efficiencies. To unburden physicians using the EMR, you must emphasize clinicians don’t need a redundant note from somebody else’s note from somebody else’s note.”

Dr. Moran agreed. “Epic is grading the user [via Signal] as opposed to the user asking, ‘How do I feel about this product?’ Lots of docs have great proficiency scores, but they’re horrible [at using the EMR]. We have some average docs and they like it.” His point: Tools like Signal can paint a positive picture of a physician group’s EMR proficiency while missing those who really need training and education.

“It’s all about how doctors treat patients. It’s not about just giving you more data and information. Unless we can radically change what’s required in a note (billing complexities), we’ll have to struggle for those efficiencies. To unburden physicians using the EMR, you must emphasize clinicians don’t need a redundant note from somebody else’s note from somebody else’s note.”

– Craig Norquist, MD, CMIO, Honor Health

“Half our docs are burned out. So this is a priority for us. I have salary at risk based on mitigating this issue.”

– David Bates, MD, Chief, Division of General Internal Medicine, Partners HealthCare System
While CDS may have ranked number two on the preconference survey, the conversation shifted inexorably to unnecessary documentation, a root cause of burnout for both physicians and nurses.

Dr. Weiss asserts it’s possible to cut down documentation fields—especially inpatient intake by nursing—by as much as 75 percent. However, good governance is required. “We’re much more efficient after thoughtfully reducing the unneeded documentation, and nurse satisfaction has greatly improved. It turns out nurses were documenting between 120 and 220 physician-to-nursing communication orders per shift,” noting that physicians largely don’t understand this huge burden on nurses. “We’re trying to reduce this volume of orders and place them on the various tasks themselves, so, for example, nursing-communication orders about a certain medication are now placed directly on that medication.”

WHAT IS “DEATH BY A THOUSAND CLICKS?”

“What I’m hearing,” said Dr. Rose, “is that the applications themselves—Cerner, Epic, Allscripts—may be intrinsically flawed, but not to the extent we’re hearing in the media.”

His comment sparked a firestorm of debate.

“I think ‘Death by a Thousand Clicks’ is about the tasks and workflows we’ve imposed on clinicians,” declared Dr. Moran. “It has nothing to do with the EMR. We made stupid decisions that drove doctors and nurses insane. We never asked where we were going to collect this information and who would be able to review it. Doctors and nurses ask, ‘Why am I doing this? Why make me a court reporter?’ That’s what they don’t like. That’s why training and education is at the top of the list. The thousand clicks come from not knowing what the [heck] to do because no one told them or showed them, sending them all over the place [to collect information].”

We often overthink and excessively analyze the problem only from the viewpoint of technology, when simple one-to-one communication can ameliorate the EMR burden. “We’ve gone out to our campuses, approached docs and helped them out, showed them how to do a task. It’s often a two-minute discussion. ‘You’ve made my day,’ they say. It’s not this global, hour-long classroom session. It’s ‘Tell me what bothers you. Let me help you.’ It might be simple utilization management. It’s not big stuff. It’s little things. That’s what the thousand clicks are,” said Dr. Moran.

In some ways, “‘The written chart was much easier to read a doctor’s note. In an EMR, you have to scroll down through a week of problem notes.’”

– David Classen, MD, CMIO, Pascal Metrics
USABILITY CAN BE IMPROVED

Dr. Bates disagreed. “I think the usability of all the major EMR systems could be a lot better. We’ve counted clicks and redesigned certain tasks that have cut down clicks by a factor of two and reached a much higher level of user satisfaction. So, vendors all need to work on their products.”

Dr. Moran agreed—conditionally. “Systems are part of the problem, but not really the problem. The problem is what we say you have to do.”

There’s a reason it’s easy to blame EMR vendors, said Topher Sharp, MD, CMIO, Stanford Health Care. “If you watch a provider search for an answer or struggle with how to aggregate [information on an EMR], it’s a terribly painful process. There’s been a lack of investment by our vendors. It’s very, very hard to navigate. I feel it’s my duty to be relentless on this issue with vendors.”

In some ways, said David Classen, MD, CMIO, Pascal Metrics, “The written chart was much easier to read a doctor’s note. In an EMR, you have to scroll down through a week of problem notes.”

ORIGINAL SIN

Despite the problems perceived with the EMR, such a nostalgic perspective didn’t get a lot of traction in the discussion. “The problem with the written chart was that it didn’t have 90 percent of the information we have today,” said Dr. Miller.

“I agree with Shaun,” said Dr. Sharp. “My question is, can you train people out of that inefficient navigation, or is it an intrinsic problem? That’s what I expected to see on the survey.”

Dr. Sharp said Stanford Health Care has implemented optimization programs with specialty departments. “We asked them what their top problems with the EMR were in their specialty. We helped them do things like revise templates while developing relationships on the local level. It helps with physician engagement. Those initiatives have been very beneficial.”

Dr. Aiyagari said adding billing documentation to the physician note is “the original sin responsible for note bloat. We should just write what’s important, what’s changed from the previous note. People would gladly do that, as opposed to the documentation externally required to justify fee for service.”

“...”There’s a reason it’s easy to blame EMR vendors. “If you watch a provider search for an answer or struggle with how to aggregate [information on an EMR], it’s a terribly painful process.””
– Topher Sharp, MD, CMIO, Stanford Health Care

“...”There’s a reason it’s easy to blame EMR vendors. “If you watch a provider search for an answer or struggle with how to aggregate [information on an EMR], it’s a terribly painful process.””
– Shaun Miller, MD, Associate CMIO, Cedars-Sinai Health System
At that point the roundtable gravitated to CDS.

“So much of CDS best practices occur on the local level,” said Dr. Miller. “So many extra clicks and alerts. When we design CDS and alerts on the EMR, users don’t know what’s Epic or Cerner. Billing is the same. The billing workflow is physicians’ number one complaint. We’re a small system and have three different ways to bill for Epic OPC (Open Platform Communications), short forms and ordering of charges. All those extra clicks add up. It’s crazy.”

Some organizations have the luxury of more coders, but there’s a lot of variability in how organizations can configure a system locally. “It could result in a distraction that causes harm. On the CDS side, there could be things missed and do direct harm to a patient because of the EMR setup. There’s lots of subtlety.”

Dr. Norquist raised the issue of BPAs or best practice alerts, Epic’s CDS that notifies clinicians when they need to tend to important tasks, such as reviewing a patient’s allergies, writing orders and completing charting. In an example of how such alerts can mushroom and overwhelm clinicians, HonorHealth discovered it had 99,000 alerts for sepsis fire per month for nurses. “They just blew past them and did nothing. So we just turned them off and haven’t had any changes in mortality. We ask ourselves, ‘Why did we put those in?’”

Dr. Weiss noted that a lot of alerts arise from executives wanting to use the EMR to hold providers accountable. “It’s a whole lot easier to throw in an alert than it is to realign workflow intrinsically. That takes a skill set most organizations lack. It’s cultural. An executive at the top will say, ‘I want an alert to force the EMR to be accountable,’ rather than have a conversation with people.” That leads to more clicks, more alerts and the general sense the EMR is not helping workflows.
Despite the almost irresistible urge to discuss CDS for the rest of the roundtable, participants chose to move on to the issue of how information is displayed in the EMR, a major factor in usability.

“What are we doing as a group to change the design of EMR displays?” asked Dr. Weiss, adding that one issue is to write shorter notes, (he consciously avoided the obvious copy-and-paste mess that had already been mentioned, but notes aren’t the only problem). Extraneous, redundant or meaningless data exist many places in the record, an example being the ‘problem list’ which in his system includes SNOMED codes after each item in the problem list.”

When Dr. Desai asked if anyone was using human factors design, few responded. All agreed the current state was unacceptable.

Pete Stetson, MD, Deputy Physician-in-Chief & CHIO, Memorial Sloan Kettering Cancer Center, said Allscripts Sunrise Clinical Manager offers some custom tabs for visualization. However, Memorial Sloan Kettering (MSK) is seeking a more comprehensive solution. “Increasingly we’ve been using human-centered design. We’ve recruited an expert in human/computer advanced visualization. We have to pay a third party or ‘dev ops’ because EMR vendors won’t do it and we can’t wait around.” Tableau, business intelligence software, contains its own visualization layer.

**TIDAL WAVE**

“I really worry about the coming tidal wave of data completely unrelated to the way we do care today from a financial-risk-management perspective,” said Dr. Zuccotti. “Now we have patients with a lifetime of data that the provider has never seen yet. How we show data is critical.”

Dr. Weiss said, “That’s a mess. When we went live in Cerner registries we found 20,000 diabetes patients because once doctors had put down diabetes as a way to get screening, it remained and replicated even though it wasn’t a valid diagnosis. A registry is like a roach motel. Once [data] is in, it can’t get out.”

Dr. Aiyagari described how Michigan Med informaticists convened physicians in a room, gave them a hand-held digital tool and invited them to design their own handoff tool. “We said, ‘Whatever you design we’ll build.’ They liked it a lot.”
Dr. Stetson said Epic’s App Orchard—and other EMR vendors’ equivalent sites—allow developers to use APIs to develop apps and feature them in a marketplace, including disease-specific visualization tools. As a cardiologist, he noted, “The marketplace is responding to disease-specific needs.”

MISCELLANEOUS NUGGETS

Time and space do not allow a comprehensive transcript of even a relatively short 90-minute roundtable of passionately dedicated CMIOs, CCIOs and CNIOs. The following are some miscellaneous nuggets to wrap up the conversation:

Dr. Moran on reducing burdensome EMR tasks:
“What a doctor really wants is a personal assistant and get the pebbles out of my shoe.”

Dr. Stetson on a thousand clicks:
“We have a click bank. If you take out 10,000 clicks, you can give back 1,000 clicks.”

Dr. Weiss on too much information:
“One doctor wrote that a patient had a family history of sore throat. Anyone here not have a family history of sore throat? That’s part of burnout.” His point: Physicians collect family history via an outmoded protocol that has little governance or oversight. As a result, family history has become clogged with “junk” that has no clinical utility, demands extra time to collect and view in the EMR—and adds to clinician burnout.

Dr. Bates on measuring physician burnout:
“The Stanford [Health Care] tool is good, it works well.”

Michigan Med informaticists convened physicians in a room, gave them a hand-held digital tool and invited them to design their own handoff tool. “We said, ‘Whatever you design we’ll build.’ They liked it a lot.”

– Ranjit Aiyagari, MD, CMIO, Michigan Medicine

Darby Dennis, RN, on governance: “If there’s a workaround to established change management, jumping up a political ladder shows repeatedly that culture will trump governance in a flash.”

– Darby Dennis, RN, VP, Clinical Systems & Informatics, Houston Methodist
LOOKING AHEAD

Please mark your calendars for **CNIO Summit, Sept. 18–19, 2019 and CMIO Summit, Sept. 19-20, 2019, both in Chicago.** Scottsdale Institute will hold these two Summits back-to-back with a one-day combined session on Sept. 19.

Our goal is to share progress on the best practices, tips—or “Wins” to reduce the EMR burden as identified in the preconference survey (see Figure 2 below).

### Best “Wins” in Each Focus Area

**Themes from open ended responses**

<table>
<thead>
<tr>
<th>Focus Area</th>
<th>Best “Wins”</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Training and education</strong></td>
<td>Training is offered but always looking to improve how to reach people:</td>
</tr>
<tr>
<td></td>
<td>• Tip sessions vs. intensive training</td>
</tr>
<tr>
<td></td>
<td>• Continuous vs. one-time training</td>
</tr>
<tr>
<td></td>
<td>• In-person “at the elbow” vs. online training</td>
</tr>
<tr>
<td><strong>Clinical decision support</strong></td>
<td>• Reducing number of alerts</td>
</tr>
<tr>
<td></td>
<td>• Documentation templates</td>
</tr>
<tr>
<td></td>
<td>• Order sets</td>
</tr>
<tr>
<td></td>
<td>• Predictive analytics tools</td>
</tr>
<tr>
<td><strong>Display of information, including imported data</strong></td>
<td>• View of info for managing discharge process</td>
</tr>
<tr>
<td></td>
<td>• Visibility of important data: problem lists, medication list, CODE</td>
</tr>
<tr>
<td></td>
<td>• Predictive tools for presenting data</td>
</tr>
<tr>
<td></td>
<td>• Improved connection between Cerner and Epic</td>
</tr>
<tr>
<td><strong>Documentation capabilities</strong></td>
<td>• Voice recognition</td>
</tr>
<tr>
<td></td>
<td>• Virtual scribe</td>
</tr>
<tr>
<td><strong>Data quality</strong></td>
<td>• Ongoing focus</td>
</tr>
<tr>
<td></td>
<td>• Emphasis on data cleanup vs. improving input</td>
</tr>
<tr>
<td><strong>Search capabilities</strong></td>
<td>• Epic chart search is good</td>
</tr>
<tr>
<td></td>
<td>• Mostly using vendor-supplied capabilities</td>
</tr>
<tr>
<td><strong>Ordering processes</strong></td>
<td>• System-wide order sets</td>
</tr>
<tr>
<td></td>
<td>• Streamlining for efficiency</td>
</tr>
<tr>
<td><strong>Billing and coding</strong></td>
<td>• Improving revenue cycle</td>
</tr>
<tr>
<td></td>
<td>• Automation of clinical documentation improvement recommendations</td>
</tr>
<tr>
<td></td>
<td>• Aligning clinical needs and workflows with billing rules</td>
</tr>
</tbody>
</table>

**CONCLUSION**

The only way we can “move the dial” to reduce cognitive and other types of burden on physician and nurse users of the EMR is to become accountable for change at our respective health systems based on sharing the knowledge, insights and lessons learned from discussions like the CMIO/CNIO Roundtable. We look forward to seeing you in Chicago!
ABOUT THE SPONSORS

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
- Education
- Networking.

SI Affinity Groups offer a popular way to focus on a shared issue, topic or collective challenges. They can be title-specific or a mix of executive titles focused on single issues like Digital and Population Health, Innovation, Cybersecurity, Clinical Decision Support, Data and Analytics and others. Affinity Groups convene in a variety of ways including Dialogues, Summits, Ad Hoc Queries, Site Visits and Roundtables.

**For more information visit:**
[www.scottsdaleinstitute.org](http://www.scottsdaleinstitute.org)

The mission of **Hearst Health** is to guide the most important care moments by delivering vital information into the hands of everyone who touches a person’s health journey. Each year in the U.S., care guidance from Hearst Health reaches 85 percent of discharged patients, 205 million insured individuals, 77 million home health visits and 3.2 billion dispensed prescriptions. FDB (First Databank), Zynx Health, MCG, Homecare Homebase, and MHK (formerly MedHOK—Medical House of Knowledge) comprise Hearst Health. Hearst also holds a minority interest in the precision medicine and oncology analytics company M2Gen.

The annual Hearst Health Prize, in partnership with the Jefferson College of Population Health, offers a $100,000 award each year in recognition of outstanding achievement in managing or improving health. [www.jefferson.edu/HearstHealthPrize](http://www.jefferson.edu/HearstHealthPrize)

**For more information, visit:**
[www.hearsthealth.com](http://www.hearsthealth.com)