All In: Moving from EHR Adoption to Optimization

A HIMSS Analytics Study evaluates healthcare organizations' adoption of electronic health record (EHR) systems and efforts to augment use with integrated, supportive technologies to improve the clinician experience, better document patient stories and gain greater financial returns on investments.

When The University of Texas MD Anderson Cancer Center was ready to go live with a new EHR, it decided clinicians should no longer use transcription and essentially disabled that option. Instead, clinicians were taught to use speech recognition tools, devoting several months prior to the go-live date to training in their legacy EHR.

Two days post-live with the new Epic™ system and speech recognition, John Frenzel, MD, chief medical informatics officer at MD Anderson, was in the command center when he asked project leads to double-check that the transcription lines were turned off. What was expected to be a huge headache from the loss of transcription for 3,500 users turned out, in fact, to be a non-event.

"It was amazingly smooth," he recalled. "I was shocked by that. But in retrospect, I should have acknowledged how much my colleagues could change and move on."

Across the country, medical and healthcare IT executives are coming to a similar conclusion. HIMSS Analytics conducted a study of industry use of EHRs and clinical documentation, and found one-quarter of respondents plan to introduce EHR-enhancing technologies like mobile devices and apps, computer-assisted physician documentation (CAPD), and speech recognition software in 2017 to help clinicians fully document the patient story, improve satisfaction and reduce physician burnout (Figure 1). In turn, they can improve patient flows and realize better financial outcomes.
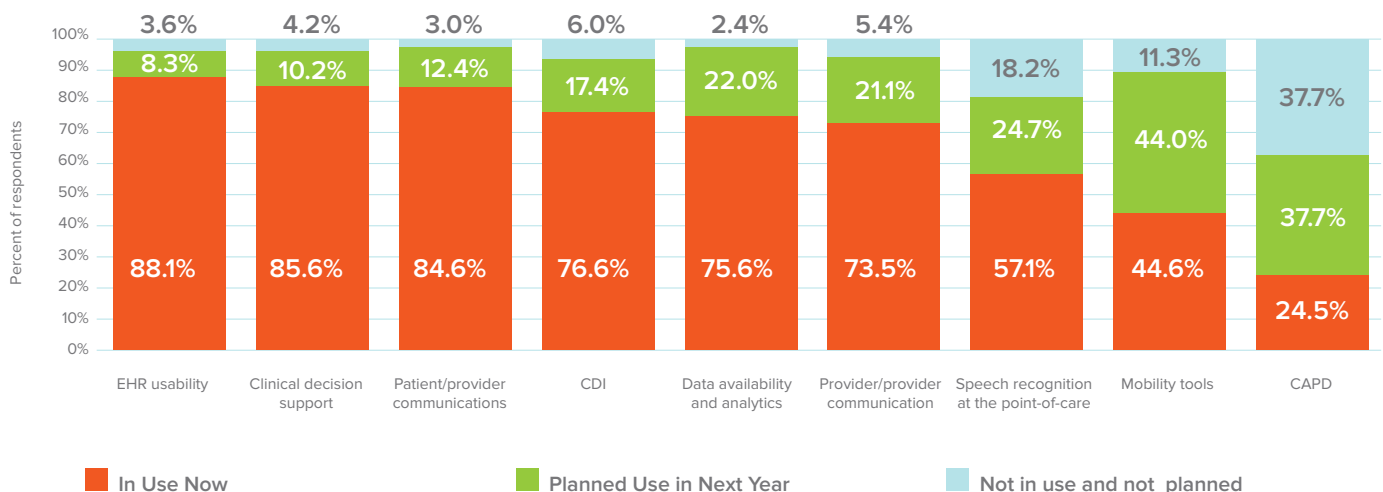
The study also found that 80 percent of respondents were very confident their organization could realize the intended benefits of EHRs. Part of that confidence may come from the significant investments they are making in training and support since moving to an EHR system. Most respondents have shifted more resources to training and key staffing areas such as software development and integration, information governance, monitoring performance, and security.

"We've spent the past 10 years struggling to get EHRs to match the utility and ease of use of legacy paper systems. Although UI and data entry issues still remain, ease of data retrieval has easily balanced out these problems," said John S. Lee, MD, an EHR expert and CMIO of Edward Hospital near Chicago.

Lee is also a member of the HIMSS Physician Committee, which provides domain expertise, leadership and guidance to HIMSS physician and medical informatics activities, initiatives and collaborations. "Now that we have systems with burgeoning reams of data, the key will be extracting and abstracting meaningful information and knowledge out of the raw data," he said. "We must then use this knowledge to truly improve care."

FIGURE 1. At least one-quarter of respondents plan to leverage speech recognition, computer-assisted physician documentation (CAPD) and mobility tools to optimize EHRs in 2017.

Which of these activities is your organization leveraging for EHR optimization?
Please indicate those in use now, those also planned for the next year or if it is not in use or planned.

	EHR usability	Clinical decision support	Patient/provider communications	CDI	Data availability and analytics	Provider/provider communication	Speech recognition at the point-of-care	Mobility tools	CAPD
Not in use and not planned	3.6%	4.2%	3.0%	6.0%	2.4%	5.4%	18.2%	11.3%	37.7%
Planned Use in Next Year	8.3%	10.2%	12.4%	17.4%	22.0%	21.1%	24.7%	44.0%	37.7%
In Use Now	88.1%	85.6%	84.6%	76.6%	75.6%	73.5%	57.1%	44.6%	24.5%

In Use Now **Planned Use in Next Year** **Not in use and not planned**

Paper trails and hybrid models

In this study, organizations report they've increased investments in training and key staffing areas, including (Figure 2):
• Software development/integration
• Information governance
• Monitoring performance
• Security

Those added expenses were often offset by reductions in staff responsible for paper-related processes, such as in-house medical transcriptionists (69 percent), outsourced medical transcription (60 percent) and paper records administrators (57 percent).

Interestingly, 90 percent reported some clinicians still use paper-based documents, forcing some to follow more of a hybrid approach, such as Hartford HealthCare, which is moving all five of its hospitals to the Epic system by October 2017.
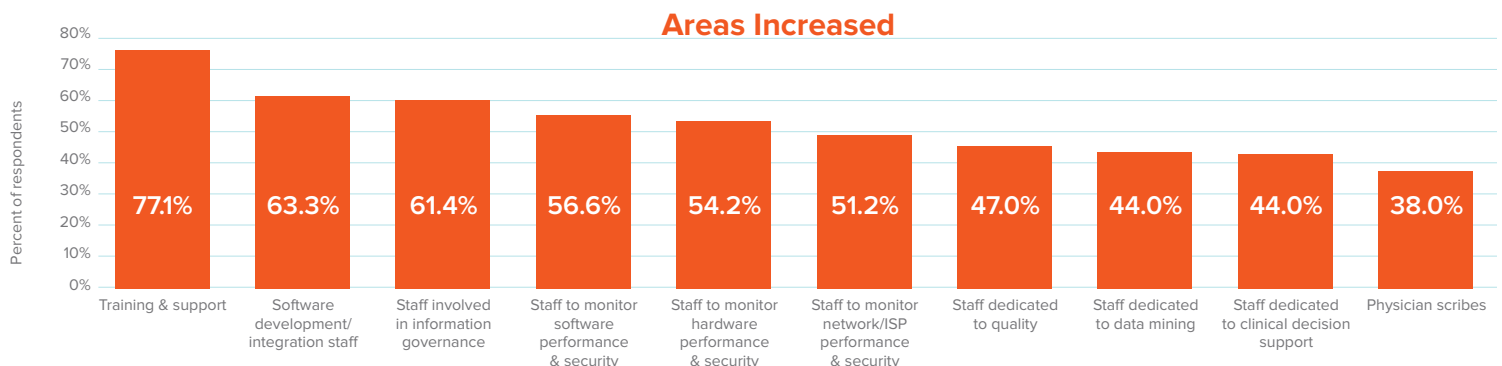
"In the hospitals and offices, it's EHRs only. No paper charts are being kept anymore except legacy stuff. No paper orders," said Spencer Erman, MD, chief medical informatics officer at Hartford HealthCare. It's the 30 to 40 percent of providers outside the system, he said, that still send in consult letters or pre-op orders that must be transcribed into the EHR and/or scanned into the patient's chart.

Where 100 percent electronic conversions did take place within the healthcare organization, a contributing factor to widespread adoption was support tools like secure messaging (more than 4,500 providers generated 250,000 messages last year) and speech recognition software, particularly cloud-based Nuance® Dragon® Medical One, now regularly used by a quarter of physicians, most of whom are highly active users of the technology.

"The adoption rate didn't surprise me, but the amount it's being used is mind-boggling," he said. For instance, between May and July 2016, Hartford Hospital was dictating and transcribing up to 4,200 consult notes a month. In October, after adopting the new speech recognition technology, that number dropped to 207. Clinicians were averaging 1,700 dictated transfer summaries per month before going live. In October, there were two. "Everything showed at least a 50 percent improvement," Erman noted.

FIGURE 2. Two-fifths to two-thirds of respondents have increased staff in their healthcare organizations.
In what ways have your organization's administrative staff or resources changed since you moved to an EHR system?

Areas Increased

Area	Percent
Training & support	77.1%
Software development/integration staff	63.3%
Staff involved in information governance	61.4%
Staff to monitor software performance & security	56.6%
Staff to monitor hardware performance & security	54.2%
Staff to monitor network/ISP performance & security	51.2%
Staff dedicated to quality	47.0%
Staff dedicated to data mining	44.0%
Staff dedicated to clinical decision support	44.0%
Physician scribes	38.0%

Percent of respondents

Arming clinicians with tools they will use

Erman and Frenzel, however, may be a little ahead of their peers. In the HIMSS Analytics Study, 83 percent of organizations reported 75 to 100 percent of their physicians and other clinicians were using the EHR to document patient care; but arming the entire clinical staff with additional tools was not yet pervasive. Indeed:

- 44 percent reported speech recognition was used by fewer than 25 percent of clinicians
- 67 percent reported the same low usage level for CAPD solutions
- 61 percent reported clinician usage of mobile applications by less than 50 percent
- 48 percent were not using Natural Language Processing (NLP) tied to machine learning, or virtualization tools like virtual reality (75 percent) or virtual assistant tools (73 percent)

Top priorities outlined in the HIMSS Analytics Study include education/training (81 percent), enhancing existing technology/tools (75 percent) and adopting new technology (67 percent) (Figure 3).

Edward's Lee believes his organization is above average in adopting an almost fully electronic workflow, "but we are certainly not bleeding edge," he pointed out. "I think hybrid approaches incorporating paper will quickly disappear as newer, data-based quality payment schedules become more prevalent," he added. "If you don't have discrete data, you won't get paid. If you have lots of paper, you simply won't be able to produce this data."
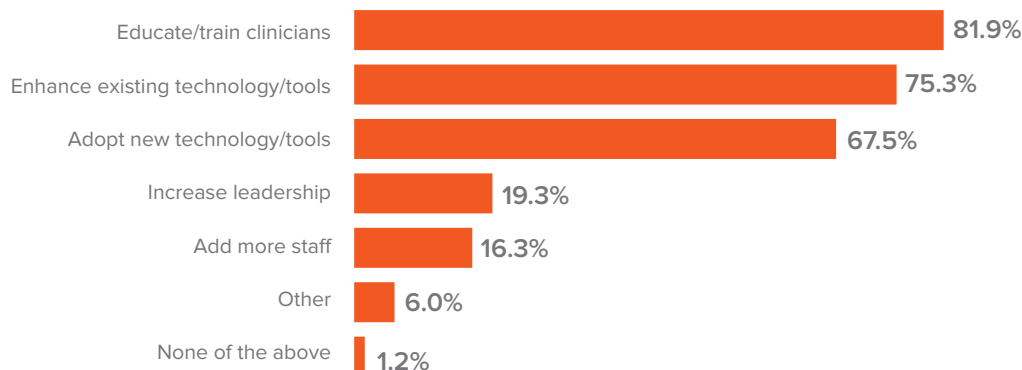
A key to extracting this data with ease and semantic fidelity lies within machine-learning solutions, CAPD and NLP. "As much as fracking has revolutionized and disrupted the petroleum industry by unlocking untapped resources, CAPD, NLP, AI and machine learning will do the same with medical data," he said. "Once this data is discretely available, it then is only a matter of ingenuity and creativity to use such data at the point-of-care."

This also requires EHR-enhancing tools, like those tied to mobile use and speech recognition, demonstrating their value through improved efficiencies and higher productivity. "The tool that has helped us the most is speech recognition," Erman said. "Point-and-click is time-consuming and doesn't tell the story. Most doctors don't type that well, and speech recognition helps them free up time to be with the patient."

FIGURE 3. Respondents are educating clinicians and enhancing tools to improve clinician satisfaction.

When it comes to documenting patient information, what is your organization doing to improve clinician satisfaction with the EHR?
Please select all that apply.

Educate/train clinicians	81.9%
Enhance existing technology/tools	75.3%
Adopt new technology/tools	67.5%
Increase leadership	19.3%
Add more staff	16.3%
Other	6.0%
None of the above	1.2%

He admits that the usability of EHRs is an ongoing fight. "None of them are easy, and none are well-liked by providers. Some are better than others, but none are really user friendly," Erman admitted. "That's something we're working on, as is every EHR company in the world and every institution that's using an EHR. We're trying to make it friendlier and decrease complaints of 'I'm a physician, not a data-entry clerk.'"

This circles back to the importance of training, both on EHRs and the tools to enhance their use. At Hartford HealthCare, Erman's informatics team leveraged a lot of internal trainers and support people, but then had trouble backfilling positions while training was underway. Before going live with Epic in their main, 900-bed hospital, Hartford HealthCare trained almost 8,000 employees and physicians in a six-to-eight-week period by offering classes mornings through evenings, six days a week.

Training 'at the elbow'

Southcoast Health, based in New Bedford, Mass., went live with Epic across its enterprise in October 2015. Though Epic has been in use for a relatively short period of time, CIO and Senior Vice President Joan McFaul and CMIO and Senior Vice President Michael Hyder, MD, MPH, wasted no time providing support tools, primarily speech recognition software, to help optimize the new EHR's use.

Because of limited IT resources and periodic turnover, McFaul and Hyder recently developed a program to augment traditional classroom and web-based training for new technologies. Designated practitioners and support staff members are given intensive training to become super users who then train and troubleshoot within their work environments.

"What we're moving toward is a much more personalized, at-the-elbow kind of support for Epic and the tools surrounding it," McFaul said. "We're finding that as we do more training with people at their work site and in their work environment, not only do they appreciate it more, but it's more effective."

Training is critical, especially when new technologies are introduced. At MD Anderson, plans include new tools for clinical decision support, analytics, peer-to-peer messaging, expanded use of a web portal to access EHR, and telecom upgrades to enterprise-wide VoIP. Speech recognition at the point-of-care is already in strong use, and should become even more prevalent with the issuance of smartphones preloaded with Epic Haiku and messaging capabilities, and, soon, voice-to-text mobile software.

"Anytime you roll out a technology, you're going to need training," Frenzel explained. Healthcare IT environments rapidly change, and it is important that EHR tools to support documenting the patient story evolve at the same pace. That is also why feedback is important. Both Frenzel's and Erman's organizations routinely send out surveys to gauge clinician satisfaction rates with enhancement or expansions to their EHRs.

## Complete patient records can pay off financially, too

Fully documenting the patient story is important, not just to improve patient safety and outcomes but to appropriately and accurately capture data for claims and reimbursements.

HIMSS Analytics Study respondents said the three areas where they saw the largest financial impact included capturing appropriate reimbursements (67 percent), a reduction in denied claims (54 percent) and improved performance under bundled payments (52 percent) (Figure 4). There also were cost savings from better physician time management improving patient flow. That, in fact, is among the top gains the medical and IT executives hope to realize in 2017 as they build out broader EHR systems with integrated support tools.

Southcoast, for instance, immediately saw significant savings on paper, printing and transcription costs when it switched to electronic-only records. "But more importantly, on the revenue-generating side, the completeness of the documentation has certainly improved," Hyder noted. That's allowed for better office coding and more accurate billing. It's also translated to more productive wellness visits, particularly for Medicare beneficiaries. With more robust recordkeeping and better tracking of patient compliance to routine preventative health tests and procedures, Southcoast is able to provide better care at a lower cost. "In a paper world, there's really not a great way to standardize and help reduce clinical variations, especially as it relates to evidence-based medicine," Hyder said. "But in an electronic world, especially with physicians' support and a cadre of digital tools at our disposal, we can dramatically move those initiatives forward."

FIGURE 4. Documenting patient encounters will have the largest financial impact by appropriately capturing data for reimbursement.

As you look to continuously improve the documentation of patient encounters, in which areas do you see the largest financial impact from these enhancements? Please rank the top 3 areas with 1 being the highest.
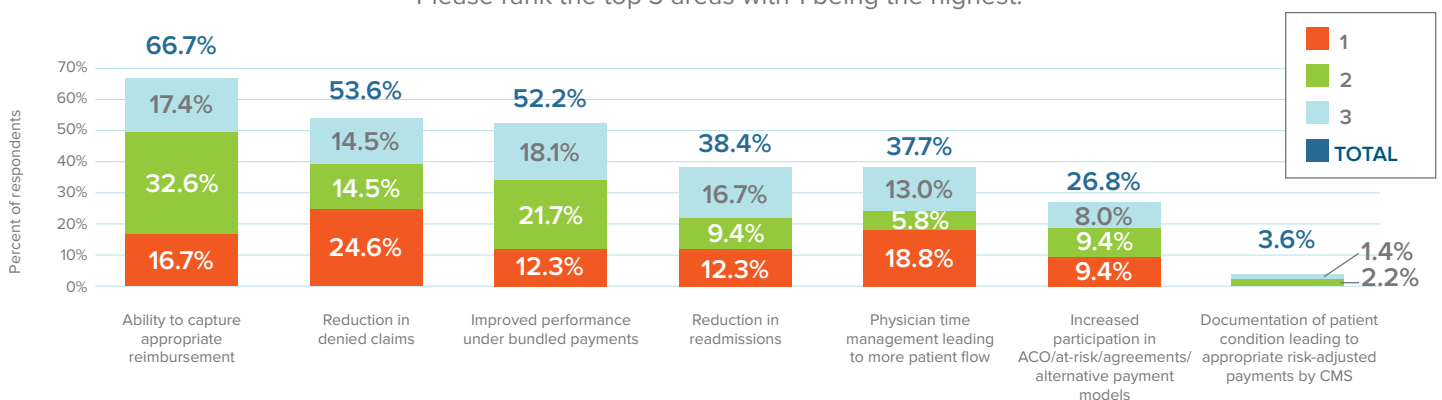
Improved patient visits and time management

Optimizing EHRs through use of integrated support tools not only saves healthcare organizations money, but also saves clinicians time. And that can be worth far more when it comes to creating better work/life balance, preventing physician burnout, and recruiting or retaining top talent.
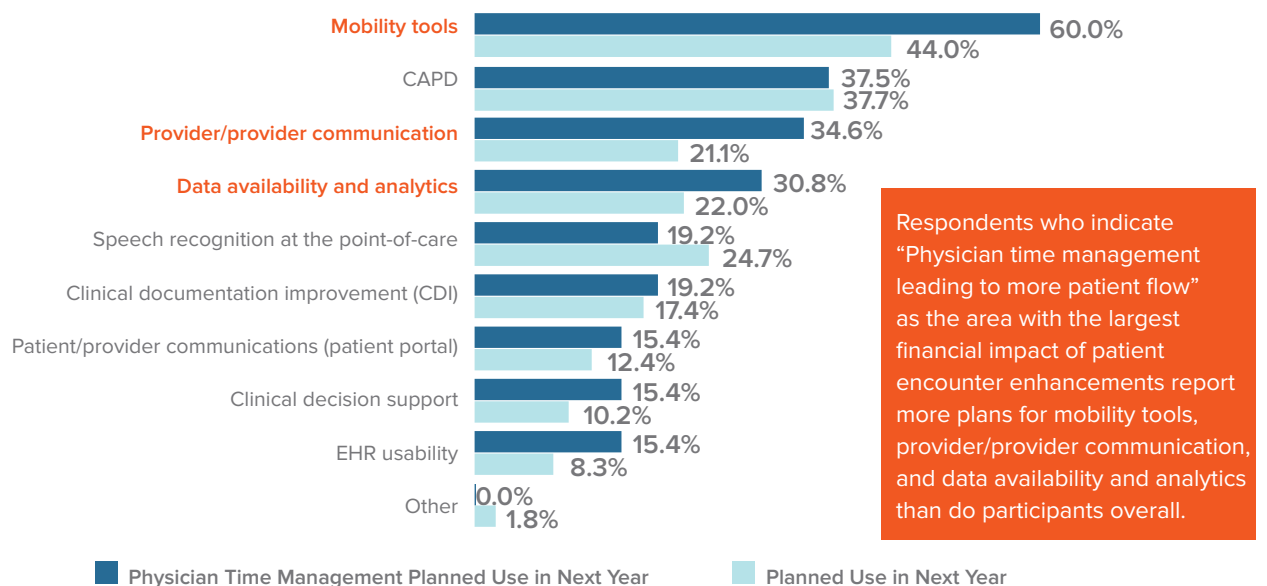
Respondents in the HIMSS Analytics Study indicated "physician time management leading to more patient flow" as the area where they hoped to see the largest impact during patient encounters in 2017. The top five tools they are most likely to use to gain better control of their time are mobility, CAPD, provider-to-provider communications, data availability and analytics, and speech recognition software at the point-of-care, with significant growth in mobility tools planned for 2017 (Figure 5).

Better patient flow "is definitely becoming more and more streamlined as providers learn the system and how to use efficiency tools within the system," Hyder said. His hospital currently is piloting a program promoting proficiency so that physicians can leave work at a reasonable hour. Initial results are excellent, according to Hyder. "Providers are really liking it. The intent of the program is to give them back time so they can be home for dinner," he said.

Erman said documenting at the point-of-care using EHR support tools, particularly voice-to-text software, is easier, and more thorough. "In my office, I'll ask the patient if they mind my dictating in front of them, for instance, when they are getting dressed," he explained. "In doing so, it validates to the patient I heard what they were saying, and they get to again hear the instructions I gave them. It also gives them a chance to correct me if I get something wrong. I've also now finished my chart by the time the patient leaves the room."

FIGURE 5. Physician time management leading to more patient flow promises to be one of the largest financial impact plans for 2017 for respondents.

Which documentation processes cause clinicians to express the most frustration?
Percent ranking process 1, 2 or 3.

	Physician Time Management Planned Use in Next Year	Planned Use in Next Year
Mobility tools	60.0%	44.0%
CAPD	37.5%	37.7%
Provider/provider communication	34.6%	21.1%
Data availability and analytics	30.8%	22.0%
Speech recognition at the point-of-care	19.2%	24.7%
Clinical documentation improvement (CDI)	19.2%	17.4%
Patient/provider communications (patient portal)	15.4%	12.4%
Clinical decision support	15.4%	10.2%
EHR usability	15.4%	8.3%
Other	0.0%	1.8%

Respondents who indicate "Physician time management leading to more patient flow" as the area with the largest financial impact of patient encounter enhancements report more plans for mobility tools, provider/provider communication, and data availability and analytics than do participants overall.

Transitioning to the next iteration of EHR

MD Anderson's Frenzel believes the industry is in a transition in which today's EHRs still emulate paper charts, but tomorrow's will not. He notes that Microsoft® Windows® uses file folders as icons because they are metaphors for old office equipment. But that paradigm is shifting, and so are EHRs. "EHRs had the same functionality to help people make the big move from paper to electronic records, but there's a generation of providers coming that never dealt with paper," he said. "And they are going to change the interface because they aren't constrained by those thoughts."

Erman is encouraged by EHRs' use in population health management. "My job as a CMIO is to improve the health of not just my patients but the whole community," he said. "By using technology, I'm acting as a translator or bridge between the technical and the clinical to leverage all these systems to tell the patient story and take care of the patient households and the community."

Southcoast's Hyder agreed, "As we're moving toward value-based care and complete accountability for a given population's overall health, without systems like these and key tools around clinical decision support … we won't be able to succeed. There's no option not to participate in something like this or to move forward without these types of tools. Advanced information technology is absolutely critical to providing high-quality care at an appropriate cost."

Erman and the other physicians encourage their peers to take control of the electronic revolution as it evolves. "The car – and by that I mean EHR technology – is going down the road. You can drive it, be a passenger or be dragged kicking and screaming behind it," he noted. "The car's going with you or without you. So I recommend you embrace it at whatever level you desire."