WHAT PROVIDERS NEED TO KNOW ABOUT CLINICAL ANALYTICS

Top considerations for implementing the right strategy in the shift to value-based care.

Healthcare providers have a lot on their minds these days. Payment reforms, aging patient populations, daily discoveries to integrate into the clinic—all create a new reality that can overwhelm even the most forward-looking providers.

TAKEAWAYS

1 To stay competitive, healthcare providers need advanced analytics to acquire, analyze, and make the most of data

2 Platforms that support artificial intelligence, machine learning, and advanced big data solutions are critical foundations for healthcare IT

3 Healthcare IT leaders must understand workflows across their organizations to build successful clinical analytics systems

Perhaps the biggest change is still coming, as the industry shifts from fee-based models to value-based care, with reimbursement tied to quality metrics. To stay competitive, providers will need advanced analytics that can acquire, analyze, and make the most of that data.

With value-based care, healthcare providers want to find the patients at highest risk of hospital-acquired infections, falls, readmissions, and other issues, and put the most resources into helping those people and preventing those problems. The industry can't provide that level of high-touch care to everyone, and stratifying patients helps hospitals decide where to focus the most resources.

Platforms that can support artificial intelligence, machine learning, and advanced big data solutions are the critical foundations that will help providers achieve this. With the right system, providers can lower costs and improve efficiency while improving patient care and preventing crises before they happen.

"The real benefit of predictive analytics is reaching the point where we can deliver the right care to the right patient at the right time and in the right place," said Jennifer Esposito, Intel's general manager for worldwide health and life sciences.

"A vast amount of untapped data exists in many different silos across healthcare, not to mention other data—from the home, the environment, fitness data, wealth data, et cetera—that can be combined with EMR data to really change the game," said Esposito. "If we can unleash that data and create new insights, we stand a chance to improve care and enhance the patient and caregiver experience, and ultimately to benefit the entire population."

Esposito's team helps healthcare providers implement a variety of technology-driven solutions for healthcare, including predictive clinical analytics, and she's seen what keeps organizations on track—and what can derail them. She outlines what providers need to consider when preparing for the paradigm shift to data-driven care.

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Q: What are some factors that healthcare providers need to consider before rolling out a clinical analytics strategy?

Esposito: First, they need to consider how this strategy can scale across the organization and over time. Not just for one clinical use case, but as it is built out, how can it be used for other use cases?

Consider the value beyond the clinical, into more operational and financial analytics that can benefit the organization on multiple fronts and really demonstrate ROI. This should drive decisions around the technology that is selected for deployment; it needs to be able to grow and evolve with changing needs.

Second, as an analytics strategy is put in place, what are the cultural changes that might need to occur, and who are some of the key influencers in the organization who can act as evangelists and bring their colleagues along? This includes both the clinical workforce, who have to consider how they will use new insights from analytics in their clinical practice with their patients, as well as those who will be driving the analytics process, who may need to develop their skill sets to take advantage of new types of analytics. Cross-functional executive support is critical at all stages of the process.

And finally, what changes need to happen in the business processes and workflows of the organization? Too often, analytics solutions are created but ultimately ignored or abandoned because no work has been done to understand the current business processes and workflows and how to evolve them to better incorporate analytic insights.

Q: What are the key infrastructure components needed to support a real-time clinical analytics program?

Esposito: It's important to first have a close look at the underlying technological infrastructure that is currently in place. What is the plan to house data? Before you start with any technology implementation, you first want to pull a multidisciplinary team together and determine the most beneficial use cases.

Healthcare organizations will need to get an understanding of the necessary data sets for their clinical analytics program. Getting that data into one place through a high-bandwidth network that moves data efficiently, along with the right integrations back into the clinical systems, is probably step one.

Next, from an architecture perspective, you'll want an underlying big data storage and computing architecture that can handle both structured and unstructured data. Storage is also key. A three-tiered storage configuration—one tier focused on new data coming in, the second focused on merging new data with slightly older data, and the third for longer-term data—is a good idea and useful for a retrospective view of something or doing trend analysis.

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Q: How important is it for healthcare organizations to consider mobility?

Esposito: Mobility is very important—it has the potential to improve collaboration among physicians and specialists and remove the screens between the patient and their provider. It can also play a role in staff satisfaction; as consumers, staff become accustomed to highly mobile, beautifully designed devices at home, and it's only natural for them to want similar tools at work.

I think form factor really does matter, and it's imperative that we continue to work on enhancing the design of computing devices in a hospital, so that these are devices they want to use. The side benefit is that they gain the advantages of enhanced security features and alleviate some of the strain on IT that comes from bring-your-own-device (BYOD) programs.

Q: And what about security, especially as so many organizations are moving to the cloud?

Esposito: We've all heard of the recent breaches that have affected healthcare organizations; the ransomware attack of May 2017, for instance, locked providers out of millions of patient records in England unless they paid a ransom.

Security has to be front and center, but it doesn't have to be a trade-off. We've found that many healthcare organizations don't have basic training and awareness programs, and many cite security risks as the reason why they prefer on-premise solutions versus moving to the cloud.

But in the last year or so, we are starting to see more widespread adoption of cloud or hybrid models for healthcare organizations. These options should be discussed as early as possible, as it can have a huge impact on the level of scalability over time. It's critical for organizations to keep a long-term view and understand the limitations they may face in the future if they don't use the cloud.

Q: Where do you feel that artificial intelligence will have the biggest traction in healthcare?

Esposito: Support from AI will augment the practice of physicians and nurses, allowing them to take on more complex cases and leaving AI to address the more straightforward ones. If anyone is worried that AI will replace clinicians, that's not going to be the case.

AI will alleviate some of the shortages in specialists, like pathology and radiology, and ultimately reduce the overall per-scan/per-test score. AI is being used to automate analysis and increase the accuracy of diagnoses today.

We have a project with the University of California, San Francisco (UCSF), using AI to speed the analysis of ultrasound images of trauma patients. We have a project with Zhejiang University in China to speed and improve the accuracy of cancer identification in thyroid nodules, where there's a significant shortage of expert radiologists.

AI will also enhance our ability to really drive precision medicine. Take the concept of real-time "cohorting"—AI can help find patients who are similar across a wide spectrum of characteristics, including response to treatments and genetic profiles. This allows us to really consider how we address the whole patient, instead of an approach based on the specific diagnosis of a disease.
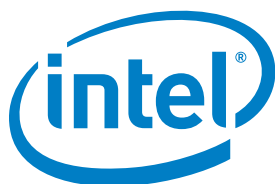
With 85 percent of office-based physicians adopting EMRs, we're seeing leading hospitals move staff to focus on more compelling use cases involving multiple datasets, some unstructured[1]. Richer insights could be achieved if healthcare providers had AI or machine learning sorting through clinical notes or audio-recorded physician notes in the EMR data and integrating billing, other downstream partner data, vitals from the bedside, or medical imaging data. That's all unstructured data that machines can parse through and analyze for new insights.

Q: Can you talk more about providers who are successfully using predictive analytics today?

Esposito: One example is Montefiore Medical Center in New York. They're using an Intel®-based Cloudera platform to predict who is likely to experience acute respiratory failure, because those patients historically stay in the hospital longer and get readmitted more often. They're now putting that risk score into the EMR and into hands of clinicians, so they can be more proactive in helping to save lives.

Another example is Sharp HealthCare in San Diego. They're using analytics to predict whether a patient will need intervention from the rapid response team within the next 60 minutes.

We want as much data sharing as possible across health systems, and to help them get as much secondary use as possible out of their data for the populations that they serve. We want to be able to help other hospitals take these platforms and implement them in a scalable and cost-effective way. Many health systems have extensive hospital networks with so much data, and we want to help them bring that all together and turn it into a system of insight.

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