The Emerging Landscape of Data in Healthcare: Time for a Reset?

Introduction

The landscape around data in healthcare right now is one of those "glass half-full, glass half-empty" stories. The good news is that there's more data available than ever before. The bad news? It's largely still disorganized and unavailable in the ways that patient care organizations and clinicians on the front lines of patient care need it.

Back in 2014, the introduction to the results of a survey[1] of healthcare CIOs noted that "The digitization of healthcare has resulted in tremendous new opportunities for using data to improve patient care and manage the health of populations. With the move from paper-based to electronic records, the amount of available data has grown dramatically. Health IT can enable unparalleled access to novel data sources by linking disparate settings, specialties, and systems across the care continuum."

It went on to say, "Today, researchers, administrators, entrepreneurs, and clinicians alike are leveraging data and complex algorithmic models to inform decisions and strategies at an individual, organizational, and regional level. As delivery system transformation efforts take shape, many healthcare organizations have begun combining claims data and medical records to identify variation and overutilization of services, stratify frequent utilizers and high-risk populations, and suggest appropriate or cost-effective treatments to improve quality and reduce costs. However, the field of analytics is still relatively young in the healthcare industry; to date, capabilities and practices vary significantly across different settings and organizations."

The survey found that 94% of organizations believe that value-based care initiatives rely on analytics for success. But only 42% have implemented a flexible and scalable plan for their analytics platform to adapt to the growing volume, liquidity, and availability of health data. Most respondents reported only moderate or minimal commitment to integrating analytics into practice.[1]

Things haven't progressed too far since then. In 2017, only 14% of CIO respondents had established a dedicated IT innovation center in their organization and more than a third had no plans at all to drive IT innovation in their organization.[2] The survey respondents did see potential in new technologies, such as natural language processing, cloud computing and machine learning but 50% saw the Fast Healthcare Interoperability Resources standard (FHIR) and application programming interfaces (APIs) as having the most potential to make a tangible impact on healthcare in the next two years.

Nevertheless, the vast majority of healthcare IT leaders agree — data that organizations have and use largely remains inadequately organized for optimal use in creating clinical and operational transformation in U.S. healthcare.

CONDUENT

healthcare informatics
CUSTOM MEDIA

2

What a new data landscape might look like

Most industry experts and observers agree that "data normalization" is one of the core challenges facing healthcare leaders and clinicians in being able to achieve healthcare system transformation. Broadly speaking, "normalizing" data involves creating an infrastructure that enables aggregating and sharing that is semantically and operationally compatible across otherwise disparate systems.

Sharing and aggregating data among different IT systems has proven difficult. The reason in both cases is the same: different data sources use different terminology content sets, and variations in definitions or forms of data presentation. As a result, data mapping remains disjointed and incomplete — and a problematic hurdle for healthcare decision-makers.

Well-designed data normalization processes can help healthcare leaders and clinical teams better see and access a spectrum of relevant data and use it to optimally support patients, achieve better outcomes, and operate much more cost effectively.

That's exactly how Lu Calkins, Director of Conduent Midas Health Analytics Solutions sees it. "One thing that's very important," she said, "is the ability to humanize data, to make the healthcare choices and decisions more proactive, with or without the patient. But in order to do that, we need true integration.

> "We need to be able to connect patients' identities across the continuum of healthcare. For example, I may go to one health system on a particular day to see a specialist in a clinic; then later go to an urgent care clinic for prompt care; and at another time to an emergency department following a car accident, which may then lead to surgery. Across all these needs and stops along the healthcare delivery continuum everyone —the clinicians, my employer, my health plan — needs to be connected into the data."

Under the right conditions, Calkins says, "We can normalize data from wherever that information is coming from, and we can see, what's going on with a patient and what are her recent interactions with the healthcare system. Regardless of where those interactions are, having normalized data enables the most informed decisions clinically, financially, and for the wellbeing of the patient/consumer."

Cleansing data in the context of value-based contracted networks

The leaders of patient care organizations that have gone into value-based contracts are becoming increasingly familiar with such challenges and opportunities — whatever levels or types of financial risk might be involved,

Indeed, those who are leading ACO development now point to three key areas of importance: cleansing data, marrying clinical and claims data, and filtering and de-duplicating data elements.

Let's look at the set of tasks around cleansing data. One simple example involves hemoglobin a1c and how that individual measure of a diabetic patient's blood sugar management might be stored and used across multiple systems in an ACO-based network. To begin with, that single measure will likely be presented in many different ways, across multiple electronic health record systems, practice management systems and data analytics platforms — using different terminology and different coding schemas. The same test might be referred to as "HbA1c" in one system, "a1c" in another, and "glycosated hemoglobin" in a third. Normalizing these to a common LOINC code is one example of cleaning data that is having to be repeated across countless ACO networks and clinically integrated networks nationwide. Data normalization cleans and organizes that data so quality can be effectively monitored, measured and reported.

Likewise, marrying clinical and claims data remains one of the biggest and most daunting challenges for ACO organizations. It's difficult across multiple dimensions. First, there's the difficulty in physically matching clinical and claims data. Patient care organizations have to make sure they're matching the right data with the right patient — there may be 20 John Smiths attributed to the same ACO organization. Patient-matching algorithms are important in this.

Then, once the data is merged, it has to be organized in ways that make it actionable. For example, in the area of readmissions for congestive heart failure (CHF), the first thing that an emergency physician or cardiologist will want to know is what is the patient's ejection fraction — the percentage of blood ejected out of the ventricle when your heart pumps. How can that data be organized so that it's available to physicians, nurses and other clinicians at the point of care?

Engaging skilled data analysts and data scientists who have expertise in merging datasets, organizing data for easy updates, and identifying data issues is an advantage. Add healthcare-specific experience to their skillsets, and the advantage is even greater

How are patient care organizations advancing?

Even as they find themselves working through a forest of issues, patient care organizations are moving forward. Process flow is a great example of where they're concentrating efforts, says Calkins. She gave an example: "One of our healthcare provider clients had Vendor A as its EHR in its hospital and specialty medical clinic, Vendor B in its primary care clinic, and Vendor C in its urgent care clinic. When we normalized the data for them, it didn't matter which venue a set of data points came from; all the data was made equal. So, if I'm the patient, and I've accessed care in all four locations, the leaders of the provider organization and the care teams know that and can see the relevant data that relates to my care. That's at the core of normalizing data."

Source: "The Landscape of Data & Analytics in Healthcare"
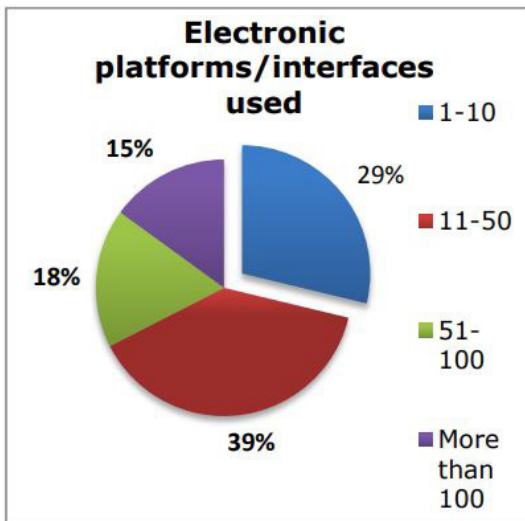
But, Calkins added, "The struggle is that many EHRs do not have full access to all the data coming into different points in a network. For example, most can access a copy of an MRI report from the specialty clinic, but they may not be able to merge that report into the hospital system's core EHR. And then they may not be able to marry that data with claims data coming into the network or organization."

She says we need to get to a state where a system or systems are able to normalize regardless of source. "Some call this interoperability," she said, "but I think of it at a patient level. That's where we'll be able to do better predictive analytics. This is one of the many things we strive to do with Conduent's Midas Health Analytics Solutions."

Interoperability, performance improvement, and core business objectives

All of these different elements are connected to hospital and health system objectives and planning. Evidence continues to mount that senior healthcare IT leaders are aware of the IT- and data-related obstacles related to key business objectives. The HIMSS Leadership and Workforce Survey found this year that much of the striving for interoperability by hospitals and health system CIOs is strongly connected to work towards core business objectives.

This year's survey found that, while the top two information and technology priorities cited by CIOs were "patient safety" and "privacy, security and cybersecurity," the next several could readily be linked to operational performance improvement: data analytics and clinical and business intelligence; improving quality outcomes through health IT; compliance, risk management and program integrity; and EHRs. Data analytics and clinical and business intelligence moved up dramatically in the 2018 survey, from ninth place in 2018 to fourth place this year, out of 25 possible priorities from which to choose.

"What we're hearing right now is two core things," Calkins said. "We're hearing from many larger, progressive organizations — usually willing to take on more risk in value-based contracts — that they have to behave more like businesses. That isn't new, but it is a little bit new to healthcare. Though the patient is always first, they are a business. They have to be pretty aggressive in taking the data they have and making good decisions from it, not just taking it to say what it's showing. So, the data questions are more focused now."

She noted that she's seeing corporate healthcare leaders wanting to obtain more operational insight. "There's a business focus," she said. "Where do we need to go in order to improve operations and the bottom line? They're more business-focused than ever."

Aspirations around the cloud

Cloud computing, long a staple in many industries, has faced a slower uptake in U.S. healthcare, for a number of reasons, including the fragmentation of health information systems previously discussed. Concerns over data security are also barriers to broader adoption of cloud strategies, especially given that patient care organizations in the U.S. have been notably behind business organizations in other industries in data security and cybersecurity. But healthcare industry experts and observers are emphasizing the need to embrace the cloud going forward.

A recent poll[3] reflected the challenges but also the emergence of cloud as a priority. Hospital information executives cited cloud hosting as one of their organizations' top priorities. Yet, the transition to the cloud is happening slowly as many CIOs continue to have concerns about compliance as well as data security and privacy.

Where in your priority list does cloud hosting for your existing applications stand?
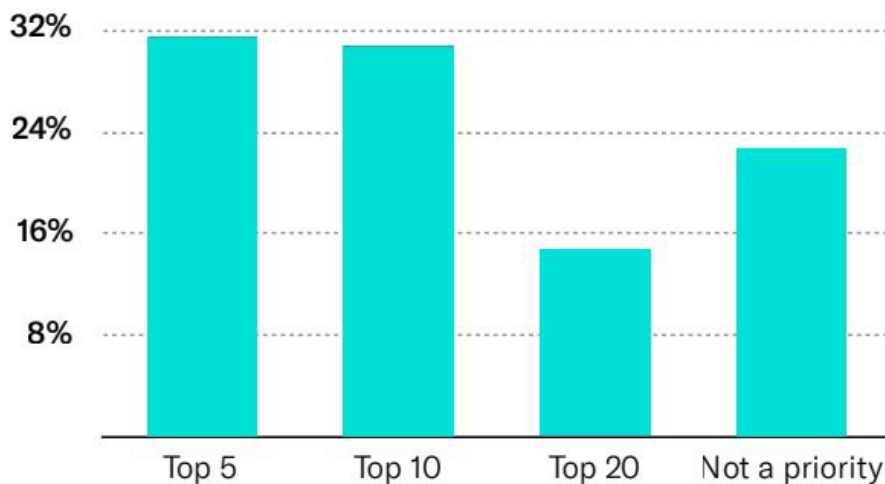
Source: "Healthcare Cloud Take-off: Waiting for the Fog to Clear"

About 55% of respondents reported that they do not host their primary electronic health record (EHR) system outside of their data center; about 35% said they are using the EHR vendor's hosted offering and about 10% are using a third-party hosting solution. And even though new tools and changes in the regulatory environment have made cloud a safe option for storing sensitive information, including Protected Health Information (PHI), the survey found that the majority of survey respondents do not have a strategy for moving their data centers to the cloud.

CONDUENT

healthcare
informatics
CUSTOM MEDIA

Nevertheless, Calkins says cloud computing is going to be a core component of what she calls "data humanization — the ability to humanize data, to make healthcare choices and decisions more proactive."

She sees this inevitability because of the unrelenting push toward real-time availability of data, and toward access at every point in the continuum of care and in operations. The technologies that are helping this include cloud computing platforms, mobile applications and other solutions.

The leaders of patient care organizations are being called to implement data security systems and processes at far higher levels than have existed in the past — to secure their cloud platforms and to be able to successfully leverage the many possibilities that the cloud presents. Underpinning this will also be new data and IT governance and project prioritization processes.

The future is calling

Imperatives around efficiency and cost-effectiveness will drive cloud computing to become the standard in healthcare operations. Scalability is one of its many advantages — eliminating the need for constant expansion and upgrading of servers and data centers. Another advantage is its reasonable cost, combined with the lifetime cost and maintenance advantages of cloud versus hard assets.

There was a time when the idea among most healthcare IT leaders was that a hospital or health system should steadily invest in hard assets over time. But things are moving so quickly now in this digital age, the old IT capital expenditure standards no longer make sense. It's time for the IT leaders in patient care organizations to move forward — into the cloud and into the interoperability that will make the normalization — and the humanization — of data truly possible.

CONDUENT

healthcare informatics
CUSTOM MEDIA

Additional Sources

[1]"The Landscape of Data & Analytics in Healthcare: Results from 2014 National Survey of CIOs"

[2]"IT Innovation Efforts at Hospitals and Health Systems – A Survey of CIOs"

[3]"Datica Reveals Findings from Hospital CIO Cloud Perspectives Survey"

CONDUENT

healthcare informatics
CUSTOM MEDIA