



# TECHNOLOGY'S CURE FOR MANAGING HEALTHCARE RISK

Improving patient outcomes and lowering costs will take the right blend of human intervention and technological prowess.

## TAKEAWAYS

- 1** Data analytics can help providers as they navigate changes in the way healthcare is bought and sold
- 2** To improve care and avoid penalties, providers will need to drastically improve their ability to acquire and analyze data
- 3** As healthcare providers transform, involving all parts of the organization is critical

In the shift to value-based care, advanced data analytics is the new competitive advantage.

Though the government may have trouble settling on the best healthcare policy, everyone agrees on one thing: The system needs to change.

The U.S. is well on its way to a value-based model that rewards providers when patient outcomes improve—and penalizes them when they don't. It's a welcome change that should lower costs and improve efficiency, but shifting this trillion-dollar industry will take a combination of human ingenuity and technological prowess, especially from the providers that deliver care.

"Right now, physicians are incentivized to perform services whether they're right or wrong, whether they're needed or not, and whether they're delivered well or poorly," said Dr. David Wennberg, data scientist at Quartet Health and adjunct associate professor at The Dartmouth Institute. "That's a flawed model."

Policymakers, payers, and providers are all doing their best to fix it. Medicaid directors from 20 states instituted value-based models in 2016, according to a survey of Medicaid directors<sup>1</sup>. In 2015, the Department of Health and Human Services (HHS) set a goal of converting 50 percent of fee-for-service Medicare payments to value-based payment models by the end of 2018, and many private insurers are jumping on board<sup>2</sup>.

To improve patient care and avoid costly penalties, providers will need to track a host of metrics, from readmission rates to hospital-acquired infections and emergencies. For many, this means drastically improving their ability to acquire and analyze data.

"Having analytics that can tell you, 'What are the most efficient paths for patients?' 'When are patients falling off track?' 'How do we interact with patients and know when things are going wrong or right?' That's all the domain of this complex analytics world," said Jennifer Esposito, Intel's general manager for worldwide health and life sciences.

The first step for many providers is having the systems to understand what's happening today by analyzing data from multiple sources. Advanced analytics systems can give healthcare organizations insights they wouldn't otherwise be able to get about patient populations, what's working, and what's not.

<sup>1</sup>[http://medicaiddirectors.org/wp-content/uploads/2016/12/NAMD\\_OpsSurveyReport\\_FINAL.pdf](http://medicaiddirectors.org/wp-content/uploads/2016/12/NAMD_OpsSurveyReport_FINAL.pdf)

<sup>2</sup><https://www.cms.gov/Newsroom/MediaReleaseDatabase/Fact-sheets/2015-Fact-sheets-items/2015-01-26-3.html>

**“RIGHT NOW,  
PHYSICIANS ARE  
INCENTIVIZED TO  
PERFORM SERVICES  
WHETHER THEY’RE  
RIGHT OR WRONG,  
WHETHER THEY’RE  
NEEDED OR NOT,  
AND WHETHER  
THEY’RE DELIVERED  
WELL OR POORLY.”**

—Dr. David Wennberg  
Data Scientist at Quartet  
Health and Adjunct Associate  
Professor at the  
Dartmouth Institute

“It just doesn’t scale to have humans monitoring all that stuff all the time,” said Esposito. Pulling all that data from disparate sources, and making sense of it, requires sophisticated systems that can work much more quickly and efficiently than any human.

The next step is analytics that can anticipate problems and help solve them before they happen. Powerful analytics programs can take historical data and recommend the best course of treatments, predict which patients are likely to need closer follow-ups after being released, and give other potentially lifesaving insights to keep patients well instead of waiting until they get sick.

“Healthcare is starting to get beyond traditional transactional decision-making, and move toward real-time, predictive, interventional decision-making at the point of care,” said Brett MacLaren, vice president of enterprise analytics at Sharp HealthCare, a large health system in San Diego. “We’re beginning to use analytics not just to understand what happened in the past and make operational decisions but to predict the future and intervene in real time to influence the clinical outcome.”

At Sharp HealthCare, MacLaren oversaw a proof-of-concept study using technologies from Intel and Cloudera to predict patients at risk of needing an intervention from the rapid response team within the next hour. The project was 80 percent accurate<sup>3</sup>, even with limited data, highlighting the potential of predictive analytics to help hospitals improve the quality and cost of patient care.

Montefiore Medical Center in New York is developing a predictive analytics pilot program that flags patients at risk of death or in need of intubation within 48 hours<sup>4</sup>. Other programs could help hospitals predict whether discharged patients are likely to suffer from heart failure so high-risk patients can be automatically enrolled in a follow-up program that keeps a closer watch.

“If you can improve your quality metrics as a provider—let’s say, by predicting which patients are going to be readmitted in the next 30 days to drive down those numbers—you can have real impact not just on patient care but also from a financial perspective,” said Esposito.

One large hospital group uses Intel and Cloudera technologies to identify patients with a high risk of readmission and give them extra care. With this solution, the hospital group prevents 6,000 readmissions, avoids \$4 million in potential penalties, and saves \$72 million in medical service costs<sup>5</sup>.

Analytics can also answer many of the nuts-and-bolts questions critical in the economic shift. For instance, said Bob Rogers, Intel’s chief data scientist for analytics and AI solutions, “Can I capture what was done so that I can be paid more effectively for what I did? Can I make sure that a patient isn’t missing appointments, or that the right follow-up is being given?”

A truly proactive medical system doesn’t stop inside the walls, and the right analytics system shouldn’t, either.

<sup>3</sup>\*80 percent accuracy indicates the level of accuracy observed when scoring a set of test data that was not used in the development of the model

<sup>4</sup><http://www.healthcarediver.com/news/montefiore-launches-predictive-analytics-program-for-crisis-patients/420181/>

<sup>5</sup><http://www.healthcareitnews.com/sponsored-content/predictive-analytics-used-help-large-hospital-group-reduce-re-admission-rates>

**“HEALTHCARE IS STARTING TO GET BEYOND TRADITIONAL TRANSACTIONAL DECISION-MAKING, AND MOVE TOWARD REAL-TIME, PREDICTIVE, INTERVENTIONAL DECISION-MAKING AT THE POINT OF CARE.”**

—Brett MacLaren  
Vice President of Enterprise  
Analytics at Sharp HealthCare

“While you have to be concerned about the patients who are coming through the door, you need to be equally concerned about those who didn’t,” said Wennberg. “We need to move away from episodic care. A sick patient who a physician sees may be indicative of many more patients who are equally sick [but] who aren’t receiving care. Good analytics will identify those people and help us get them care.”

To get people focused on accountable care, said Wennberg, providers have to deal with possible negative consequences if they don’t meet certain benchmarks. And to track those benchmarks, payer organizations will need their own systems to evaluate who’s doing well and who’s not.

Medicare penalties assessed on hospitals for readmissions are expected to increase to \$528 million in 2017, \$108 million more than in 2016<sup>6</sup>.

“You have to know who you’re accountable for and to,” said Wennberg. “That means you need excellent analytics on the characteristics of the population you’re serving, of course—but it also means you need comparable analytics for providers. Variability in provider efficiency and quality of care is a serious issue.”

There is at least one bright side so far: The technological backbone already exists in many organizations, thanks to previous government stimulus spurred by the Great Recession.

“The American Reinvestment and Recovery Act provided huge incentives for physicians to institute electronic record systems,” said Jonathan Kolstad, assistant professor at the University of California, Berkeley, Haas School of Business. “That’s essential for value-based care. The investment was gigantic, so providers are now working off a superb IT chassis.”

But it will take a village to change the entrenched human habits, and involving all parts of the healthcare team—including administrators and office staff—is critical.

“[To institute a successful value-based model], you have to get everyone on the primary care team involved, from the person who registers you when you come in, to the office manager, the nurses, all the way to the physician,” said Wennberg. “You give them a global budget: Here’s what you get for this year to manage your practice and care for your patients. And then you hold that team accountable, with each person responsible for his or her specific area.”

It’s a radical mindset shift for most people in the industry, but it’s beginning to take hold. The same goes for the technology underpinning the shift.

“Analytics tools are improving at an unbelievably fast pace,” said Sharp’s MacLaren. “Part of our job now is to evaluate and redesign our infrastructure so we can be ready to use these tools—to provide more proactive care and create a data-driven healthcare enterprise.”



<sup>6</sup> <http://kff.org/medicare/issue-brief/aiming-for-fewer-hospital-u-turns-the-medicare-hospital-readmission-reduction-program/>

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