

# Healthcare Data Analytics:

## LEVERAGE ASSETS NOW TO PREPARE FOR WHAT'S NEXT

By David Devine

The North American [healthcare analytics market](#) is forecast to reach \$11.4 billion by 2023, up from \$3.13 billion in 2018.

Despite these bold projections, in the provider setting, big data analytics still lags behind other industry segments – such as the medical device and payer markets – where machine learning and artificial intelligence (AI) technologies are having a dramatic impact.

Healthcare systems are catching up while simultaneously looking to the future of data to improve clinical outcomes, keep people healthy and lower costs. Whether organizations are harnessing basic patient data and analytics to make real-time care decisions or developing more transformative strategies that include entire patient populations, leaders need to understand how to leverage their data now and in the near future.

## Big Data at Work

The healthcare industry is at a point where core, foundational technology for the end user is almost fully digitized and automated. Structured data captured in data warehouse-centric models and electronic health records (EHRs) provides information that can be executed on in real time to improve patient care.

Reducing the prevalence of hospital-acquired conditions (HACs) continues to be an output of new

technology and tools combining with data and analytics. Early [warning systems for sepsis](#) that utilize continually updated EHR data, and subsequent treatment protocols, are helping organizations successfully lower sepsis rates nationwide. Algorithms for fall risk management, catheter-associated urinary tract infection (CAUTI) prevention and diabetes management are now commonplace.

Avoiding costly and preventable readmissions is one area where healthcare has seen the valuable application of data and machine learning. Conservative estimates put the [cost of readmissions](#) at more than \$41 billion annually for hospitals, and 30-day readmissions continue to be a quality measure for healthcare organizations. At the University of Maryland Medical System, a [risk-score model](#) driven by machine learning is analyzing 382 variables pulled from the EHR and other patient outcomes data to predict readmissions. [Allina Health](#) used predictive analytics to drop readmissions by 10.3%, and [Ascension Health](#) has relied on big data coupled with an enhanced focus on patient engagement to reduce its readmission rates.

Healthcare information technology and data analytics are also helping solve the U.S. opioid epidemic. Tools that monitor e-prescribing practices, EHR integration with state prescription drug monitoring programs and other best practices in opioid stewardship all rely on data. In 2019, the [FDA announced plans](#) to invest \$20 million in data analytics capabilities to identify trends that will help the agency combat abuse.

Every major EHR platform has deployed toolkits capable of assisting with data-led prediction and prevention, and organizations of all sizes should be using those tools now to better understand their patient populations and improve care.

When considering the evolution of evidence-based best practices, big data will continue to influence how providers standardize and personalize care. On-demand analytics allow for real-time modification of workflows, care delivery, documentation and staffing. This predictive approach is driving the creation of a more consumer-centric health system.

## Advancing Data Strategies

The next level of data and analytics in healthcare goes beyond making decisions about patients at the time of care to a deeper analysis of population-based data to identify trends. To do so, organizations must consider how to move beyond traditional data sets such as databases and the EHR and into analysis of less structured data. Building insights from this type of data is where machine learning and AI become essential.

### Data Lakes, Less Structured Data and More Strategy

A data lake describes the central storing of both structured and less structured or raw data that have inconsistent or less predictable formats. That information might come from the growing scope of health data such as encounter data, genomic data, outcomes data, biometric data, consumer data and social data.

Big data and analytics become truly transformational when organizations can devise strategies and architectures that pull together and analyze disparate sources of data in a meaningful way. To evolve, healthcare organizations must support data analysis beyond the patient continuum to that of the entire consumer continuum.

With this type of global perspective, organizations can get into analysis that includes valuable information such as predicting healthcare costs and addressing social determinants of health.

### Adding Value Without Adding Work

Bringing in [new technology and capabilities](#) that promise to vastly improve clinical outcomes and patient care is not enough. The real challenge leaders face is introducing new systems that avoid contributing to physician and staff frustration and workload. Systems must provide value to providers and patients while maintaining the appearance of simplicity and efficiency for the user. For example, in the HIMSS EMR Adoption Models, this would be the final stage (Stage 7) characterized by systemwide adoption of data visualization and enabling of self-service analytics.

At [Phoenix Children's Hospital](#), their data management strategy is amassing data from dozens of systems and facilities to manage medications, predict risk and generate safety dashboards. Their strategy has three criteria, the first of which is to advance data usage while increasing efficiency for providers. Mass General Hospital and Brigham and Women's Center for Clinical Data Science recently [announced plans](#) to make AI a standard capability for use by its doctors.

With the ever-growing amount of data available, the healthcare industry will continue to move down a path where processes, care and outcomes are informed by the predictive power of data analytics. As this potential continues to unfurl, healthcare organizations should be deploying practical uses of big data now while considering how to advance their data strategies in ways that transform every aspect of the health system.

## Key Takeaways

To advance their data analytics strategies, health system leaders should:

### Think differently.

Continually evaluate whether health data is being applied to improve clinical outcomes.

### Plan differently.

Inventory sources of unstructured data that can advance the use of big data analytics beyond single episodes of care.

### Act differently.

Create data asset strategies that foster adoption across the enterprise by keeping the end users — consumers, physicians and staff — at the forefront.



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