UNLOCKING HEALTHCARE BIG DATA TO CREATE TIMELY VALUE

Big data can transform the healthcare industry by tracking encounters over time and establishing benchmarks

In today's healthcare industry, unprecedented opportunities exist for companies to trim costs, unlock value, improve performance and enhance care by using big data. These large data sets, when analyzed correctly, are invaluable in transforming the U.S. healthcare system.

"There are billions of events that are being recorded in some way and aggregated. It's really an exciting time to be in healthcare because there are new opportunities every day that are unrecognized, and big data has the potential to capture them," says Dr. William Kirsh, Chief Medical Officer at Sentry Data Systems Inc., a healthcare business intelligence and technology solutions company based in Deerfield Beach, Fla.

Kirsh says big data can help transform healthcare on the business and administrative sides and in clinical application. The real advantages of using big data in today's marketplace, he says, are on the business side, because this is where hospitals, ambulatory care centers and ancillary providers can pinpoint their cost structure.

"It's critical to use big data on the business side," Kirsh says. "This will be the key aspect: to acquire and utilize data, convert it into actionable information and then attach it to a method in which value can be unlocked. The industry needs a way for hospitals to look at their cost structures to see what value they produce. Big data can help them do that."

However, one roadblock that the industry has faced is highly fragmented data. Information in the healthcare industry is widely dispersed among a variety of interested parties: pharmaceutical companies, clinicians, patients, insurance companies and even stakeholders outside the healthcare industry.

Comprehensive data, all in one place

Recognizing the need for amalgamated information, Sentry Data Systems has amassed big data in the healthcare industry with its data-driven system. This database, which is constantly updated, contains over 40 million records with valuable longitudinal information on medication usage, procedures, outcomes, supply costs, third-party reimbursements and treatment protocols—all accessible through a secure Web browser. The company has two data centers in different cities to ensure that sensitive information is stored and conveyed safely to comply with rigorous federal standards to protect confidential data, and all systems are monitored around the clock.

By breaking down silos among interested parties and encouraging data sharing between research centers, medical offices, pharmaceutical companies and insurance firms, companies can unlock value and benchmark results more accurately.

"Through industry experience and technological expertise, Sentry has built a longitudinal health information database using normally disparate data—such as internal hospital dispensation of medications—aggregating and benchmarking procedures, medical devices and services by specific charge master codes, and the use of specific interventions and treatments," says Kirsh. "The platform is applicable and accessible to both nonprofit and for-profit healthcare organizations."

The opportunities to use the information in Sentry's database are endless. For example, a pharmaceutical company might use the data to expedite a clinical trial, target

providers with a specific treatment pattern or note alternative uses for a medication currently being studied—or completely withdraw the medication from the market. Additionally, by having immediate access to data on how populations have responded to a drug or treatment protocol, physicians, researchers and hospital administrators can use big data to provide the correct care more quickly at a cost-effective rate, and monitor outcomes and performance to attract third-party payors. A pharmacy administrator can use such data to manage medication inventory—potentially controlling their costs—and hospital systems can use the database to understand their internal cost structure and monitor their pharmacy's materials and device procurement costs, which, on average, account for about 30 percent of hospitals' expenses.

Another way to look at the opportunities created by big data is to document, trend, compare and benchmark how certain medications, medical devices, procedure trays and implantables are used by physicians. By documenting these costs and aggregating the information into charge master codes and revenue codes against internal and external financial benchmarks, a hospital can see whether or not the costs add value. This analysis can improve cost-effective care and yield better outcomes that are critical in the evolution of current healthcare delivery models, such as accountable care organizations and medical home models. For example, Kirsh estimates that up to 25 percent of medications are used "off-label" to treat a disease for which the drug was not originally intended. Documenting the efficacy of these types of medications, understanding their procurement costs and linking their use to outcomes of care under a performance-compensated delivery model may translate to a lower cost structure for providers.

A further example of big data usage is in the pharmaceutical industry. "By recording this information we can see how doctors are prescribing off-label medications and what they are being used for," explains Kirsh. "We spend years developing medications, but the reality is that when physicians use them in alternative ways, we don't capture that data. There is opportunity if we can see where things work or don't work. The only way to do that is to look at data over time for patterns."

In the past, without a large database to draw one's attention to a pattern, healthcare stakeholders lacked objective data and relied on predictive modeling and guesswork. But today, big data can be aggregated to see variations over time.

"You can use that data to dig into your cost structure to reduce expenses," Kirsh says. "Providers face constant changes in reimbursement standards, and must base decisions on timely and factual data that encompass their entire network."

As organizations acquire and store more data, they can extrapolate more accurate and detailed information, and expose patterns.

"When you look at big data and aggregate it, over time you'll see variations in one category or another, and then you have a benchmark to compare it to. Theoretically, as you amalgamate the data, you statistically get closer to the truth," Kirsh says.

—Betsy Vereckey