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Providing the best medical care

Crouse Hospital improves patient outcomes with data-driven approach

Taking a data-driven approach to managing quality is expected, but how do you do it without hiring a team of programmers? Crouse Hospital in Syracuse, NY, uses SAS point-and-click health analytics solutions to help it manage multiple quality initiatives that are reducing post-surgical infections, improving the discharge process, and decreasing readmission rates.

Crouse serves patients in a 15-county radius in central upstate New York with 500 beds and room for 57 newborns. The hospital partners with DNV Healthcare to monitor and improve the quality and safety of patient care and is a member of Partnership for Patients, a public-private partnership focused on quality, safety and affordability issues. Crouse has earned numerous accreditations and awards for its quality work.

"Our mission is to provide 'best care.' To do that, you need to be able to measure what you do and the outcomes you achieve. Over time, I have learned that what you pay attention to in an organization is what is important. At Crouse, we believe best care requires attention," says Derrick Suehs, Chief Quality Officer. "Our metrics are part of our conversations every day, which is why we know how quality impacts the bottom line. SAS helps us know the facts about our performance and outcomes. SAS, through its statistical analysis capabilities, gives us the confidence we need to know if our efforts are working."

Going beyond chart audits

When you can show data to the medical staff, we gain a lot of credibility. We can test notions and theories because we have the tools.

Jennifer Watkins
Director of Quality Improvement

"A lot of hospitals are stuck in the quality assurance model of doing chart audits and trying to find the bad apple," explains Jennifer Watkins, Director of Quality Improvement. Some institutions can analyze data, but it is a once-a-year effort, with a program specifically written to look at one issue, or data sent to a consultant for a report.

Crouse wanted to take a broader approach, giving administrators, doctors and nurses a continual view of metrics on everything from post-surgical infections to length of stay. It also wanted to be able to help health care providers dig further into data to make improvements, sometimes using Six Sigma quality performance methods.

"Instead of just being able to do something one time, we're able to provide physicians with feedback monthly or quarterly," Watkins says.

Using data to improve patient outcomes

The hospital uses analytics to easily track quality initiatives and create models to help the most vulnerable patients receive the services they need to stay healthy. It also works with medical providers to create queries to address complex problems, such as why length of stay has crept up in certain units.

One example involves post-surgical infections. Recent studies suggest that one way to reduce post-surgical infections is to find out which patients have staph

colonization before undergoing surgery. After Crouse began screening and treating patients for existing staph colonization prior to hip procedures, post-surgical site infections fell 60 percent. Seeing the results achieved by the orthopedic service has encouraged surgeons in other areas to adapt a similar protocol – and test its effectiveness.

On the ob-gyn floor, administrators noticed the length of stay for deliveries creeping up. The analysts initially expected to find this tied to one or two physician practices, but that wasn't the case. As the ob-gyn chief began distributing the reports, the physicians started asking for different types of data analysis to try and pinpoint the problem. "So we looked at length of stay by gender, thinking perhaps scheduling baby boys for circumcisions was delaying discharge. We concluded that wasn't an issue," says Crouse Quality Improvement Analyst Rachel Carey. Now the analysts are looking at whether they are seeing a higher percentage of pregnant patients with pre-existing conditions that lead to complications.

The hospital also uses analytics to find the right time for pre-operative antibiotic administration. For many procedures, receiving a dose of antibiotic within one hour before surgery is ideal for reducing infections. But as patients moved through various pre-operative phases, it was hard to pinpoint the best time to give the dose. By using analytics, Crouse can track how long it takes during each phase to determine the best point for administering the dose.

Analytics was also used to study patient severity to reduce unplanned readmissions. The analysts studied which factors – such as pre-existing conditions, age and reason for stay – were most highly correlated with a readmission. This information can then be used to develop a predictive model to identify those high-risk patients on admission to help avoid readmissions.

Underpinning all of these efforts is that Crouse can work with all the data – not just samples pulled randomly from charts. This data-driven approach is critical to achieving physician and staff buy-in.

Pulling data together quickly and easily

Data is often located in multiple locations, so the first job for analysts like Rachel Carey and Lyn Johnson is to pull it all together. "We have information that comes from several different databases," explains Watkins. For a Center for Medicare &

Medicaid Services report on complications in colon procedures and NYS Department of Health report on hip procedures, the analysts needed data on how long the patient was in the operating room, the patient's anesthesia complication rating, details about the surgeon, information on whether it was an emergency procedure and several other data points. "We had to combine information from several different databases and run calculations," explains Watkins. "We know other sites are trying to do this by hand, but we were able to use SAS to automate the job."

The hospital also created a database to track clinical quality improvement issues (such as readmission and complaints) by physician. This is not only to help individual physicians improve, but also for accreditation purposes. "It's another project we would not have been able to do without SAS," Johnson says.

Interactive visual reporting and analysis without programming

Johnson used SAS in graduate school and at a previous employer. She was intrigued when she learned that SAS Analytics solutions now include SAS® Enterprise Guide®, a menu-and-wizard-driven tool enabling data analysis and results publishing with no programming required. And to explore these results even further, the hospital also uses SAS® Visual Data Discovery, a point-and-click solution that enhances advanced analytics and exploratory data analysis with interactive data visualization.

"We couldn't do our jobs and go and learn to code," explains Carey, who learned to use SAS Enterprise Guide after one online class. "[SAS] is point-and-click and the results are automatic," says Johnson.

Challenge

Improve quality by decreasing post-operative infections, reducing readmissions and analyzing length of stay.

Solution

SAS® Advanced Analytics

Benefits

- A 60% reduction in post-operative infections in hip surgery patients.

- Improved results in pre-surgery antibiotic timing.

- The ability to identify and intervene when patients are at greater risk of readmission.