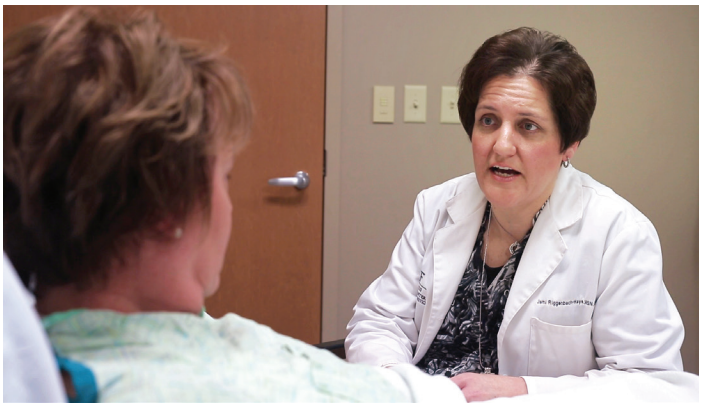
30-Day Readmissions

a Healthcare Analytics Case Study

THE OPPORTUNITY

In an effort to reduce hospital readmissions for OSF HealthCare, the Healthcare Analytics team developed a nursing assessment-based navigator inside Epic that requires nurses to assess patients on multiple criteria. The idea was to identify key areas of potential patient need as a way of focusing improvement efforts. However, the approach was found to take a significant amount of nurse time over the course of an inpatient stay, resulting in more than $3 million in salary and benefits in nursing time each year to assess patient risk. It also produced a large volume of inefficient downstream work through false-positive generation.



THE SOLUTION

Healthcare Analytics built a 30 Day Readmission Risk Model that helps clinicians identify patients most at risk for readmissions, driving work processes and helping better align patients with existing interventions such as case management.

THE IMPACT

Over the course of a year, this resulted in more than 400 fewer readmissions than expected in our medium-high and high-risk patients. The team also found it was able to reduce about 67 percent of nursing assessment activities and decrease the flow into case management by about 44 percent. These staff time reductions translate to a little more than $2 million per year that we can put back into direct patient care.

HEALTHCARE ANALYTICS

OSF Healthcare Analytics provides an enterprise view of key clinical, financial, operational information and analytics to support a culture of data-driven decision making.

OSF INNOVATION

Launched in 2016, OSF Innovation is the overall umbrella initiative for the planning, structure, goals and services OSF HealthCare uses to innovate for the improvement and transformation of health care.

To learn more, visit

osfinnovation.org/CaseStudies

OSF® HEALTHCARE

In an effort to reduce hospital readmissions, OSF Healthcare implemented a BOOST-based navigator inside of EPIC. This required nurses to assess patients on multiple criteria in an effort to identify which are at the highest risk of readmission. However, the approach was found to take a significant amount of nurse time over the course of an inpatient stay, resulting in more than $3 million in salary and benefits in nursing time each year to assess patient risk. It also produced a large volume of inefficient downstream work through false-positive generation, meaning up to 85 percent of all in-patients were getting referred into case management even though they didn't all warrant it.

BUILDING THE MODEL

The Healthcare Analytics team came up with a more efficient way to proactively identify patients in need of risk mitigation. The group explored hundreds of variables and their interactions, but ultimately built a predictive model that includes around 50 variables and automatically identifies at-risk patients in four levels.

Low risk: About 55 percent of discharges, with a readmission rate of about 4 percent
Medium-low risk: About 22 percent of discharges, with a readmission rate of about 11 percent
Medium-high risk: About 16 percent of discharges, with a readmission rate of about 18 percent
High risk: About 7 percent of discharges, with a readmission rate of about 30 percent

The model was initially implemented in our Enterprise Data Warehouse (EDW) and its output shared with clinicians via a daily report. The report grouped patients by unit and risk level and then sorted by probability to readmit, but was delivered outside of the clinicians' normal EPIC workflows. As the utility and effectiveness of the model was proven, Healthcare Analytics partnered with Information Technology to develop a communication pathway between the EDW and EPIC via a process called DataLink. This allowed the model's output to be incorporated directly into clinicians' daily workflows, reducing a potential barrier to use.

RESULTS

Over the course of a year, this resulted in about 425 fewer readmissions than expected in our medium-high and high-risk patients. The team also found it was able to reduce about 67 percent of nursing assessment activities and decrease the flow into case management by about 44 percent. These staff time reductions translate to a little more than $2 million per year that we can put back into direct patient care.

The model has been in active use for more than three years. While it started as a way to help direct case management activities inside the hospital, the use of the model has expanded to provide work direction assistance to: inpatient case management, ambulatory care management, follow-up phone calls, outpatient palliative care and homecare reporting/monitoring.

Overall, the unadjusted readmission rate has remained steady, but we did see a change in the distribution of our population with an increase in medium-high patients and a decrease in those within our low risk category. Patients categorized in the Medium High and High levels are showing significant differences.

This data suggests targeting these activities is having an impact.