The Next Big Challenge

Blessing Hospital in Quincy, Ill., is a 340-bed teaching hospital with a medical staff of some 250 physicians and more than 2,000 employees. It is part of the two-hospital Blessing Health System, which has a physician group and a four-year nursing education program. Quincy, a city of 41,000, is on the Mississippi River, and is the economic hub of west-central Illinois. Blessing is the major health care provider for a 100-square-mile area with more than 350,000 residents.

Challenge

Blessing Hospital has long been a leader in using data to drive operational and clinical improvement. In 2005 it went live with an electronic health record. Later it developed an in-house advanced clinical decision support tool to identify variability in clinical care processes. Where there was proof of efficacy, it promoted best practices across the organization. Using Lean Six Sigma tools, leaders continually seek efficiencies in care delivery.

The results have been significant: Over a two-year period the hospital nearly halved its mortality rate, decreased length of stay by 9% and reduced the variable costs per case by 4%.

By early 2010, however, hospital leaders were looking for the next level of improvement. "In light of health reform, we knew we needed to look at what are some of those other pieces we need to create an excellent organization," says Maureen Kahn, RN, the hospital's CEO. "We realized we had opportunities for improvement in customer satisfaction and our patient flow processes."

Two years ago, the hospital faced several capacity challenges. It needed to improve operating room capacity in its surgical area without adding new rooms or staff. Its emergency department was admitting 85% of patients to inpatient floors, resulting in frequent backups as patients awaited rooms and transport.

Solutions

The hospital adopted Press Ganey's PatientFlow Optimizer™ solution. The patient flow team, led by Christina Dempsey, MBA, RN, senior vice president for clinical and operational consulting and Sandra Myerson, RN, MBA, MS, managing consultant, met with hospital leaders and Blessing's Performance Improvement Project Management Team (PIPMT), suggesting a number of potential interventions. The wide-ranging nature of Blessing's challenges necessitated the implementation of an enterprise-wide approach to improving patient flow and operations, focused on those areas of the hospital with the greatest impact on overall hospital census, cost and revenue: the operating room, emergency department, cardiac catheterization lab and inpatient areas.

Press Ganey and the PIPMT sought improved patient placement, resulting in decreased lengths of stay and complications; increased surgical volume during prime time and a reduction in overtime hours; improvements in the accuracy of surgical scheduling; improved patient, physician and staff satisfaction; and improved admission and discharge efficiency.

"Previously, when we looked at patient flow, it was only looking at flow out of the ED. Talking to the people at Press Ganey, we realized we had other opportunities as well in surgical services and the cath lab," says Jill Mason, MS, RN, Blessing's chief nursing officer.
The OR process unfolded in three phases. The first involved separating the flow of scheduled and unscheduled (add-on) surgical cases. The separate capacity for add-on cases eliminated competition between the two types of flows; by separating flows, elective cases could be scheduled back to back, increasing utilization in the elective ORs. The process really is about smoothing out avoidable variability in patient flow, with cascading effect in the ED, OR, intensive care unit and cath lab.

Press Ganey also utilized queuing theory, a mathematical tool that has been used in the industry for decades to help manage random arrivals. It works to help calculate the capacity needed to handle randomly arriving emergent and urgent cases.

Also, a system was developed to consistently review urgent/emergent cases to ensure clinically appropriate case prioritization.

Phase 2 was about smoothing the flow of elective case volume and improving operational efficiency, focusing on improving on-time starts in the OR, improving day-of-surgery patient preparation, assuring accurate case scheduling by matching actual and scheduled case duration, and revising the block schedule using surgeon and service utilization patterns. Working with the hospital- and physician-led OR committee, simulation modeling was used for patient placement, assuring data-driven decision-making.

Performance and Outcomes

“When you are working with high-performing teams, accurate information can create a compelling story for change,” Kahn says. “What becomes challenging is when that change impacts my life, and for a physician that’s especially challenging. They book their offices out months in advance. Understanding that, we added a considerable period of lead-up time to our new block schedule. I think that showed physicians that we understood their needs, which helped with adoption.”

Part of the final phase of the OR work involved teaching Blessing staff to use the queuing and simulation models for sustainability. Anytime that urgent/emergent volume changes, a queuing analyses should be performed prior to any block schedule revision in either the OR or the cath lab.

“I think that was one of the real advantages of this engagement,” Kahn says. “As the story goes, ‘If you feed a man a fish, you feed him for a day. If you teach a man to fish, you feed him for a lifetime.’ As we add surgeons to the organization, we have an ability to use the queuing theory to analyze what that will do to our surgery schedule and what we need to do in response.”

“Blessing is fortunate to have superior data analytic capability and project management skills in-house, which means the patient flow improvements are really sustainable,” Dempsey says. “The Performance Improvement Project Management Team is one of the very best we have worked with.”
Meanwhile, in the cardiac catheterization lab, the patient flow process focused on the challenges of start-time delays and gaps in the day that caused overtime. Concerns were voiced that the noninvasive lab and cath lab competed for cardiologists’ time, leading to inefficiencies as well as staff and physician frustration. The majority of patient volume in the labs is nonelective urgent, making scheduling unpredictable.

“I think this was one of the most challenging pieces in the project,” says Lance Privett, Blessing’s Master Black Belt in process improvement. “The cath lab did not have any scheduling rules and really managed by fire. It was completely dependent on the people, and since we have very good staff and cardiologists, they were able to get by. We used the queuing analysis to size the blocks, but it took many months before they finally agreed to try it, and even then it was only a pilot. After the pilot, we asked what they thought and received zero negative comments by staff or cardiologists, so we were able to move ahead.”

The ED: Complex Challenges
In the ED, Press Ganey’s Myerson and the Blessing team confronted a range of process issues. The triage of ambulatory patients delayed patient placement into open treatment rooms and assessment of patients upon arrival. Patients waiting in the lobby were not regularly reassessed. And ED charge nurses were often unable to facilitate patient flow because of staffing shortages, requiring them to take a patient assignment.

The Blessing ED is a Level II trauma center and accredited chest pain center, treating nearly 55,000 patients annually. It has a main ED with 20 beds and an urgent care pod with eight beds, with the ability to expand to 12 beds.

ED tracking board and medical records data were collected for the period December 2010 to March 2011; the data were initially used to establish baseline operational and performance metrics, including patient arrival rates by hour of day, patient acuity distribution, average ED length of stay by hour of day, distribution of ED patients by location and key ED cycle times.

Press Ganey’s initial analysis revealed a lower-than-expected percentage of Emergency Severity Index (ESI) Level II patients (those requiring immediate medical attention). ED nurses made differing calls when assigning high-risk behavioral health patients an ESI level and some nurses assigned acuity level after the patient was medically stabilized. ED nursing leadership shared this information with nurses, discussed how ESI levels data would be used to assess department functions and provided training, so that future acuity data would be more reliable.

Two of the main recommended improvements in the ED were implementing “quick triage” – with direct bedding to treatment rooms when ED beds are available – and a rapid diagnostic area to reduce ED throughput time for nonurgent patients.

Patient satisfaction scores for “time to treatment area” and “time to physician” improved following the implementation of quick triage and direct bedding. Analysis of ED cycle time data following implementation of the rapid diagnostic area revealed a nearly 50% reduction in ED throughput time compared to baseline data for urgent care patients.

“In regard to the rapid diagnostic area, we are still working on that to make it function as it should,” Privett says. “If you use the techniques and processes Press Ganey presented to us, it really does cut the visit time in half. It was really worthwhile for those who can get a prescription or shot and go. Expanding our use of the methodology, we may reassess the way we use the room.”

Improved Satisfaction
Patients’ Rating of Arrival at Blessing’s ED on the Rise

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>n = 93</td>
<td>n = 123</td>
<td>n = 132</td>
<td>n = 122</td>
<td>n = 113</td>
<td>n = 135</td>
<td>n = 147</td>
<td>n = 152</td>
<td>n = 134</td>
<td>n = 110</td>
<td>n = 133</td>
<td>n = 163</td>
</tr>
<tr>
<td>Mean</td>
<td>77.2</td>
<td>78.8</td>
<td>79.9</td>
<td>76.8</td>
<td>80.0</td>
<td>77.5</td>
<td>82.5</td>
<td>81.3</td>
<td>83.5</td>
<td>79.9</td>
<td>83.7</td>
<td>86.1</td>
</tr>
<tr>
<td>Mean</td>
<td>86.1</td>
<td>85.3</td>
<td>84.6</td>
<td>82.5</td>
<td>80.0</td>
<td>77.5</td>
<td>82.5</td>
<td>81.3</td>
<td>83.5</td>
<td>79.9</td>
<td>83.7</td>
<td>86.1</td>
</tr>
</tbody>
</table>

n = number of respondents
A key benefit of the ED improvements, Kahn says, is that the hospital should be well-positioned to succeed on a new national hospital quality indicator taking effect this year: median time from admit decision to time of departure from the ED for ED patients admitted to inpatient status. “I think on a number of outcomes measures we are going to have an advantage,” she adds.

Impact on New Inpatient Capacity

The patient flow simulation model was employed in designing the new inpatient tower. Information regarding appropriate unit size, number of observation beds and length of stay may help maximize use of the new facility, which has received a certificate of need from the state of Illinois. The model allowed Blessing to design and run a number of size and configuration scenarios, analyzing the impact to preferred placement and census levels with the implementation of each scenario.

As a result of using the simulation model and Lean analysis, the hospital was able to reduce the projected size of the tower from six to four stories. The hospital had intended that the new facility would be all private rooms, but the analysis of projected capacity allowed it to design for 85% private rooms. Most days of the year all patients will have private rooms, with the rest being surge capacity. “By taking this approach we have saved millions of dollars off of this tower project and at the same time we are addressing the rest of the problems of the organization in a much more cost-effective way,” Kahn says.

As everyone involved in the project notes, the project remains a work in progress. “These were big changes that they rolled out, and they got big results, but process improvement is not something you do once and forget it,” Dempsey says. “It’s an ongoing process requiring data and collaboration for the long term.”