Unclogging the ED by Fixing the OR

WellStar Kennestone Hospital smooths out elective surgeries to ease patient flow throughout the facility

Vital Statistics
The emergency department at WellStar Kennestone Hospital in Marietta, Ga., a 572-bed facility in suburban Atlanta, averages 103,000 visits each year, impressive numbers given that it is not a trauma center. The general medical-surgical hospital had 34,346 inpatient admissions last year. Its physicians performed 9,590 inpatient and 12,706 outpatient surgeries.

The Bottom Line
Faced with backups in its emergency department in 2007, WellStar Kennestone Hospital found that the issue was not a surge in ED volume, but an inability to get patients being admitted through the ED to inpatient units and competition in the operating suite between emergency cases and scheduled surgeries.

The hospital turned to Press Ganey’s PatientFlow Optimizer©, which uses a variety of solutions – including the same queuing theory used to solve long waiting times in restaurants – to reduce variability in scheduled surgeries for operating rooms.

The new queuing method allowed urgent surgical cases admitted from the ED to move directly into designated emergent/urgent ORs. The result? Wait times for patients requiring surgery within four hours dropped by 78%, and there was an average wait time decrease of 21% for urgent surgical patients across the board, which meant fewer patients in the ED. The mean score for overall satisfaction with the ED experience rose from 78.2 before the first phase of the project to 80.9 after implementation. Elective surgery volumes increased by 10% in one year. WellStar Kennestone is able to see more patients in the same amount of time because it no longer has to worry about bumping scheduled surgeries for urgent cases. In only eight months, waiting times for urgent cases in the cardiac catheterization lab decreased 75% from an average of 25 hours to just six.

The Back Story
On March 15, 2007, WellStar Kennestone Hospital experienced an unprecedented logjam in its ED. The backup was traced not to a surge in volume but to an inability to get patients being admitted through the ED to inpatient units and to competition in the operating suite between emergency cases and scheduled surgeries. As a result, ED beds began to fill up, patients waited an average of nearly 19 hours to be admitted, a record 50 ED patients left without being seen and ED patients who could go home waited nearly eight hours on average before being discharged. As this Pulse Report indicates, those are the leading indicators of patient dissatisfaction with ED care.

ED overcrowding is often thought to be the cause of patient bottlenecks, with cascading effects in the rest of the hospital. The emerging science of patient flow management utilized by Press Ganey has found that ED wait times can be traced to variability in elective surgical case volume.

The situation that March day at WellStar Kennestone illustrates the delicate equilibrium of WellStar Kennestone’s ED, operating rooms and floor units; but the inherent problems that caused the crisis in the ED were merely more severe on that day. Competing flows of patients and unmanaged case volumes were issues that had been occurring for years.
The long wait times were causing patient and employee stress levels to rise, compromising access to care, losing revenue for the hospital and damaging the hospital’s reputation in the marketplace. The message patients sent WellStar Kennestone on their Press Ganey ED satisfaction surveys was clear: “We don’t like to wait.”

The fact that satisfaction declines considerably for every hour a patient spends in the ED was well-known at WellStar Kennestone long before that disastrous day in March 2007, where wait times in the four- to six-hour range were the norm. “After looking at patient satisfaction data for two years, we realized nothing would change unless we really started focusing on providing better customer service and improving our processes,” said Stephanie Clark, director of Strategic and Quality Learning for parent WellStar Health System in Atlanta.

Looking at all aspects of the patient experience, WellStar Kennestone’s leaders launched initiatives to address wait times, patient throughput and boarding and the discharge process.

WellStar Kennestone contracted with PatientFlow Technology in July 2007 to help solve the underlying problems that were affecting its ED, ORs and nursing units. PatientFlow – acquired by Press Ganey in January 2009 – soon found that WellStar Kennestone’s ED bottlenecks were not actually caused by its large ED patient volumes, but were primarily the consequence of variability in elective surgical case volume and the competition between emergent/urgent cases and the elective schedule.

**Hard and Soft Science**

Using a data-driven, “hard-science” approach for real-time analysis of daily admissions, Press Ganey was able to show that the volume of WellStar Kennestone’s ED admissions was actually more predictable on a daily basis than elective surgeries throughout a given week. By setting aside separate OR capacity for the emergent and urgent cases, the variability in non-elective case volume can be managed, even though it can never be eliminated. In contrast, variability in the elective surgery schedule can be largely eliminated so that flow is smoothed, leading to an effective increase in capacity and decrease in overtime and stress. Collaboration between physician and hospital leadership added the “soft-science” approach of change management WellStar Kennestone needed to begin a three-phase strategy for improving patient flow.

Phase one began with comprehensive data collection and analysis of elective and non-elective surgical volumes. This allowed WellStar Kennestone’s staff members to shift their focus away from anecdotal evidence and begin an objective investigation of the causes of ED bottlenecks. Working closely with Press Ganey, WellStar Kennestone’s physicians used data from their own surgical cases to determine an urgency classification system for their add-on emergent and urgent cases. This system was used to prioritize which cases should get into the OR first, and to establish clinically based maximum wait times from when a case was booked and when surgery began.

To determine the capacity needed for emergent/urgent cases in the OR, PatientFlow applied a queuing model using WellStar Kennestone’s arrival patterns, average case duration and urgency classifications. “Queuing theory is a mathematical tool that has been used in industry for decades to help manage random arrivals. It works very well in hospitals to help calculate the capacity needed to handle randomly arriving emergent and urgent cases,” said Susan Madden, vice president of product analytics for Press Ganey.

With input from the physicians, the hospital designated operating rooms specifically to care for the emergent/urgent surgical volume.

The second phase of the patient flow project uses surgeon-specific case data to smooth the elective surgical case schedule. The separate capacity for add-on cases eliminated competition between the two types of flows (add-on and scheduled elective). By separating flows, elective cases can be scheduled back to back, increasing utilization in the elective ORs. Although the average utilization rate in the add-on ORs is lower (usually 50% to 60%), the overall utilization of all ORs increases when the flows are separated. Press Ganey worked closely with surgeons to design a schedule where elective surgeries are smoothed throughout the week.
Smoothing is accomplished by examining the utilization of the OR by service and by surgeon, and also by understanding that postoperative patients need to be placed in the appropriate nursing unit after surgery. Press Ganey applied various scheduling scenarios in a simulation model that were evaluated by the hospital and physicians in order to find the best patient placement strategy to fit the hospital’s needs. Some surgeons had to adjust their operating days and times, a difficult decision for the team, but one that resulted in better patient placement and a better schedule for physicians and staff.

“Physician and hospital leadership should be commended for their work during this difficult phase,” says Christy Dempsey, senior vice president of operational and clinical consulting for Press Ganey. “By working together and making decisions based on data instead of anecdote, they were able to come up with a schedule that improved the lives of everyone – patients, physicians, staff and the hospital as a whole.”

The third phase of PatientFlow Optimizer also uses simulation models to determine proper bed and staff volumes that accommodate long-term strategic plans and growth. In this phase – which is still under way – WellStar Kennestone has begun to maximize throughput by streamlining the discharge process and addressing length-of-stay issues.

By partnering with Press Ganey, WellStar Kennestone Hospital was able to address flow issues throughout the organization that led to better utilization and improved clinical quality, and was prepared to focus on improving patient satisfaction and efficiency in the ED.

**OVERALL SATISFACTION WITH THE ED AT WELLSTAR KENNESTONE**
**DURING THE IMPLEMENTATION OF PATIENTFLOW PHASE 1**

<table>
<thead>
<tr>
<th>IMPLEMENTATION STAGE</th>
<th>EMERGENCY ROOM OVERALL MEAN SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre</td>
<td>78.2</td>
</tr>
<tr>
<td>During</td>
<td>79.5</td>
</tr>
<tr>
<td>Post</td>
<td>80.9</td>
</tr>
</tbody>
</table>