Optimizing Perioperative Workflow

A five year study of the steps one New York state medical center took to optimize surgical workflow.

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When running their operating rooms, hospital perioperative departments face dynamic workflow challenges every day as they schedule and staff surgical cases, handle and track equipment, and manage patients and surgical procedures. In this highly complex environment, surgical and management staff can experience any of the following issues:

- Inadequate situational awareness/communication to the entire perioperative team and surgeons.
- Missing patient information in preparation for surgery.
- Lack of real-time communication and updates to patient families experiencing extended periods of waiting and worry/anxiety in surgical waiting rooms.
- Complexity of running OR schedules and managing staffing in a dynamic and changing environment (cases taking longer than expected, emergency cases, add-on cases).
- Lack of systematic measurement of quantifiable data to support better day-to-day management and scheduling decisions.
- Inability to communicate efficiently (in real-time) with sterile processing department to prioritize same-day turnaround of special dedicated instrument trays that may have to be used by surgeons doing multiple cases on the same day.
- OR turnover delays due to lack of awareness that rooms need to be cleaned for the next scheduled surgical cases.
- Inability to provide auto notifications to key surgical team members for timed events.

Case-In-Point: Erie County Medical Center

Buffalo, NY-based Erie County Medical Center (ECMC) is a 550-bed regional center for trauma, burns and rehabilitation, and is also a major teaching facility for the University of Buffalo. In September 2006, ECMC had a limited number of operating rooms and lacked the physical room to build more. Hospital leaders needed a way to maximize patient throughput and increase OR capacity levels to generate additional revenue. With surgical services typically representing 20 percent of patient volume and 60 percent of revenues at the average hospital, ECMC knew that optimizing the management of its ORs and surgical patients would be a key

component to help the organization achieve its revenue goals without having to build new ORs or take on additional construction and property acquisition debt.

Before a solution was implemented, ECMC's lead times for scheduling elective surgery and non-emergency procedures were typically up to two weeks. They sought a consultation from an industry expert in surgical workflow solutions: PeriOptimum (now part of STERIS Corporation). After thorough analysis of current surgical practices, workflow and capacity, RealView™ OR Workflow Optimization was recommended and implemented.

RealView optimization provides ECMC with an "air traffic control" perspective of all surgical cases across all departments, including their GI and catheterization labs. Each patient admitted for a medical procedure or surgery is assigned a RealView real-time location system (RTLS) CareTag with a unique ID code corresponding to the patient's name, doctor, procedure and additional case information. As the patient moves through the perioperative process, patient care workflows are automatically read by RTLS sensors and time-stamped through pre-op, surgery, post-op (PACU) and patient discharge.

RealView optimization delivers instant and accurate views of patient-related workflows at all times to large, highly visible flat panel displays posted in pre and post-op areas and surgeon and OR staff lounges. The information is also sent to bedside charting computers-on-wheels in pre-op, OR, and post-op areas; and to flat-panel displays in ECMC's surgical family waiting area. This real-time, instant updating of perioperative workflows and the OR schedule keeps ECMC's surgical care teams in perfect sync with the OR schedule, and keeps patients' loved ones informed in real-time throughout the surgical experience.

At ECMC, the RealView displays communicate the status of patients to their families within a HIPPA compliant format. Family members are given a unique numeric identifying code for their loved one, so that they can track the patient from admission, to pre-op, into surgery, then to recovery and discharge. "Being able to display the status of a procedure greatly reduces the anxiety and worry that family members typically encounter when they have a patient in surgery," said Jim Turner, Vice President of Surgical Services at ECMC. "It's yet another way our hospital can improve the level of service we deliver to patients and their families here at ECMC."

RealView optimization has also enabled ECMC to optimize scheduling and increase its procedure room and OR capacity. RealView software provides decision- making data that helps with managing bottlenecks, identifying late arrivals of staff, handling emergency surgeries and add-on cases, and with proactively making adjustments to the surgical schedule when cases take longer than anticipated. As a result, scheduling lead times for surgeries have been improved to two to three days as a result of optimized workflow, and scheduling real-time awareness has increased OR capacity to nearly 85 percent from 60 percent.

It is important to note that the RealView solution was integrated with existing hospital systems. It did not replace ECMC's existing surgical scheduling and documentation applications; rather, it enhanced the existing applications to real-

time, using a standard HL7 interface. RealView runs over the hospital's standard TCP/IP network (certain components of the system can be configured for remote access via secure internet connections).

RealView optimization enables ECMC to analyze and benchmark perioperative processes. In addition, RealView data provides perioperative management with key performance indicators (KPIs) that identify critical milestones necessary to improve and optimize ECMC's OR schedule throughout the day. This allows schedulers to efficiently assign OR block times and prime time cases, among other OR management considerations. RealView software tracks first case on-time starts, on-time starts throughout the day, scheduled vs. actual status, prime time utilization, surgeon turnaround time by specialty, and more.

STERIS also provides ECMC with surgical information management system (SIMS) reports on a web-based interface to manage perioperative analytics and data reporting. The combination of RealView and SIMS reports enables ECMC to analyze and benchmark perioperative processes that help them optimize their OR utilization, case volume and throughput. In so doing, ECMC increased average OR capacity to nearly 85 percent, which resulted in a three-month return on the RealView investment and an increase in revenue of two million dollars within the first 12 months of RealView deployment.

Five years later ECMC continues to optimize its perioperative services with STERIS RealView Workflow Optimization. The hospital added one additional operating room (total of 12 ORs) as part of an expansion project in 2009, based upon a consistent increase in surgical cases. RealView optimization continues to maintain the ECMC perioperative department as a high-performance environment with instant awareness and communication that optimizes visibility and workflow. The end result is a calm, high-performance perioperative environment in which ECMC staff optimizes the quality of care provided to patients and family each day.

"For us, installing this solution at ECMC was, and continues to be, a minimally invasive way of increasing revenues, eliminating costs and improving our bottom line without incurring substantial capital expenses. When we were ready to expand our operating rooms, we were able to do so at the right time and for the right reasons," said Turner.

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