Performance improvement

First case on-time starts soar after rapid process improvement training

In 2011, fewer than half of all first cases at Dartmouth Hitchcock Medical Center in Lebanon, New Hampshire, were starting on time. That meant subsequent cases were also delayed, with overtime costs exceeding $500,000 a year.

“People were unhappy with that for a lot of different reasons. It was a morale problem, but also a financial one. For every minute you delay a case, the OR loses money,” says Sophia van Hoff, MD, an anesthesia resident at Dartmouth Hitchcock.

The hospital had previously hired outside consultants to try to improve the situation, but without much success. In early 2012, Dartmouth’s Center for Perioperative services (tCPS) decided to try a Kaizen Rapid Process Improvement Workshop (RPIW), in which multiple front-line OR staff members from across the organization were brought together for an intensive 5 days to analyze and improve the morning OR intake process.

Linda D. Thompson, BSN, RN, CNOR, nurse manager for perioperative services at Dartmouth Hitchcock, says that previous attempts to improve OR on-time starts failed in part because they were trying to change the end of the chain rather than the front. “Through this RPIW work, we identified a lot of things preventing the patient from getting to the OR that had nothing to do with the OR.”

The RPIW and subsequent reinforcement brought Dartmouth-Hitchcock’s on-time start rate—defined as delivering the patient to the OR suite within 5 minutes of the scheduled start time—from 47% in 2011 to 83% by about week 39, exceeding the 80% goal they’d targeted. Thanks to ongoing reinforcement, on-time starts have remained stable at that level over the nearly 2 years since, according to Daniel P. Herrick, the tCPS senior consultant for process improvement who led the effort.

The result has been an average 17% reduction in overtime costs, for a biweekly savings of about $3,081. “I do 8 to 10 RPIWs a year, and this one was very successful,” says Herrick, who holds a Lean Six Sigma Black Belt and a certified professional in healthcare quality certification.

Advance work

To prepare for the RPIW, Herrick and his tCPS team began collecting baseline data in October 2011, focusing on the time from when patients arrive in the morning and check in until they are wheeled into the OR suite.

The team determined that the most common reasons for delay during that time were related to missing or incomplete paperwork (34% of cases), late staff (surgical or anesthesia) (26%), and late or conflicting orders (20%). “There was less than optimal utilization of resources,” Herrick notes (sidebar, p 10).

The goal of the RPIW, laid out in a pre-event “charter,” was to “optimize the process flows and patient handoff between the pre-op and the OR teams in order to maximize patient safety and satisfaction, staff efficiencies, and on-time surgical starts,” Herrick explains.

The RPIW event took place January 30 to February 3, 2012. The team of 13 consisted of 3 preoperative nurses, 2 anesthesia providers, 2 operations managers (including Thompson), 2 circulating nurses, 1 anesthesia resident (Dr van Hoff), a surgical technician, a support service technician, and a surgical resident.
The RPIW week

Day 1

Monday began with extensive education and training, which included the entertaining “Toast Kaizen” video of a man making toast in a very inefficient manner. The video was meant to illustrate how a familiar process can be improved to save time and increase efficiency (http://www.lean.org/Bookstore/ProductDetails.cfm?SelectedProductId=126).

Thompson, who was participating in an RPIW for the first time, was impressed by the video. “That to me was huge. Watching this man make toast, seeing the dirty dishes in the sink—he could have done 20 things in the time he was waiting for the toast to pop. It’s so simple, yet how many times do we stand around waiting for something rather than efficiently using time?”

Herrick guided the team through several cycles of “process mapping,” in which each team member described exactly what he or she did on a typical morning, then mapped it out on paper.

They broke up into 2 to 3 groups for “Gemba Walks,” during which they picked a random patient checking in and observed the flow from admission to arrival in the OR. (Gemba Walks, a fundamental aspect of Lean management philosophy, are a way for staff to walk through a process to identify wasteful activities.) Then they returned and refined the process map, with each person’s role written with a different colored pen.

Collection of baseline data helped pinpoint causes of delays.
Source: Daniel P. Herrick
“We went through it multiple times. By the end of day 1, we had a really great visual process map of what’s going on with the patient and how it’s happening,” Herrick says.

For Dr van Hoff, the process was educational. “When I’m doing my things in the morning, I’m just thinking of what I need to do with the patient….It’s really kind of eye-opening seeing what everybody else does and how the whole process works instead of just your one little piece.”

**Day 2**
On Tuesday morning, the team had more training, did another Gemba Walk, and did more mapping of the current state, including a “spaghetti chart” of the physical flow to the OR.

The team also performed a root cause analysis of the reasons for the delays and began brainstorming ideas for improvement. They created a “future state” process map of an ideal patient flow. Of approximately 31 ideas generated, each team member voted for his or her top 10. They ended up with fairly universal agreement on 9 key improvement opportunities.

**Days 3-4**
The team divided into groups to work on the different areas identified for change. They spent Wednesday and Thursday designing and testing Plan-Do-Study-Act
(PDSA) cycles, or small tests of change using just 1 patient or 1 staff member. “If it doesn’t work, you tweak it and try again,” says Herrick.

As the PDSA cycles continued on Thursday, the team also began to create rollout training plans and to prepare a final report.

Day 5
While wrapping up the PDSAs Friday morning, team members drafted plans for rollout training, education, and communication of the new model. They gave a PowerPoint presentation to senior members of the organization and to the OR staff.

The following Monday, they began rolling out the changes (sidebar, p 11).

What worked?
Ask more the day before. One of the most successful changes involved pre-event phone calls. Typically, a preoperative nurse calls the patient the day before surgery to confirm the appointment time, answer questions, and provide instructions. In the old system, on the morning of surgery a preoperative nurse would ask the patient about medications, health updates, and social questions. Thanks to the RPIW changes, the nurse now includes those questions in the day-before phone call, thereby saving 5 to 10 minutes the following morning.

Asking about medications the day before surgery is also more effective because the patient can access them from home rather than having to list them from memory in the hospital, Herrick points out.

See the patient first. Another major change involved the circulating nurses’ morning flow. Pre-RPIW, nurses arrived at 7:00 am, set up the OR, and saw the patient in the preoperative holding area around 7:20, just before the scheduled surgery. If a problem arose—for example, observing that the patient was obese and would require different instrumentation—there would be a delay.

The RPIW team switched the schedule so the circulating nurse would see the patient at 7:05 am, before the OR was set up.

“For the RNs to go directly to see the patient preop was a big change in the culture of what we were doing. My role was to help staff see the benefit of that,” Thompson says.

Switch who calls whom. A third successful change shifted the default from requiring anesthesia staff to routinely call the OR to make sure the room was ready to requiring the circulating nurse to notify anesthesia if the OR was not ready.

“Previously,” Dr van Hoff says, “it wasted a lot of our time. You’d call and wait. Now, you assume they’re ready. If they’re not ready, they page you.”

The goal of all of this is to increase efficiency, she notes. People should be using the same amount of time they had before, but using it more efficiently, she explains.

Maintaining the gain
On-time starts improved to about 70% by week 20 after the changes were implemented, but then they plateaued. Extra encouragement was needed to nudge the rate up to the current 83%.

According to Herrick, not everyone embraced the change. “We talked to them. We told them this is the new practice, and here’s why change was made. We asked them to try it for 30 days.”

“Indeed,” says Thompson, “you always have your early adopters, middle adopters, and late adopters. I sent out a lot of emails asking people what they thought were barriers.” A good tip, she says, is to ask, “If you were to do this, what would it look like?”
Having everyone use the same script and providing a lot of positive reinforcement are key for success, she adds.

This past November, Herrick led another 5-day RPIW focused on room turnovers. “Now that the first case of the day is starting on time, we want to reduce the time between cases. We used the exact same format and came up with some extremely exciting improvements,” he says. ✤

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