No time to waste: A children’s hospital Lean team streamlines its turnover process

Children’s Hospital of Los Angeles (CHLA) is renowned for patient care, but by early 2013 the increased complexity of new technology and other factors had eroded efficiency. Orthopedics had fallen to the bottom quartile compared to national benchmarks for turnover times, and executive leadership called for change.

Within orthopedic surgery, spinal fusion procedures were identified as the culprits dragging down turnover times. “These are large and complex surgical procedures, with a lot involved in terms of equipment and instrumentation. So we started with that,” explains Dawna Willsey, MSN, RN, CNOR, OR manager.

One aim was to enable one of the orthopedic surgeons to perform two spinal fusion procedures on most days, rather than just one. “We recognized that if we could improve the flow, we could improve turnover rates as well as our ability to more efficiently utilize his block of time,” Willsey told OR Manager.

The hospital assembled a multidisciplinary team to address problems using Lean principles and techniques. In the process, they gained an appreciation of the complexity that goes into turnover times, according to senior project manager Wendy Lin, MPH.

“So much went into turnover. The process is kind of like peeling back an onion. We started from the beginning and really looked from end to end at all the factors that could contribute,” Lin says.

Identifying waste
With the full support of executive leadership, a team led by Lin was organized in July 2013 comprising Willsey, the orthopedic surgeon, an anesthesiologist, individuals from surgical admitting, the preoperative area, sterile processing, the postanesthesia care unit (PACU), ICU, the admitting floor, circulating nurses, surgical technicians, and patient care service aides. “We had a great interdisciplinary team that worked on this,” Willsey says.

The team followed four patients from the time they arrived for surgery until the room was turned over, taking notes and recording their observations about potential time-wasting factors.

Based on the information they gathered, Lin drew up current-state maps for surgical admitting, the preoperative area, room setup, anesthesia, positioning/prep, surgery, PACU, and turnover.

For each of those phases, the maps denoted each event in which the patient was engaged (such as “patient receives lab draw” during admitting, and “patient receives Emla for IV” during preop), the duration of each event (“value-added time”) and, for admitting and preop, the duration in between each of the events (“non-value-added time”).

Team members’ observations were added to the maps above the time charts in yellow star shapes known as “Kaizen bursts.”
The surgical admitting map showed that the time spent for the four cases ranged from 20 minutes to 121 minutes, with an average time of 68 minutes. Nearly half of that time was “non value added,” during which the patient waited until the OR team was ready for the next step.

“People tend to know their own areas, but when you follow the patient through [the operative process], you get the patient’s perspective, which is what Lean is all about: your customer’s time and value,” Lin says. “There were so many waits in between. You have to think, ‘Would the patient want to pay for this?’”

Taken together, the current-state maps highlighted the following problem areas:

- Redundant preoperative processes resulted in increased patient wait times.
- Inconsistent patient preparation and room and case readiness resulted in decreased on-time starts.
- Cleaning processes for room turnover were disorganized.
- There was a large volume of unused instruments.

“The issue we were trying to solve was the turnover time. But when we mapped out the process, we identified some other issues that we needed to look into,” Willsey notes.

**Standardizing work**

The current-state maps were placed on a large wall poster so that the entire team could discuss them during a 3-day Kaizen event. “That’s how we do it at Children’s. We’re very collaborative. We looked at the map and asked, what can we do to fix this?” Willsey says.

“We got everyone in a room together and looked at everything from a systems perspective, rather than finger-pointing. We talked about how to build standard workflow and how to get rid of some of the waste,” Lin explains.

The team came up with a list of what to tackle right away and what to accomplish within the next 30 days.

Some changes were easy, such as updating surgical preference cards, adding hooks to hang lead x-ray gowns near anesthesia staff to shorten the distance to reach the gown tree, and writing a standard operating procedure (SOP) to ensure that an oxygen tank always comes with the bed to transport the patient upstairs to the patient care unit after surgery.

For the systemic process changes, they drafted future-state maps—visuals of how the flow should go—for evening or staff case prep, surgical admitting, preoperative, intraoperative, and room turnover. Within those areas, they created a total of 14 SOPs defining each staff person’s tasks. Systemic changes included:

- Moving the lab draws, assessments, and IV starts from surgical admitting to preoperative in an effort to decrease patient wait time, needle sticks, and redundancies in documentation.
- Coordination of clinician “interviews” with the patient to avoid repetition and save time.
- Creation of visual checklists for room readiness and case setup, which helped decrease the rush to get missing items into the room and avoid delays.
- Establishment of a standard workflow for the entire process from room setup to turnover to instrument cleaning, in an effort to reduce delays, inconsistency, and repetition of steps.

Time goals were set for each step, and the processes made more sequential.

In one major time-saving change, the point at which the patient is asked to undress was moved from admitting to the preoperative area. Most spinal fusion patients are adolescents who aren’t eager to disrobe, Willsey points out. “We were ask-
ing them to change downstairs in another department and travel upstairs to preop. It’s not reasonable to ask them to do that.”

Indeed, the teens would often don two robes or keep their underwear on, which sometimes wasn’t noticed until they were in the OR. Now patients keep their clothes on until they’re upstairs, and they are put on a gurney with a gown, a patient belongings bag, and a blanket.

Another major undertaking involved opening up and thinning out all the surgical trays. The surgical technician led this effort with input from team members. For one of the vendor’s trays, removal of 53 instruments totaling 36 pounds resulted in the elimination of two entire trays weighing more than 25 pounds each, the legal limit.

“Spinal fusion procedures use many heavy instruments,” Willsey explains. “It takes a long time to reprocess and to set up each case. Why reprocess instruments you’re not using?”

Emergency items were placed on separate trays and left unopened so they wouldn’t need to be resterilized. The tray thinning, Lin says, was “a very eye-opening experience.”

**Saving time and money**

Audits were conducted at baseline and at 30, 60, and 90 days postintervention. At 60 days, total surgical admitting and preoperative time had dropped from 150 minutes to 112 minutes, with admitting time reduced from 68 minutes to less than 2 minutes. Average turnover time was reduced from 63 minutes at baseline to 54.5 minutes at 90 days, and first case on-time starts improved from 71% at baseline to 86% at 90 days.

Lin says at 4 months the new habits appeared to have stuck. “After 120 days, if you’re still doing it, the behavior is pretty much changed. Behavior change is the hardest part of Lean. The tools are pretty straightforward.”

Because most spinal fusion cases are scheduled during the summer when kids are out of school, the team is now auditing to see how often the surgeon who participated in the project is able to perform two procedures a day. The team is also working on expanding this project to the rest of the orthopedic ORs and to other ORs in the hospital.

*Miriam E. Tucker is a medical writer based in Bethesda, Maryland.*

**Reference**