

Performance improvement

Rooms with a view: Kaizen events put things in their proper place

What can you do when you need to store about 9,000 sq ft of equipment in just 7,000 sq ft of storage space? What if your OR supplies are housed in such cluttered, disorganized drawers that staff have difficulty finding things?

Unleash the Lean teams, of course.

At the University of North Carolina Hospitals (UNCH), Lean Six Sigma has become part of the culture. The state-owned, not-for-profit system, which includes seven facilities, began Lean training in 2010. Since then, more than 1,000 staff members have been trained, including more than 110 perioperative services staff qualified in basic Six Sigma and more than 24 staff and managers with advanced-level training.

"My favorite part of using Lean concepts is that [the process] pushes it back to the staff to come up with solutions," says Elizabeth Finch, MSN, RN, RNFA, CNOR, director of UNCH's OR and central processing department. "It encompasses everyone—not just nursing, but everyone who touches the equipment, from surgeons to OR assistants to central processing. It's not coming from the top down, but flows from the bottom up."

Thus far, UNCH has conducted four Lean Kaizen events related to OR supplies. "Kaizen" is a Japanese term meaning "change for the better." A Kaizen event is a team-based approach in which quality improvement steps are conducted rapidly, typically over a week or weekend.

The first two Kaizens at UNC were specialty-specific, focused on the cardiac and vascular surgical suites. The more recent two, conducted 5 months apart in 2013, provide larger examples of how Lean tools can be used successfully to overcome challenges related to physical space.

"Don't assume it's as easy as cleaning out your closet. You have to make sure everyone with a vested interest in the process has a place at the table," says Janet Chadwick, MBA, BSN, RN, CNOR, manager of surgical services quality and education at UNCH.

It certainly wasn't easy, but 10 to 12 weeks of advance planning followed by very intense weekend Kaizen events resulted in significantly improved staff satisfaction, overall process efficiencies, and—in the case of the supply room—a credit return to central distribution of nearly \$10,000.

For both Kaizens, Chadwick, who is earning a Lean Six Sigma Black Belt, served as the project coach. Finch, who has a Blue Belt, was a sponsor.

Organizing the equipment

The equipment storage Kaizen took place in May 2013.

"The problem was, we had one very small equipment storage room for the 16 ORs and anesthesia," Chadwick says.

Indeed, staff would often push beds and other equipment into the hallway so it would be easier to locate the necessary items. And some things were being stored to-



*These before and after images illustrate the use of different colored rooms and duct tape to organize equipment storage.
Source: University of North Carolina Hospitals, Chapel Hill.*

gether that shouldn't have been, such as anesthesia equipment in the OR equipment space and positioning equipment in a utility room.

"We decided we needed to carve out locations for equipment storage in their areas of use and visually manage what was located in each storage area," Chadwick recalls.

A team of about 22 staff members was established with representatives from each OR specialty group. They met for about an hour every Wednesday morning for 10 weeks prior to the actual event.

During the first few sessions, Chadwick reviewed some basic Lean concepts that would guide the team's efforts. These included the eight forms of "Muda," or waste: Defects, Overproduction, Waiting, Non-utilized talent, Transportation, Inventory, Motion, and Extra processing ("DOWNTIME").

Also key were the DMAIC (Define, Measure, Analyze, Improve, and Control) paradigm and the "5 S" needs assessment: Sort (eliminate the unnecessary), Shine (clean the open spaces), Set in order (bring in the new items), Standardize (ensure that everyone is on the same page; use visual management), and Sustain (establish



*These before and after images show how better labeling and organization make it easier to locate supplies.
Source: University of North Carolina Hospitals, Chapel Hill.*

accountability to keep up the changes, measured before and after).

“DMAIC and the 5 S’s are part of the planning process. They give you a shared mental model,” Finch explains.

The group planned to split the overall equipment storage among six different rooms, sticking to uniform steps for each. “Standardization is probably one of the biggest things that you look at when you’re doing a Kaizen,” Chadwick says. “You want to figure out how to make things flow better. Both process and performance standardization are critical.”

Smaller teams of four to six people took charge of each intended new storage room. They designated each new storage room by a color—purple, orange, red, grey, blue, and green. The walls of each room were to be painted those colors, and corresponding colored duct tape was placed on all of the equipment belonging to that room. The storage locations were also marked on the floor to indicate where the various pieces of equipment would go.

The teams mapped out the new storage areas and used to-scale paper cutouts representing the equipment, arranging and rearranging the items until they found the best way to make everything fit. Much time was also spent on standardizing the color-coded signage for each room—like maps in a shopping mall—to guide people to the new locations for the equipment.

The Kaizen event was scheduled over a weekend because the OR couldn’t be shut down during the week. The team met with the sponsors on Friday at noon for their pre-project “tollgate.” A representative from each small team presented a summary of the plan for what was to be done with their room.

Finch, along with Shawn Brooks, the anesthesia manager, and Jeremy Cartner, the x-ray technician supervisor, then signed off on the plans. Chadwick’s job had been to serve as intermediary throughout, so there were no surprises. Then the work began.

The teams emptied out all six rooms, placing the items temporarily into three ORs and parts of the hallways that weren’t being used over the weekend. Environmental services staff then came in and cleaned the rooms overnight.

Along with environmental services, staff from information technology, engineering, and facilities were vital to the overall success of the project. Improvements made to the

space included the platforms installed in two of the equipment rooms, which increased storage space by more than 80 sq ft.

On Saturday, the teams began putting things back into the rooms according to plan, along with the new signs (see images). Team members documented the process in three newsletters that were distributed hospital-wide.

To the team's delight, the hospital's chief executive officer, chief operating officer, and vice president stopped by on Saturday afternoon. "Upper management really supports us when we do these things. To have the CEO come by on a Saturday to congratulate the team is a really big deal," Chadwick says.

By Sunday night, the equipment was housed in its new locations.

OR and anesthesia staff satisfaction were surveyed 1 week prior to the Kaizen and 2 to 3 weeks afterward. Based on a 5-point scale, average satisfaction scores before and after the event were 2.76 and 4.08, respectively.

Streamlining supplies

The Kaizen for UNCH's main OR supply room, nicknamed "KMART" for its wide array of items, took place in October 2013.

"The KMART was completely overstocked, and it was very difficult to find anything. Supplies were all over the place," says Finch.

Items were housed in poorly labeled metal drawers. Staff in search of specific items would routinely damage sterile packaging. Overstocking the drawers to available space instead of established par levels required frequent reviews of expiration dates.

Planning for this Kaizen involved the same Lean tools and principles as the equipment storage one, and it also necessitated a couple of extra Wednesday morning meetings (12 weeks total) as well as 8 weeks of Friday afternoon meetings to reevaluate par levels for all the supplies.

"The KMART Kaizen was more difficult, even though it was for just one room. I think that was the hardest Kaizen we've done to date just because there was so much stuff in there and so much prework was needed. The individual team members really stepped up and worked hard after hours on every aspect of the project," Chadwick says.

Once the new pars were established, the team reviewed supply codes for each item to see if the right number was stocked. Unneeded items were consolidated and returned to central distribution or the business office. In all, par levels decreased by 2,148 items, and overstocked supplies were returned to central distribution for a \$9,800 credit.

Just as with the equipment Kaizen, the KMART team broke out into smaller groups to address various aspects of the room. Again, they used paper cutouts to model where the supplies would be placed in order to maximize space and efficiency.

"We had such limited space that we were trying to cram as much as possible into, we needed to-scale models," Chadwick explains. "We spent hours and hours on the smallest details and regulatory requirements. For example, would the new layout provide the required aisle width based on state codes?"

The planned annual budget included approximately \$11,000 to purchase new wire bins to replace the metal drawers. That made items more visible and easy to move. Color-coded labeling for the bins clearly identified the type of supply, along with the bar code, par level, and item name. The phone number to call when the bin is empty was prominently posted.

In another major change, the team decided to organize items by supply type rather than by surgical specialty group. The supply storage Kaizen event also began on a Friday afternoon. Team members cleared out the entire room, and after it was cleaned and painted, the new bins were placed and items returned according to plan (see images, p 16).

“It was really neat to watch the evolution of the room that weekend. Once everything came out, we realized how big the space actually was,” Finch says.

To help orient staff during the following week, the team gave out maps, conducted tours, and stationed people in the room to give directions.

As with the equipment Kaizen, staff satisfaction with the supply storage area also improved. What’s more, the amount of time required for a staff member to find a given item in the room—which was tested before and after the event—decreased. The time needed by experienced staff picking supplies for an exploratory laparotomy was reduced from 6 minutes, 47 seconds to 4 minutes, 53 seconds. For new staff picking supplies for that same type of case, the time was cut in half: from 12 minutes, 48 seconds to 6 minutes, 26 seconds.

Lessons learned

The improvement process continues for both Kaizens, Finch notes. “It’s constantly evolving. Once you do the Kaizen weekend and you live in that space for a while, you see what is working and what isn’t, and you give people an opportunity to tweak it.”

Her advice to those interested in accomplishing what UNCH did is to “go in with no concept. Build the framework, decide what are your absolute no’s. But then let the staff have fun.”

Chadwick adds, “The planning is essential. You also have to figure out in advance how to train people on the standard stuff. When you say ‘5 S,’ everyone has to understand what you’re saying.”

Finally, she says, “Don’t be afraid to fail. Nothing is written in stone.” ❖

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