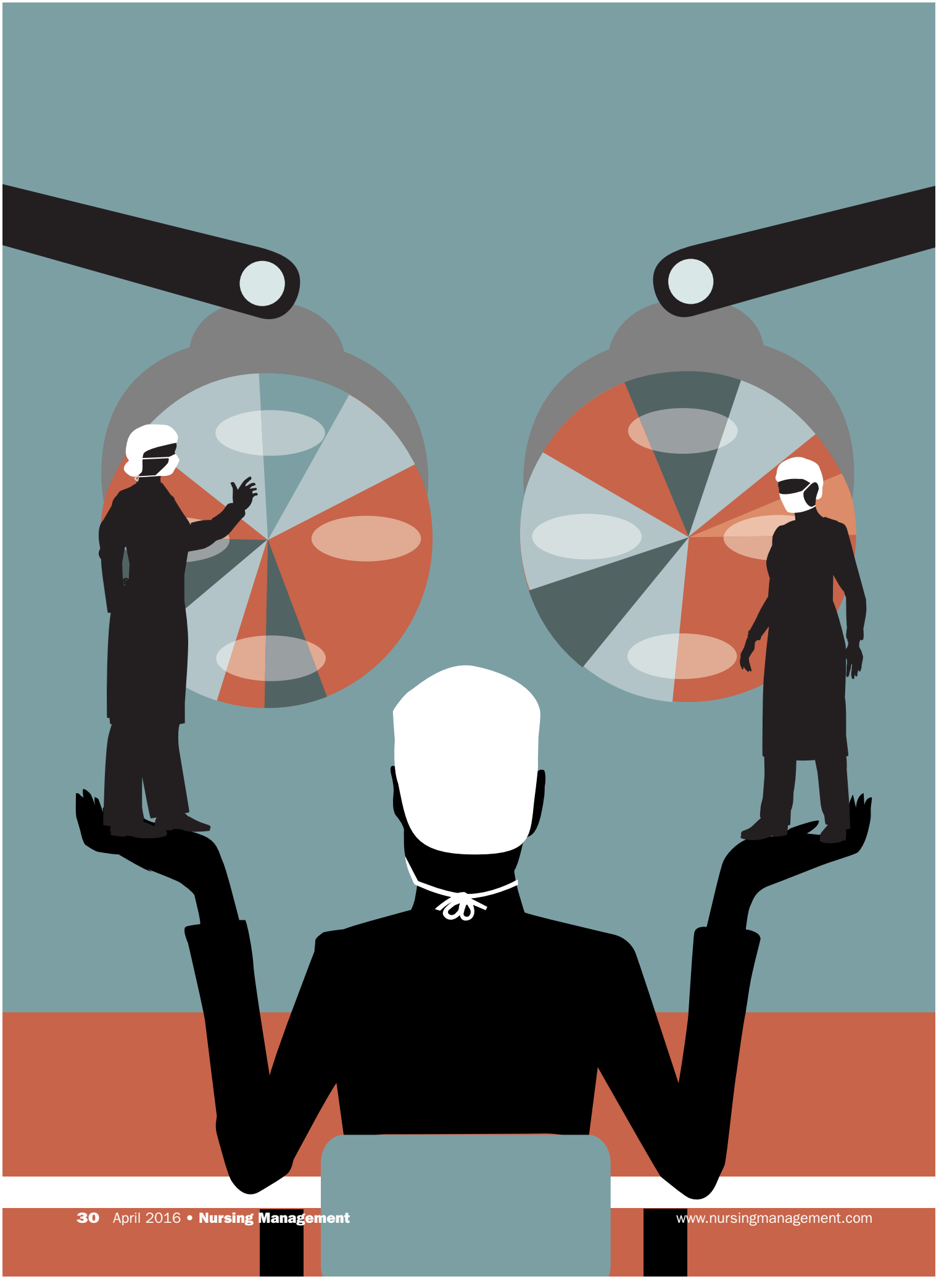


CE 2.0 CONTACT HOURS

Balancing efficiency and safety in the OR

By Kaye Reiter, MSN, RN; Mike Hannig, MBA; Di Li, MS, BS; Melissa Lingle, BSN, RN, CNOR; Steve Monacelli, BSN, RN, CNOR; and Victoria Wells, MSN, RN-BC, CAPA

Hospitals work diligently to improve patient throughput, contain costs, and enhance the work environment for healthcare teams. Developing efficient and safe practices to provide the best care for patients should result in a shared goal for excellence. This article describes one interdisciplinary team's process improvement journey using Lean Six Sigma (LSS) and the Define, Measure, Analyze, Improve, and Control (DMAIC) approach to standardize and sustain the turnover process and improve efficiency and safety in the OR.

The project

Quality care requires efficiency, safety, and teamwork. Our leadership team, the Surgical Services Optimization Committee (SSOC), identified OR turnover time as a potential area for improvement. At this Level I trauma center in the northeastern United States, the leadership team adopted LSS methodology and the DMAIC approach to drive process improvement.[1,2] The desired outcomes of the improved process were increased awareness, safety, and financial savings; clear role expectations related to the pre-op process through consistent, mindful use of a safety checklist; and a well-designed cleaning process.

Define

Table 1 illustrates the first step in any LSS project: creating a project charter—a living document that helps the team keep the project moving and on target.[2] The charter generated a better

understanding of the project's business impact for core team members. In this case, the charter was developed with the assistance of the facility finance department and included direct and indirect costs, such as utilities, supplies, equipment, and staffing. Any project charter should involve all team members in a shared decision-making process to ensure that project goals, scope, and timeline are feasible.

During the project charter development, another important element is the "voice of the customer," or the input from actual end users of the project. The internal "customers" of the OR are the surgeons, nurses, surgical technicians, and support and supply staff. Keeping the customer in mind helps all involved understand current performance and opportunities for improvement. After the charter is drafted, the team is ready to move to the next phase.

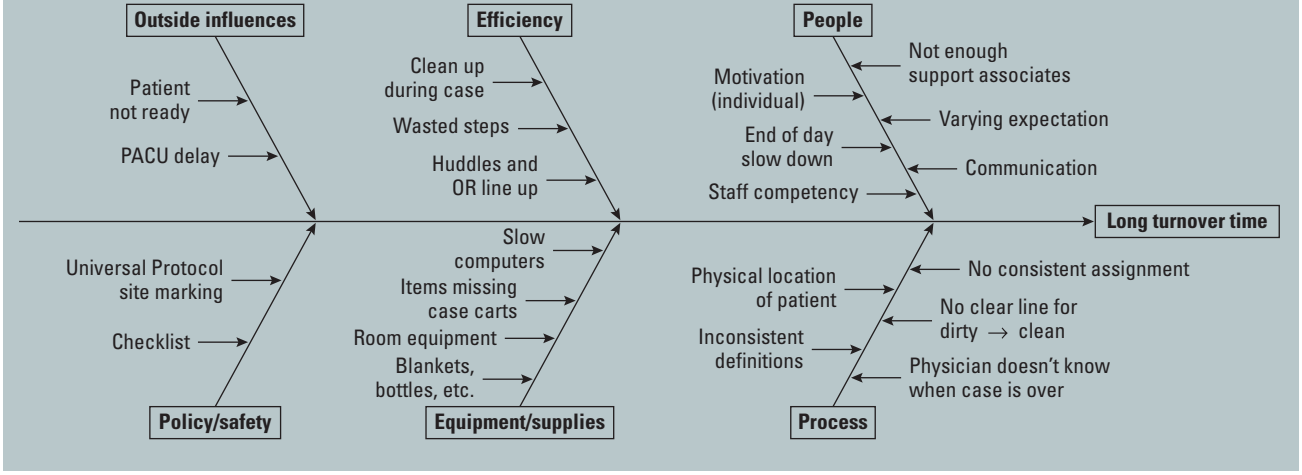
Table 1: Turnover process project charter

Business case	Current average turnover time is 29 minutes between cases scheduled with the same surgeon. If turnover time between patients is decreased by 4 minutes, potential savings are $19,000 per month ($228,000 per year).
Problem statement	From June to October 2012, average turnover time between scheduled cases was 29 minutes. Turnover delay was seen in 16% of cases.
Goal statement	To decrease average turnover time from 29 minutes to 25 minutes by April 2013. To maintain patient safety, the OR cleaning process shouldn't be less than 10 minutes.
Scope	Main OR surgical to follow cases scheduled with same surgeon, excluding add-ons.
Timeline	Define: October 2012 Measure: November 2012 Analyze: January 2013 Improve: April 2013 Control: June 2013
Team roles	Project sponsor: Senior management executive Project manager/team lead: Unit director Core team members: Role representatives performing the process improvement

Measure

The next phase of the LSS project is to determine root causes of the problem and measure baseline performance. As seen in *Figure 1*, our root cause analysis was accomplished by team brainstorming and organized using a fishbone diagram to help us understand all aspects of the problem.[1,2] The root causes are divided into general categories that assist with brainstorming and identifying the problem areas. Observations and surveys were used during the session to understand the current process; during observations we noted that the current turnover process was inconsistent and efficiency and safety could be improved with standardization. We decided to focus on The Joint Commission's Universal Protocol

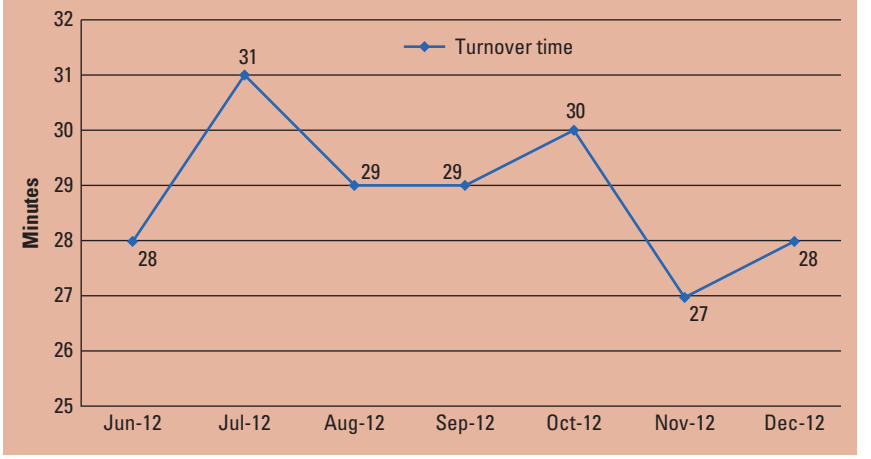
Figure 1: Root cause analysis



and perioperative checklist process, as well as the OR cleaning process.[3]

In this phase, be sure to evaluate baseline performance. It's important that the baseline data are documented and used later in the project to compare and evaluate improvement results. *Figure 2* documents our baseline turnover time between patients before beginning this project; the average turnover took 29 minutes. Comparing this metric with The Advisory Board Company benchmarks for like ORs, our 29-minute average turnover was ranked in the 25th percentile.[4]

Figure 2: Turnover time baseline performance before process change



Analyze

Preprocedure verification of the patient's information is the first step in most OR protocols and involves specific organizational requirements and checklists.[3,5] Patient OR readiness and safety can be affected by the checklist design, surgical scheduling, and distractions during checklist completion. As the previous step demonstrated, at our facility, these factors and more resulted in increased turnover time.

Workflow observation of RNs and certified registered nurse anesthetists (CRNAs) helped us develop a better process for efficient and safe patient readiness. In the existing process, the RN circulator quickly checked supplies and equipment for the next case, then interviewed and transported the patient to the OR. After surgery, the CRNA transported the patient to our postanesthesia care unit (PACU) and prepared the next patient's anesthesia medications. Unbalanced commitments and workload prompted leadership, frontline supervisors, and experts to think outside the box and restructure this workflow.

Another area the team focused on was the cleaning process. Observation and subsequent video analysis of cleaning allowed the team to identify several areas for improvement: duplicated efforts, unclear work assignments, and a lack of OR support availability.

Improve

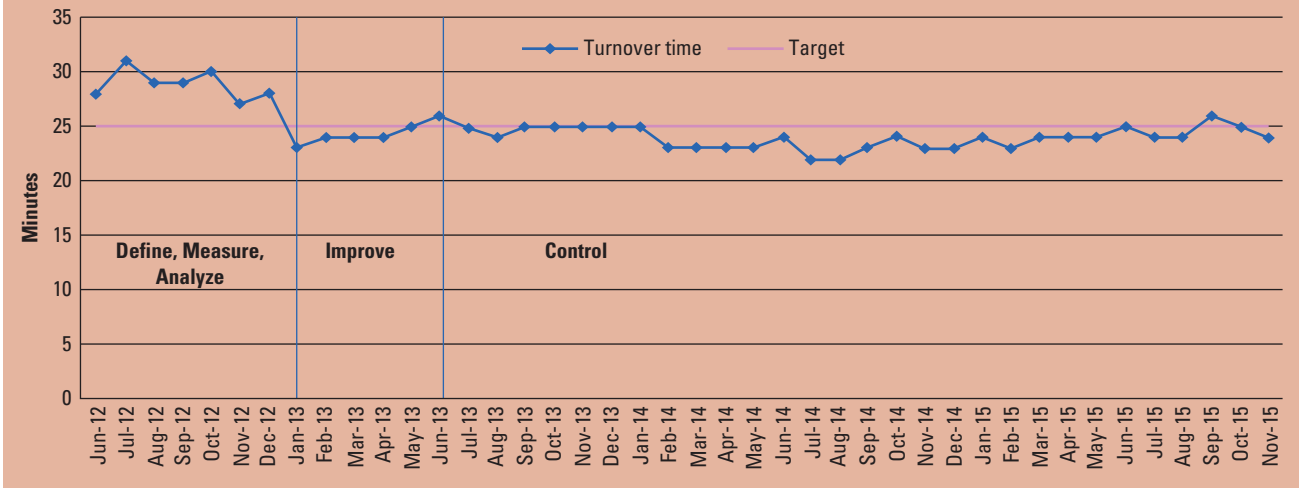
For the revised preoperative process, the team designed a safety checklist for RNs and CRNAs to use as a guide for improved workflow.[5,6] The new preprocedure verification process assigns the CRNA primary responsibility for the patient interview, checklist completion, and patient transport to the OR. This adjustment to the process provides the RN circulator with sufficient time to check the supplies and equipment for the next case. After the CRNA transports the patient, before moving the patient to the surgical table, the RN circulator then double-checks the "hardstop" section of the checklist to validate that the patient is ready for surgery.

To view the checklist layout, including the section for elements needed before transport, a green "ready for OR" checkbox, and the hardstop OR safety checklist, visit the *Nursing Management* iPad app. The checklist also includes a debriefing section, to be reviewed at the end of the case, detailing projected turnover time and when to bring the next patient to the OR. This process change encourages teamwork and communication between the RN circulator and the CRNA.

To view the new process design for cleaning the OR between surgical cases, visit the *Nursing Management* iPad app. The tasks are divided based on timing and team member role. The goal is for individuals to work as a team to decrease cleaning time.

The leadership team provided education to project stakeholders about the project before piloting the new process, using team-building exercises and training sessions with small and large groups. During the pilot, the daily average turnover time was posted and discussed with staff. Checklist completion rate and accuracy related to each phase of care were monitored. At the end of the pilot, the new average turnover time was compared with baseline data. The project goal was achieved; the OR team decreased turnover

Figure 3: Continuous monitoring of turnover time



time to an average of 25 minutes (75th percentile). This positive change led to the standardization and implementation of the new preoperative checklist and postoperative cleaning process.

Control

After the implementation of any process improvement, it's important to continue data collection and monitoring, as well as to solicit quality feedback. Our turnover time is monitored daily and summarized monthly. It's reported at several committee and staff meetings to ensure continued vigilance for efficiency and safety. *Figure 3* demonstrates the sustainability of the process for our organization. To date, we've sustained an average OR turnover time of 25 minutes or fewer for 29 months.

The final step in the process, a control plan, helps us define what to do if we fail to sustain this progress. If the turnover time increases to 26 to 27 minutes over three consecutive months, we'll post turnover time daily and conduct individual case reviews. If the average time is greater than 28 minutes for three consecutive months, the SSOC will regroup and review the process.

Synergy in the OR

Efficiency and patient safety are crucial in every OR. Often, healthcare professionals believe that you can have one or the other, but not both. However, the integration of efficient manufacturing principles into the safety-conscious healthcare industry has introduced a fresh perspective into patient care delivery processes, offering the chance to achieve both.

This performance improvement project translates into an annual savings of $331,000. Current benchmark data show our performance is within the 90th percentile.[4] This success is proof that a collaborative, interactive team and commitment to improvement provides a blame-free environment that enables synergistic safety and efficiency. Our goal is to move forward with continuous improvement opportunities in the coming months. Team engagement is a top priority. Next steps include evaluating turnover times for each specialty and implementing an electronic safety checklist. With tools such as LSS and DMAIC, the culture of innovative thinking and process design becomes the new normal. NM

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