A project at The Cleveland Clinic has reduced turnover time for total joint replacement cases by 50%—enough to add another case to the OR schedule. Adding a case has been the Holy Grail of turnover time—an elusive goal.

The project is called QuEST—Quality based on Efficiency, Satisfaction and Teamwork—emphasizing quality while expediting cases, says Michael Smith, MD, MSEd, physician manager of the project. The name also represents the “quest” for the grail.

QuEST involves 1 orthopedic OR and a smaller adjacent OR that was converted to an induction space. The room is reserved for cases performed under spinal anesthesia that generally can be completed in under 2 hours (sidebar).

Reorganizing the work flow reduced:
• turnover time from 30 minutes to an average of 12 minutes (patient out to next patient in)
• patient-in-room to incision time from 50 minutes to an average of 32 minutes.

For more than half of cases, the patient-out-of-room to incision-on-next-patient time is about 35 minutes compared to 80 minutes for historical controls.

Dr Smith explains that if 4 cases are performed in the QuEST room, and 30 minutes are saved on turnover time for each case, the total savings is 1 1/2 hours, enough to perform an additional case, adding that these are rough numbers. Surgeons can perform as many cases before 5 pm or 5:30 pm as they used to perform by 8 pm or 9 pm, he says. One surgeon can perform 6 joint replacements in 5 patients (one a bilateral) by 5:30 pm. Six of the 58 orthopedic surgeons are participating, and the room is used 14 to 16 days a month.

How the process works
Staffing for each case consists of a certified registered nurse anesthetist (CRNA), a circulating nurse, a scrubbed person, and a postanesthesia care unit (PACU) nurse who transports the patient to recovery.

This is how the patient flow works:
• About 20 minutes before the end of a case, the PACU nurse comes to the OR to accompany the patient to the PACU. If there are any questions about a patient’s condition, an anesthesia provider transports the patient to the PACU.
• The CRNA then goes to the induction area to prepare the next patient.
• The OR is cleaned, and the instrument tables are rolled in. The tables have been preset and covered. An experienced environmental services technician aids cleanup.
• Two circulating nurses rotate between cases. While 1 circulator is in the OR for the current case, the second circulator is in the preoperative area assessing and preparing the next patient.
• To aid communication, staff members carry walkie-talkies.
• An automated supply station in the OR gives anesthesia providers ready access to medications.

At least 4 joint replacements need to be scheduled in the QuEST OR to justify the additional staffing, Dr Smith says.

Instrument setups
QuEST is the best example of teamwork he has seen in his nearly 30 years at the clinic, says Robert Lovequist, RN, nurse manager for the orthopedic ORs. Last year, the orthopedic team won the clinic’s World Class Service Award.

“The physicians are open to suggestions, and it is nice to see everyone working together,” says Lovequist. One example was his suggestion to have the PACU nurse
transport the patient to recovery rather than the circulating nurse, which has worked well.

Most of the orthopedic nursing staff rotate through the QuEST room, giving the RNs an opportunity to scrub as well as circulate. Lovequist would like to see a program to reward the nursing staff for productivity. For example, if they finish 5 joint cases by 4 pm or before, they might be able to go home but receive the same pay.

A controversial practice is setting up the instrument tables in advance. The tables are set up in a separate closed room by surgical technologists. The setups are generic and latex free. The tables are covered with cloth and plastic. The tables generally are set up one case in advance, used within 4 hours, and monitored at all times.

“We’ve been doing this for quite a few years, and our infection rate has not increased,” Lovequist said, adding that the orthopedic surgeons do not have a problem with the practice. Representatives from the Association of periOperative Registered Nurses (AORN) and the Joint Commission on Accreditation of Healthcare Organizations have questioned the practice but “were satisfied” when it was explained, he says.

AORN cautions about setting up sterile fields in advance. An AORN recommended practice says sterile fields “should be maintained and monitored continuously” and prepared as close as possible to the time of use. AORN also says “there is no scientific data to support the practice of covering or not covering the sterile field,” adding that removing the table cover “may result in a part of the cover that was below the table level to be drawn above the table level,” and “it is important to continuously monitor all sterile areas for possible contamination.”

**Fast and fun**

Dr Smith compares QuEST to an Olympic team whose every movement is honed.

“I can’t stress enough that the OR nursing team and PACU nursing team are the keys to this working,” he says. “The CRNAs love to be in that room because it is fast and fun. You look up and it’s 11 am, and you’re on your third case. With joints, that’s unheard of, especially in a large institution like ours.”

Yet the pace is not too hurried for the circulating nurses because they rotate, he says. One circulates on 3 cases a day, and the second circulates on 2 cases.

“I think we have found the perfect time-line. Everyone feels they have enough time, yet everything is moving along.

“The concept is that we will add staff, but we will make additional revenue that will more than cover that cost,” Dr Smith says. A consultant is currently conducting a study to document costs and revenue.

The Cleveland Clinic has 59 ORs, of which 6 are used for orthopedics, and performs about 1,900 total joint procedures annually.

Dr Smith presented an abstract on the project at the American Society of Anesthesiologists conference in October in Atlanta.

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**Reference**

Cleveland Clinic’s turnover time project

Eligible cases must be:
• performed under spinal anesthesia
• primary total knee or total joint replacements that can be completed in 2 hours or less; some revision procedures are performed in the room.
• performed by a surgeon with a track record for performing cases within the estimated time.

Patients are not scheduled for this room if they have:
• advanced cardiac disease (ejection fraction 35% or below; severe valvular disease)
• dwarfism
• severe pulmonary disease
• morbid obesity (body mass index >35).

Staffing for the room:
• 2 circulating nurses who rotate between cases
• a postanesthesia care nurse who comes to the OR to assume care of the patient at the end of the case
• a certified registered nurse anesthetist
• an experienced orthopedic service technician who performs the prep, scrubs, holds retractors, and assists with turnover.

Other features:
• instrument tables are set up in advance and covered.
• an experienced environmental services staff member is assigned to assist with cleanup of the room.
• staff members have walkie-talkies to aid communication.

Focusing on what is essential helps tighten up turnover time

MetroHealth Medical Center, a county hospital in Cleveland, has adopted some principles of Massachusetts General’s OR of the Future without building separate work spaces.

The new process has reduced nonoperative time by 30% (the time from when the dressing is applied on one patient until the incision is made on the next patient).

There was “tremendous cooperation” from the project team, says the surgeon in chief, Mark Malangoni, MD, FACS, with representation from surgeons, anesthesiologists, nurses, surgical technologists, environmental services staff, central service, information services, and the hospital administration. The hospital has 17 to 18 staffed ORs.

Rather than having a separate induction room, patients at Metro-Health are prepared for induction in the holding area. Like the OR of the Future, MetroHealth uses a transportable OR table top.

The new process involves a number of steps—“and you need all of the steps,” Dr Malangoni emphasizes.

Before the day of surgery
• All patients are seen for a preoperative assessment to ensure they have had a history & physical and appropriate lab tests.
• All operative permits are scanned into the computer system so they will not be misplaced.
• Orders are initiated for prophylactic antibiotics, anticoagulants, and any other medications so they are available when the patient comes to the OR.

**On the day of surgery**

• When a case is finishing, the circulating nurse signals the anesthesia provider in the holding area to prepare the patient for the next case. The patient is placed on a transportable OR table top (Jupiter, Trumpf Medical), monitors are applied, and the patient is prepared for induction.

• While nurses are setting up for the case, the patient is wheeled in, and the OR table top is docked to its base. Anesthesia is induced, and the case begins.

• Room cleanup begins as soon as the bandage is applied.

• At the end of the case, an anesthesia provider accompanies the patient to the PACU with the patient still on the transportable table top, and the patient is transferred to a PACU bed. A second anesthesia provider prepares the anesthesia machine for the next case and goes to the holding area to prepare the next patient.

Initially, the project focused on cases of less than 2 hours where shorter turnover times would make the most difference. MetroHealth plans to expand the process to more cases.

“We embarked on this project to improve patient satisfaction, and we have been able to do a better job of getting patients in at the scheduled time,” Dr Malangoni says. “It’s also been a surgeon satisﬁer because they are getting their cases done more quickly.

“But it would be wrong not to admit that this process puts a lot of stress on everyone” to keep things moving, he adds. “We have continued to emphasize patient safety, and we have found we can continue to do that while reducing time.

“It requires effort to focus on what is essential while eliminating what is extraneous.”