Parallel processing—performing some tasks in tandem—is one strategy that helped an Ohio hospital reduce nonoperative time by 37%, from nearly 65 minutes to 42 minutes. Turnover time was reduced by 38%, from about 43 minutes to 26 minutes.

The project team analyzed patient flow from the surgeon’s office through discharge from the OR suite. The team then determined which activities could be performed in parallel and which could be removed from the OR. (Non-operative time was defined as time not devoted to performing the operation; it is the sum of anesthesia-controlled time and turnover time.)

The 3-month study was conducted in 2 of 17 ORs at MetroHealth, a county-owned academic medical center in Cleveland. The study involved cases with an expected operating time of 2 hours or less, with similar cases in the other 15 ORs serving as controls.

The broad-based team included surgeons, anesthesiologists, and OR staff as well as support employees, such as those from environmental services.

Important lesson
The most important lesson—“you need to involve everyone from preop testing to the PACU in your new process, and you need buy-in,” says the team’s leader, anesthesiologist Maureen Harders, MD. Consultants from the Twin Peaks Group (www.twin-peaks-group.com) worked with MetroHealth on the project.

Strategies were identified to help reduce nonoperative time in each phase of care—preoperative, intraoperative, and postoperative. Though some fell by the wayside at the end of the study, others have become part of daily practice.

Before launching this type of project, it’s important to involve senior management, says Dan Krupka, PhD, of the Twin Peaks Group.

Saving time during the day won’t be of benefit unless the hospital can generate enough surgical cases to fill out the work day. Also, anesthesiologists will lack an incentive to reduce nonoperative time if their billable hours are reduced, and hospitals could see a reduced reimbursement for CRNAs they employ.

MetroHealth opened a new 20-room OR suite in 2004, and the team was able to take advantage of new technology, including OR tables with mobile tops (Trumpf Medical Systems.) But the new suite also presents logistical challenges—the distance around the suite is a quarter mile.

“We can put on 4 or 5 miles a day walking back and forth, so we have to try to be efficient,” Dr Harders says.

These are strategies they adopted for each phase.

Preoperative strategies
Improvements in the preop phase may help reduce delays and cancellations on the day of surgery.

To address the problem of missing consents, the hospital now requires the consent to be signed in the surgeon’s office, scanned, and sent to the OR suite through the hospital’s information system.

Also, more patients, about 80%, are seen in the hospital’s presurgical clinic before the day of surgery. Nurse practitioners and anesthesia residents perform the assess-
ments, which help identify patients who may need more of a workup before surgery. The goal is to have workups and charts completed the day before surgery.

**Day of surgery**

Strategies for the day of surgery are aimed at reducing nonoperative time and performing nonclinical activities outside the OR.

**Modular OR tables**

Though MetroHealth purchased the modular tables for its new ORs, they were not used to full advantage. In fact, Dr Harders says a suggestion from Trumpf got her and others thinking about redesigning the process.

The tables have movable tops that patients remain on from the preop phase until discharge from the OR suite. The table top fits onto a transporter, which is wheeled to the OR, where the table top is transferred to a column mounted in the OR floor.

Using the tables takes coordination. The staff must make sure the right patients are placed on the modular table tops. Not all of the ORs have the columns because some must be available for specialty needs.

**Monitoring leads**

With the mobile table tops, monitoring leads, the blood pressure cuff, and pulse oximeter can be placed on patients in the holding area.

“As we are transferring the table top onto the column in the OR, an anesthesia assistant hooks up the monitors, and we get our first set of vital signs,” Dr Harders says.

**Anesthesia evaluation**

When possible during the study, the attending anesthesiologist went to the holding area to see the next patient as the nurse anesthetist was monitoring the current patient. As a teaching institution, MetroHealth has attending anesthesiologists who are responsible for 2 ORs as well as anesthesia residents and certified registered nurse anesthetists (CRNAs).

There are times when the attending anesthesiologist must remain in the OR to direct a resident, Dr Harders notes. She adds that some anesthesiologists accepted this arrangement better than others, and some CRNAs felt burdened with the turnover activities.

“We didn’t want anyone to feel hurried,” she adds. “We just wanted everyone to use their time more efficiently.”

**OR nursing assessment**

During the study, circulating nurses stayed in the OR to help set up for the next case rather than going to the holding area to see their next patient. The OR nursing assessment was performed by nurses assigned to the holding area, who conveyed results to the circulators.

“That was a big hurdle for us because the circulating nurse’s interview sometimes lasted 10 minutes,” Dr Harders says. It took time for circulators to develop trust in the holding area nurses’ assessments, and some circulators insisted on performing their own assessments, she adds.

**OR cleaning**

At the end of the case, the cleaning crew arrives to begin cleaning the room as soon as the surgeon has covered the wound. The crews were given pagers to alert them 5 minutes before the end of the procedure.

The paging not only saves time but also helps the environmental services workers feel more involved, Dr Harders notes.

“Now there is a focus on them as part of the team, and they have done a great job,” she says. The project team got budget approval for a disposable mop system that is quicker to use and more sanitary.
Rewards for staff

What can motivate OR staff to save time when their “reward” might be another case added to the schedule? Though add-ons are hard to avoid in a busy OR, nurse managers try to arrange for staff who have worked through the day to use their time at the end of the day to work on projects in a less hurried manner, Dr Harders notes. Anesthesia providers who aren’t on the late list can leave early.

Status of the project

Though the study was focused on 2 ORs, all of the ORs reduced their nonoperative time during the project, Dr Harders notes. Some changes that have become part of daily practice include scanning the surgical consent and having holding area nurses perform more of the preop assessments. Dr Harders says she and the chief of surgery, Mark Malangoni, MD, plan to ramp the project back up and apply it to more ORs early in 2007.

Reference


Examples of process redesign

Tasks transferred out of the operating room:
1. Patient placed on mobile table top in holding area
2. Preoperative nurse interview obviates need for circulating nurse interview
3. Patient taken to postanesthesia care unit on mobile table top.

Parallel processing
1. Anesthesia provider interviews next patient and obtains medications during ongoing case
2. Environmental services personnel begin room cleanup as dressing is placed
3. Anesthesia personnel split duties: One takes current patient to PACU while the other prepares room for next patient
4. Circulating nurse and scrub person open instruments and prepare room during cleanup
5. Case carts brought to substerile area before room cleanup.

Minimization of nonclinical disruptions
1. Operative permits are scanned in surgeons' offices
2. Mandatory presurgical evaluation instituted
3. All patient information (including operative permits) available on hospital information system.

Rethinking case activities

Tips for reducing nonoperative time:

Focus on time from close to cut
To be more efficient, focus not just on turnover time but on nonoperative time—the time from close of the incision on one patient to the incision on the next. This includes anesthesia activities as well as turnover tasks.

Conduct a pilot
Pilot the project in 1 or 2 ORs, not the entire OR suite.

Could you add another case?
Consider whether you can save enough time to add an additional case. Shaving a few minutes from each case is unlikely to provide enough time.

“But if you focus on reducing nonoperative time for shorter cases, you may be able to free up enough time,” says consultant Dan Krupka, PhD.

The corollary: Will you be able to generate new cases to fill the extra time?

Garner support
You must have the support from physicians and administrators. At MetroHealth, the chief of surgery, chief of anesthesia, and other physicians “were keen to reduce nonoperative time,” Krupka says. The project was led by a high-level steering committee that supported a broad-based task force that included everyone affected by the new process. The structure helped cut through barriers, such as getting budget approval for new disposable mop heads to enable faster room cleaning.

Map the process
The task force mapped the nonoperative process minute by minute.

“We asked, ‘How will we change this process to make use of technology [like new OR tables with portable tops] with the target of a 35-minute nonoperative time?’” says Krupka.

Look at tasks that can be done in parallel, such as having the anesthesiologist see the next patient while the nurse anesthetist or resident is finishing with the current patient.

The result was a better-coordinated process.

Eliminate delays
Consider all types of delays, not just those between cases. Work to resolve issues such as missing instruments and paperwork.

“I believe if you really concentrate on the short cases, think about parallel processing during nonoperative time, and eliminate delays, you should be able to get nonoperative time down to 45 minutes,” he says.