Since 2002, OR Benchmarks, a service of OR Manager, Inc, has studied turnover time for 11 types of surgical procedures. The studies have found a great deal of variation in turnover times.

“It is a myth that there is a universal benchmark for turnover time,” says OR Benchmarks director, Judy Dahle, RN, MS.

“Many facilities collect turnover times from a variety of types of procedures and average them,” she says. Though this provides a way for monitoring turnover time within one facility, it doesn’t work well for benchmarking because there is so much variability among types of procedures, she notes. Some procedures require more setup and cleanup time than others. Total hip arthroplasty, for example, typically has a longer setup and cleanup time than hernia repair because it requires a larger amount of instrumentation and equipment.

Turnover time also varies from one facility to another because of different case-loads. A facility that performs a larger proportion of orthopedic and cardiac cases, for instance, will have longer turnover times than one that performs primarily shorter, less complex cases.

For these reasons, OR Benchmarks defines turnover time as the setup and cleanup time for the same procedure. For example, turnover time for a total hip arthroplasty is measured as the setup and cleanup time for that procedure only.

“OR Benchmarks believes it is important to compare like procedures with similar setup and cleanup requirements to help participants better understand their turnover process,” Dahle says.

In collecting data, participants record setup and cleanup times for 5 cases of each procedure type they are benchmarking. The times are averaged and compared with those of other facilities for the same procedure.

Turnover practices vary

Variations in turnover time for the same procedure can be explained by a number of factors. There is no one method for setting up or cleaning an OR, she notes. Setup time varies with the staff’s experience, the department’s practice for when the patient is brought into the OR, the team process, completeness of preference cards, and supplies and equipment required.

Surgical volume does not make a difference in turnover time, Dahle says. There was no evidence that facilities performing a higher volume of total hip replacements, for example, have a shorter turnover time than those with a lower volume of these cases.

Use of endoscopic equipment seems to have an effect. Endoscopic procedures had similar turnover times, with a mean of 50 to 55 minutes for knee arthroscopy, laparoscopic cholecystectomy, and laparoscopic gastric bypass.

Strategies of better performers

Interviews with better performers in the benchmarking studies identified 4 strategies they use to manage turnover time:

Parallel processing

“Most of those who do better on turnover time are using parallel processing,” says Dahle, meaning they overlap activities. During setup, for instance, the patient is brought into the room while the staff is still setting up instruments for the case. Similarly, during cleanup, one person mops the floor, if necessary, while another person removes used instruments, and another cleans the table and other surfaces.
Team processes are identified

Better performers identify a specific process for setup and cleanup rather than letting activities occur haphazardly.

“A good team process reinforces parallel processing,” she says. “This doesn’t mean there has to be a ‘turnover team.’” But it does mean the turnover process is planned and duties assigned. For example, the scrub person and circulating nurses may have specific duties for setup and cleanup. If others such as housekeepers are involved, they also have specific tasks to perform.

“There is no ideal number of personnel for setup and cleanup,” she adds. “It is more important that each person has a role and knows what needs to be accomplished so there is not a need for rework.”

Preference cards are accurate

Accurate, up-to-date preference cards aid efficient case setup.

“If your preference cards aren’t accurate, you may have a longer setup time because the staff has to hunt for needed supplies,” Dahle says.

Standardization among physicians

If surgeons who perform the same procedure standardize their instrument sets and room setups, turnover time is quicker because the staff has fewer variations to manage.

“The team knows the setup, and it organizes the process better,” she says.

Battle of perceptions

“The turnover time issue often is a battle of perceptions—surgeons, nurses, and anesthesia providers see turnover time differently,” says Dahle.

The surgeon thinks of turnover time as the downtime between finishing with one patient and making the incision on the next patient.

OR nurses typically define turnover time as the time needed to clean the room following one case and prepare the room for the next case. For the anesthesia provider, turnover time includes time needed to transfer the patient to the postanesthesia care unit and prepare and induce anesthesia for the next patient.

“It’s important to address these different points of view and try to gain consensus on the definition,” she says.

It’s also important to analyze all of the turnover time activities and how each team member contributes to the activities. That can lead to a better understanding of how to coordinate these activities.

Analyzing care events

One tool for analyzing turnover time is the OR Manager Standard for Costing Surgical Procedures. OR Benchmarks studies are consistent with the cost standard. The standard divides a surgical procedure into phases of care, each with activities called “care events” (illustration).

### Mean turnover by procedure

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Range</th>
<th>Median</th>
<th>Mean</th>
<th>Cases reviewed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inguinal hernia repair</td>
<td>18-65 min</td>
<td>26 min</td>
<td>33 min</td>
<td>35</td>
</tr>
<tr>
<td>Total hip arthroplasty</td>
<td>25-161 min</td>
<td>71 min</td>
<td>74 min</td>
<td>77</td>
</tr>
<tr>
<td>Total knee arthroplasty</td>
<td>20-98 min</td>
<td>55 min</td>
<td>58 min</td>
<td>73</td>
</tr>
<tr>
<td>CABG</td>
<td>28-85 min</td>
<td>65 min</td>
<td>64 min</td>
<td>42</td>
</tr>
<tr>
<td>Knee arthroscopy</td>
<td>35-99 min</td>
<td>50 min</td>
<td>55 min</td>
<td>43</td>
</tr>
<tr>
<td>Carotid endarterectomy</td>
<td>21-65 min</td>
<td>43 min</td>
<td>44 min</td>
<td>46</td>
</tr>
<tr>
<td>Laparoscopic gastric bypass</td>
<td>39-83 min</td>
<td>52 min</td>
<td>55 min</td>
<td>30</td>
</tr>
<tr>
<td>Lumbar laminectomy simple</td>
<td>23-65 min</td>
<td>26 min</td>
<td>33 min</td>
<td>35</td>
</tr>
<tr>
<td>Lumbar laminectomy implants</td>
<td>26-125 min</td>
<td>41 min</td>
<td>56 min</td>
<td>25</td>
</tr>
</tbody>
</table>

Notes: Turnover time is defined as setup time plus cleanup time for the same procedure. Setup time is measured from the start of setup to the time the patient enters the room. Cleanup time is measured from the time the patient leaves the room until the room is ready for the next case setup.

Population represents teaching and non-teaching hospitals ranging from 4 OR suites to 38 OR suites. Data collected from 2002 to 2004.
The “OR Committed” phase of care includes 8 care events that start with the time room setup begins and end when room cleanup is completed.

Why measure 8 care events?

“We know collecting this data takes time,” Dahle says. “But when teams look at these time segments and benchmark, they get a better picture of what is going on. For example, they may find they have a long induction time, and that affects surgeons’ perceptions of turnover time. Then they can address that particular segment of care.

“It is important for the surgeons and staff to understand the impact of all of these events on turnover time,” she adds. “Understanding where delays may be occurring opens opportunities for improvement.”

Ideas to improve turnover time from best performers in recent studies by OR Benchmarks, a service of OR Manager, Inc.

A turnover crew
At a NASCAR race, pit crew members know what to do when a car comes in. One takes care of the tires and gas, another washes the windshield, and someone else changes the sparkplugs. “The race crew is a perfect concept for OR turnover teamwork,” notes Heather Carelock, RN, director of surgical services at Mary Washington Hospital, Fredericksburg, Va. The hospital has 10 rooms in its main OR and performs about 9,000 cases annually.

At Mary Washington, when a case is finished, 2 support associates go to the room. (Support associates combine positions of orderly and housekeeper.) Support associate 1 wipes down surfaces while support associate 2 empties the linen, trash, and suction bottles. Support associate 1 returns and washes the floor, and support associate 2 pushes equipment for the next case. Meanwhile, the scrub nurse takes out the dirty instruments, and the circulating nurse begins opening supplies for the next case.

Other strategies that help:
• The hospital provides RN first assistants (RNFA) for each case. The RNFA accompanies the patient to the postanesthesia care unit (PACU), allowing the circulating nurse to start setting up for the next case.
• Accurate preference cards make a difference. The hospital created new preference cards when implementing a new information system. The preference cards are detailed so the nurses know exactly what is needed. Nurses write on a white board outside each OR what equipment the support associate needs to bring for the next case.

Hamper organizes supplies
A “turnover hamper” helps reduce turnover time at Poudre Valley Hospital in Fort Collins, Colo. The hamper is wheeled into the OR as the patient is being moved off of the OR table.

The hamper has a wet mop, wipedown cloths, and bags. While the circulating nurse helps the anesthesiologist with the patient, the scrub nurse cleans the instruments, and orderlies wipe down the prep tables and start bagging trash, says Steve Stout, RN, OR business associate at Poudre Valley, which has 13 ORs and performs about 11,400 cases a year, about 28% of that in orthopedics.

After the patient leaves, orderlies finish disassembling the back table, wipe down the equipment, and mop the floors. Then they place the trash, mops, and dirty linens in the hamper and move it out, saving trips.

By that time, the scrub nurse is rolling in the case cart and preparing to open for the next case. The circulating nurse is counting and readying prep solutions while keeping an eye on the patient and helping the anesthesiologist when needed.

Other strategies that help:
• Orderlies are assigned to 2 rooms for a 3-month period then rotate to 2 different rooms. They watch so they know when the cases will be finishing.
• In orthopedics, left-sided procedures are scheduled in the morning and right-sided procedures in the afternoon so the staff doesn’t have to flip the rooms between cases. This way, an orthopedic surgeon can complete 7 or 8 total knee replacements in an 8-hour day, using 2 rooms back to back.

Poudre Valley’s average overall turnover time for August was 23.9 min, including orthopedic, cardiac, and trauma cases.

A group effort
Decreasing turnover time by 2 minutes is a goal of every OR staff member at Bryn Mawr Hospital, Bryn Mawr, Pa—it’s part of their performance appraisal, says Lynne McGrath, RN, nurse manager, surgical services. Turnover time is measured each month, and results are posted throughout the OR. McGrath writes notes, such as, “Keep up the good work. Our goal is 22 minutes.” She also announces turnover times each month at OR business and staff meetings.

The average time for August was 24.4 minutes, excluding cardiac surgery. Turnover time is defined as the time from when the previous patient left the OR until the next patient enters (cleanup plus setup time). Bryn Mawr has an annual surgical volume of 7,000 patients a year.

McGrath has introduced a team concept she calls “herd cleaning.” When an OR is ready to break, all OR assistants and anyone else available goes to the room to assist with turnover activities. If more than one room finishes at once, the group breaks up and goes to separate rooms.

The concept is also used for the first cases of the day. At 7:15 am, all OR assistants go to the preoperative holding area and accompany surgeons and anesthesiologists to the rooms with the patients.

The circulating nurse does not go to the preoperative holding area. Instead, the anesthesiologist waits with the patient in the holding area until the surgeon arrives and takes the patient to the room with the orderly.

“We definitely have a good team approach and a cooperative relationship with anesthesia, surgeons, nurses, and support staff working side by side,” says McGrath.

—Judith M. Mathias, RN, MA