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).

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.”


OR of the Future highlights

• A 1,300 sq ft storeroom was converted into a 4-room suite with an OR, induction room, early recovery room, and surgeons’ work space.
• The new workflow was supported by additional anesthesia and OR personnel.
• The project used a mobile OR table with a mobile table top, transporter, and fixed post in the OR floor.
• The redesign reduced nonoperative time from 67 minutes to 38 minutes and turnover time from 36 minutes to 22 minutes.
• Though hospital and anesthesia costs per case were higher, increased revenue from improved throughput and additional cases resulted in the overall net margin being unchanged. The anesthesia group has a net negative margin.

New turnover studies from Europe

Overlapping induction

German researchers studied the effect of overlapping anesthesia induction by having an additional anesthesia team available, using an induction area, and having patients emerge from anesthesia in a separate area before going to the postanesthesia care unit (PACU). The study was conducted for 60 days with 335 cases, including a control group.

By overlapping induction, the number of cases performed increased, nonsurgical time was reduced from 68 minutes to 57 minutes, and turnover time decreased from about 38 minutes to 25 minutes.

The authors concluded that overlapping induction can improve the number of cases performed during the regular work day. The hospital where this study was performed already used induction areas. All patients in the study were inpatients who were already in the facility and had surgery only when the turnover time was reduced.

Inducing anesthesia outside the OR

Researchers in Finland studied the effect of moving anesthesia induction and positioning out of the OR for cases completed during the regular work day from 7:45 am to 3 pm. They compared traditional induction with the new out-of-the OR model.

In the new model, patients were positioned and induced on a mobile OR table, which has 3 parts: a mobile top, a transporter, and a fixed dock in the OR. The patient is positioned and has anesthesia induced on the mobile top in the induction area and is wheeled into the OR where the top is transferred to the dock, saving transfer of the patient in the OR. The new arrangement required more staffing, with 6.25 anesthesia providers compared with 4.75 for the traditional model.

Mean nonoperative time was reduced by 46%. About half of the time savings was from concurrent anesthesia induction, with the rest from reducing delays during the surgical process. The new model allowed an additional case to be performed during regular hours.

The study was conducted in an orthopedic and trauma OR; all cases were urgent, and patients were available in the hospital to start earlier in the day if necessary.

The researchers estimated potential yearly savings are greater than the cost of additional staff involved.