You’ve no doubt worked hard on turnover time and on-time starts to improve your OR’s performance. But there’s a factor you may be overlooking—the accuracy of your case-duration estimates.

These estimates have a big impact. Underestimate case times, and cases run over. Then subsequent cases either start late, or you have to scramble to find another room. But if you overestimate times, cases end early, leaving awkward gaps in the middle of the day. Surgeons and patients have to be asked to move up to fill the gaps. It can feel like crisis management, and it drives down patient, physician, and staff satisfaction.

The OR Benchmarks Collaborative (ORBC), analyzing 12 months of data for a sample of 72 subscribers with 1.3 million cases submitted, found that with targeted efforts, subscribers were able to improve case-duration accuracy by an average of 3%. They were also able to make improvements of 3.2% in subsequent-case start-time accuracy, 5.1% in prime-time utilization, and 8% in both surgical case volume and case minutes.

Over the first 20 months of the collaborative, subscribers in general have improved case-time accuracy by 29% using the collaborative’s tools. Overestimated time fell by 12%, and underestimates decreased by 33%. The ORBC tools enable managers to analyze a great deal of data quickly and easily. ORBC is a partnership between OR Manager, Inc, and McKesson that provides a web-based dashboard on key performance indicators and analytical tools (www.orbenchmarking.com).

Why are estimates inaccurate?

OR directors often scratch their heads about why case-duration estimates are off, says Tina Foster, RN, MBA, CNOR, of McKesson Business Performance Solutions. Automated OR scheduling systems typically compute average case durations for each type of procedure each surgeon performs. In general, the system considers the surgeon’s past 10 to 15 cases for each procedure, discards the longest and shortest times, and averages the times in between.

Foster says there are 4 major reasons why estimates are inaccurate:

- Procedure files have multiple names for the same procedure.
- Cases involving multiple procedures, which take more time, are counted in with times for a single procedure.
- Default cleanup and setup times are used in scheduling, regardless of the complexity of the procedures.
- Surgeons are allowed to override system-generated times for case duration.

Here’s how each factor affects OR operations and suggestions for some solutions.

Keeping procedure files clean

An eroded procedure file is the most common reason for inaccurate case-time estimates.

“Looking into the procedure file, you might find, for example, that laparoscopic cholecystectomy has been posted under a number of different names in the past 6 months, such as lap chole, laparoscopic chole, or lap cholecystectomy,” Foster says. When the system figures an average for lap chole, it doesn’t know to look under all of those different names. Thus, it doesn’t include data for all lap choles performed during the time period in question.
Another problem is uncommon procedures that aren’t performed often enough for the data to be representative. When most organizations build their systems, Foster notes, they include a rough estimate for these uncommon procedures and expect enough data to accumulate. But if there aren’t enough of those cases, the case duration estimate will be inaccurate.

Procedure files tend to be unruly. For the average community hospital, the best practice for a procedure file is about 2,500 different procedures, she says. But it’s not unusual to have 10,000 or 12,000.

Ideally, facilities would use a standardized procedure dictionary for naming and scheduling cases. Most surgical services information systems provide such a dictionary. But many ORs elect to customize the dictionaries, which eventually leads to inconsistent naming.

ORBC, with its data-mining tools, gives subscribers the ability to drill into their case scheduling statistics to identify which procedures or physicians are outliers. One facility found only about 39% of its case-duration estimates were accurate. Analyzing the data, the facility learned orthopedics was a lower performer than the other service lines, and one high-volume surgeon was a statistical outlier. Examining the data in more detail, they discovered that only his total hip cases, specifically his right total hip cases, were underestimated by about one-half hour. After further investigation, they found his office routinely scheduled all of his total hip procedures as left hip cases. As a result, when a right hip procedure was performed, the staff had to change the room setup, which took about 30 minutes.

“This was driving the performance of the whole OR, not to mention raising quality and safety issues,” Foster says.

**Accommodating multiple procedures**

Multiple procedures are a second factor leading to inaccurate case-duration estimates. For instance, a lap chole is performed with an appendectomy and an oophorectomy. If the case is posted as a lap chole, the case-duration data will go into the lap chole file. It will skew the case-duration statistics because the combined case takes longer than a lap chole alone.

A solution is to provide a method for the scheduler to accommodate cases routinely performed together so the data will be kept separately from the standard procedure file, Foster suggests. There should also be an override process that allows the scheduler to post multiple procedures not often done together so these statistics will also be kept separately.

**Accounting for setup and cleanup times**

A third factor that throws off case-duration estimates is the way the scheduling system adds time for between-case activities like setup and cleanup. There are a number of ways to handle this, and they can affect the accuracy of estimates, Foster notes.

A common approach is to set up standard “time buckets” to add to the end of each procedure for setup and cleanup. That’s the easiest approach, she says, particularly if clerical staff will be doing the scheduling. But it can lead to inaccurate case-duration estimates because actual setup and cleanup times vary considerably by type of procedure. For example, the setup for an appendectomy might take 10 minutes, while a total hip setup might take 45 minutes.

Another common approach is to provide standard setup and cleanup time buckets by 3 levels of case complexity, such as simple, minor, and major. For example, for a simple case, you might add 15 minutes for setup and cleanup; for a minor case, 30 minutes; and for a major case, 45 minutes.

But this approach doesn’t take into account situations where cases of different complexity follow one another. For example, an appendectomy is followed by a total hip replacement. If the appendectomy has 15 minutes added at the end, the total hip case will be delayed because there is not enough time for the setup. In the reverse situation, where a total hip case is followed by an appendectomy, there would be 45 minutes before the appendectomy, which would mean downtime.

Although these buckets may seem like the easiest way to allow for between-case
activities, “they often don’t work well,” Foster says. “You can see how stringing 20 to 40 cases together in a day with these mismatched turnover times would lead to an inaccurate schedule and a high degree of dissatisfaction.”

A better approach is to add separate setup and cleanup buckets on the front end and back end of the case times. For example, for an appendectomy, you might add 10 minutes on the front end for setup and 5 minutes at the back end for cleanup; with total hip, you might add 30 minutes on the front end, and 15 minutes at the end of the case. Though this system is more accurate, it’s more complicated to implement and manage.

“Organizations are starting to use more complex methods because they realize the importance of scheduling accuracy, but it’s a hard process—there is no silver bullet,” Foster notes.

**Surgeons overriding the system**

There are 2 variations on system overrides, Foster notes. In private practice settings, a surgeon might say he or she can perform the case in less time than the system reports to fit the case into the time available or to fit more cases into the surgeon’s block. When physicians are salaried, they may have an incentive to overbook case times so their schedule looks full, providing them with more free time during the day.

“There should be a process in place that requires scheduled case times to be driven by system estimates. There should also be a clear policy for exceptions that requires approval or documentation,” Foster advises. For example, the policy would give recourse to a surgeon who knows a patient has adhesions or another condition that will require additional time. Otherwise, the system-generated time should prevail.

Organizations that invest time and effort to improve their case-time accuracy can make big gains in performance, she says. Being accurate in estimating case times is as important in effective utilization of OR time and customer satisfaction as efforts to improve on-time first-case starts and reduce turnover time.

*For more about the OR Benchmarks Collaborative, go to [www.orbenchmarking.com](http://www.orbenchmarking.com).*