

## How can I calculate the operating room cost from cancelled cases at my facility?

For outpatient surgery centers with no add-on cases, do not underestimate costs by envisioning that the very few cases scheduled on the day before or on the day of surgery will fill a hole in the schedule. Typically, there will be few add-on cases. In contrast, hospitals usually have many cases of patients who are inpatient preoperatively, with surgery scheduled from the working day before surgery through the day of surgery. [Click here](#) for quantification, and [click here](#) for the full article. Those add-on cases cannot be ignored because otherwise the costs of cancellations will be over-estimated. The add-on cases can and are scheduled to fill holes ([click here \[PDF\]](#)). Staffing is planned months in advance. That planning should include whatever add-on cases typically are scheduled (e.g., labeled as “URGENT” in the [example](#) 1<sup>st</sup> shift staffing analysis report used in my [course](#)). This is why the OR analysis needs to consider all services (specialties) simultaneously, not only those for which cancellations are being studied.

The opportunity cost of the payment from the case may be included, but usually not. Rarely would a case that is cancelled on one day be performed instead at a different facility. Approximately 90% of cases that are cancelled after 7 PM the working day before surgery eventually are performed at the facility ([click here \[PDF\]](#) and [click here](#)). However, if not performed, consider not the payment, but the contribution margin. The contribution margin is revenue minus variable costs (e.g., implants). Contribution margins are typically around \$1700 per OR hour. [Click here](#), [click here \[PDF\]](#), and [click here \[PDF\]](#) for financial data from three hospitals.

The indirect/ intangible cost to the patient and family can be included. [Click here](#) for some references – however be cautious as this excellent, early paper was performed before managerial cost accounting for ORs was refined. [Click here](#) for some survey results. Also, include the incremental cost of all patients waiting longer on the day of surgery. The appropriate managerial response to a high cancellation rate is to have other patients arrive earlier in the day for their cases ([click here](#) and [click here \[PDF\]](#)).

The majority of the cost of cancellations is from the creation of a (very) prolonged turnover. [Click here](#) for the methodology of measuring the cancellation rate for each specialty (service) in a statistically sound manner [\[PDF\]](#). [Click here](#) for the methodology

of measuring prolonged turnover times [\[PDF\]](#). Calculate the baseline staffing cost, with staffing planned based on having as low a cost as possible. Then, repeat the calculation after having turnover times for each day that would not have been present had the case not been cancelled ([click here](#) for an article). All of these analyses are contained in the above listed [example](#) OR management report under “Service-Specific Turnovers”).

Do not over-estimate costs by taking a cost per minute of OR time and multiplying that by the estimated duration of the cancelled case. To understand why, consider an outpatient facility with an 8 hour workday, all the surgeons’ cases scheduled each workday, and rarely finishing late. For this common scenario, the incremental cost of a cancellation is only the indirect/intangible cost to the patient. There is no cost of the empty OR time per se, because there is no lost revenue and the labor costs are fixed. For large teaching hospitals with nearly every OR day being longer than 8 hours, the issue is moot ([click here](#)).

For the cost per minute of OR time, Childers and Maggard-Gibbons analyzed hundreds of California hospitals’ financial statements ([click here](#)). Median direct wages were \$9.56 per minute for inpatient care and \$9.34 for outpatient. For financial accounting (e.g., effect of cancellation in terms of all cases at a facility), use these values. However, if estimating the cost per minute of OR time relevant to the cancellation of individual cases, these would generally be overestimates, because these wages include not only nursing personnel and some physician and nurse practitioner payments, but also management and administrative staff. In other words, envision my time writing this paragraph as being included as a cost, and then divided by total used OR time. To obtain the wages of the personnel in an individual OR for a specific case, consider instead using the Bureau of Labor Statistics hourly wages. Then, add median payments for personnel who would be present. [Click here](#) for an example.

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