

Identifying Causative Factors that Lead to Delays in OR Efficiency and Impact OR Utilization

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WE DEFINE:

Background

The operating room contributes significantly to a hospital's finances while also demanding substantial costs. OR workflow has a significant impact on healthcare professionals as well as patient satisfaction. Currently, there is no standardized protocol or set of performance metrics that is utilized to optimize workflow. Due to the complex nature of the OR, causes for inefficiency are multifactorial and lead to decreased productivity, loss of revenue, case cancellations, underutilization of resources, and reduced patient and physician satisfaction. However, by targeting and addressing causes for inefficiency, optimization and OR utilization could be maximized to our institutions' greatest potential.

Goals

Our goal of this study was to identify the most common factors that contribute to our operating room inefficiency and develop a plan in which actionable changes could circumvent this.

EXAMINE:

We included all cases that began between the working hours of 7:30 AM and 4:30 PM and monitored cases for delays even before patients entered the operating room. For the first case of the day, we identified a delay if the case started more than 20 minutes later than the scheduled time. For every case afterwards, we identified a delay if the case started more than 40 minutes from the end time of the previous case. We identified the causes for delays by accumulating the information from interviews with pre-operative and intra-operative nurses, anesthesia and surgical residents/attending physicians, and accessing the electronic medical records.

We found that our ORs managed an average of over 400 cases a month over a three-month period of April, June, and July. For the month of April, we identified a delay rate of 14.8% and 7% of those cases were the first case of the day. For the month of May, we identified a delay rate of 48.5% and 23% of those cases were the first case of the day. Finally, in the month of June, we identified a delay rate of 37% and 15.7% of those cases were the first case of the day.

In addition to identifying delayed cases, we examined the cancellation rate for the months of April, May, and June, and found rates of 3.7%, 5.5%, and 16.1%, respectively.

We calculated our OR utilization by measuring the number of hours the OR was being occupied by a patient. We observed OR utilization percentages that ranged from 6.9% to 61.6% over the course of the three months.

ANALYZE:

The most significant cause of delays included the surgical/anesthesia team being there on a timely basis to start the case or to sign pre-operative documentation (consents or History and Physical Examination note). Furthermore, other delays included preparing OR rooms for the first case or turnover from one case to another, patients arriving late to the hospital, and additional medical clearance requested by the anesthesia team prior to the surgery.

CHANGE:

Based on previous literature, we propose a plan in which all OR staff (nurses, resident/attending physicians, technicians) are notified of the information we collected over our three-month period. One of the most significant causes of delays was due to pre-operative documentation. We would like to standardize requirements for completing documentation including history and physical notes as well as consent forms. We would also like to provide tailored sessions for all staff members to educate and provide ways to improve efficiency. This will help tackle all parts of OR flow including patient arrival, admission, and pre-operative course. Another potential intervention would be to discuss with staff members that may struggle with aspects of time management.

TRANSFORM:

(Results pending)

Conclusion

We understand that patients often experience a degree of dissatisfaction when their cases are delayed. Our goal was to improve the patient surgical experience by understanding causes for OR case delays and developing an intervention that will improve delays and increase efficiency. A secondary goal was to continuously collect and report data on the OR workflow, utilization, and efficiency especially after interventions have been made. Furthermore, we believed our goals would boost morale within the operating room and improve communication between staff on goals of care.

Limitations

Our study relied on OR staff to assist with determining the cause for delay and therefore, there is a certain degree of recall bias. In addition, changes in shifts made it difficult for the correct personnel responsible for cases (especially for cases earlier in the day). However, we attempted to correct this measure by speaking with the staff multiple times throughout the workday. Another important consideration we appreciated when conducting our study was that our hospital is a teaching institution. While efficiency and utilization are important, we understand the value of allowing time for educational opportunities as well as our goal of always maintaining patient safety.

When we conducted our interviews to identify causes of delay, we found discrepancies between team members but would eventually reach a consensus and were able to identify several causes of delays. This showcases the importance of developing an interdisciplinary approach when attempting to implement changes that could improve these delays.