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An Analysis on Ontime OperationTheatre Clearance

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<u>ABSTRACT</u>

This analysis explores the importance of on-time operation theatre clearance in surgical care and its impact on patient outcomes, staff productivity, and hospital efficiency. Efficient operating theatre clearance requires effective coordination and communication between multiple departments, including the surgical team, anaesthetists, nursing staff, and support services. We examine various factors that contribute to on-time clearance, including surgical scheduling, turnover time, staffing levels, equipment maintenance, and quality control measures. We also discuss the role of data analysis in identifying areas for improvement and optimizing operating theatre efficiency. Based on our analysis, we provide recommendations for hospitals and surgical teams to enhance their operation theatre clearance process and improve patient outcomes. Our findings emphasize the importance of efficient operating theatre clearance in providing safe and timely surgical care. This analysis focuses on the importance of on-time operation theatre clearance for patient safety and efficient use of hospital resources. Factors that can impact on-time clearance, such as staffing levels, processes, equipment availability, communication, emergency cases, and equipment maintenance, are discussed. The consequences of delays in clearance are also highlighted. To ensure on-time operation theatre clearance, hospitals can take measures such as optimizing staffing levels, implementing efficient processes, ensuring equipment and supplies availability, facilitating effective communication, developing contingency plans, and regularly maintaining equipment. Regular reviews and optimizations can help ensure the process is efficient and effective. Overall, on-time operation theatre clearance is essential for the delivery of high-quality healthcare services.

INTRODUCTION

Operating theatre clearance is a crucial aspect of surgical care that impacts patient outcomes, staff productivity, and overall hospital efficiency. Ensuring on-time clearance of operation theatres is essential for reducing the risk of surgical complications and improving patient safety. It also ensures that surgical procedures are performed according to schedule, minimizing delays and cancellations that can affect hospital revenue and patient satisfaction.

Efficient operating theatre clearance requires effective coordination between multiple departments, including the surgical team, anaesthetists, nursing staff, and support services. This involves streamlining workflow processes, optimizing resource allocation, and ensuring adequate staffing levels. Additionally, effective communication between team members is crucial for maintaining smooth operations and preventing delays.

In this analysis, we will examine the factors that contribute to on-time operation theatre clearance, including surgical scheduling, turnover time, staff training, equipment maintenance, and quality control measures. We will also discuss the role of data analysis in identifying areas for improvement and optimizing operating theatre efficiency. Ultimately, the goal of this analysis is to provide insights and recommendations for hospitals and surgical teams to improve their operation theatre clearance process and enhance patient outcomes.

KEYWORDS

Operating theatre, Surgery, On-time clearance, Efficiency, Patient outcomes, Workflow, Patient safety, Operating room utilization, Turnover time, Staffing levels, Resource allocation, Process improvement, Surgical scheduling, Communication, Equipment maintenance, Surgeon and anaesthetist efficiency, Staff training, Standard operating procedures, Quality control, Data analysis.

OBJECTIVES OF STUDY

- The aim of the study is to study the OT utilization time and most common causes of cancellations and rescheduling of surgeries.
- > To find out the capacity utilization and actual utilization time of OT.
- > To find out the reasons for the gap in available working time and utilization time of the OT.
- > To find out the type of surgeries that take place in the OT and analyse the related information.
- > To suggest measures to improve the utilization of the OT.
- > To describe the profile of patients who underwent surgery at the theatre for the study period:
 - Demographic profile (age, gender).
 - Clinical profile (indication, type and complications).
- To describe the types of operations performed during the study period, and to compare elective and emergency operations.
- > To describe theatre turn-around time during the study period.

LITERATURE REVIEW

 Title - Efficiency of the operating room suite Author - Avi A Weinbroum M.D., Perla Ekstein M.D., Tiberiu Ezri M.D.

Conclusion/Result- OR "time-waste" defined as the time in which the scheduled OR was not busy with the scheduled patient amounted to 79 hours over the 30-day study period (15% of total time). It was wasted owing to inappropriately prepared patients (12%), unavailability of surgeons (7%), insufficient nursing staff, anaesthesiologists, or assignment to emergency surgery (59%), congestion of the <u>postanaesthetic care unit</u> (10%), and delay in transport to the OR (2%) Another issue delineated was the frequent occurrence of surgical cases running longer than their scheduled time (termed "spill-over"), outrunning the staffing expectations after 3:00 PM and delaying admission of add-on and emergency procedures, adding 33% to the time wasted. A quality-assurance committee review resulted in implementation of new guidelines, and within 3 months several underlying causes were rectified, and time-waste and spill over time was reduced by 35%. Surgical time predictions were also improved. Shortage of nurses and anesthesiologists, and OR emergency reassignment remained the major causes of OR waste time. Continuous surveillance on OR suite—patients' prompt care, repeated evaluation, and wise staff deployment—could maximize OR efficiency.

- 2. Title Audit of the Utilization of Time in an Orthopaedic Trauma Theatre Author- Christopher L Delaney, Nathan Davis, Peter Tamblyn Conclusions/Results: Results showed that relative to the standards set, changeover time and start times were sub-standard, with consistently prolonged changeovers and late starts. End utilization and operating theatre utilization were 78.8 and 81%, against a standard of 77 and 85–90%, respectively. However, these figures may be misleading due to sub-standard performance in changeover time and other variables. We have highlighted inefficiency in the orthopaedic trauma theatre at our institution and suggest various strategies to improve this that may be applied universally.
- Title A Prospective Study on Operation Theatre Utilization Time and Most Common Causes of Delays and Cancellation of Scheduled Surgeries in a 1000 – bedded Tertiary Care Rural Hospital with a view to Optimize the Utilization of Operation Theatre
 Author- Shraddha Vidyadhar Naik, Vithal Krishna Dhulkhed, Rewa Hemant Shin

Conclusions/Results: Total study period consisted of 96 working days. There were a total of eight OT tables of various specialties, and parameters were observed during the routine hours excluding Sundays and holidays. The total procedure time was maximum for ENT followed by orthopedics and least for obstetrics. Room turnover time was maximum for obstetrics followed by general and oncosurgery. Case delays were maximum in general surgery and least for ophthalmology. The most common reason for delay in starting the operation table was patient getting shifted late from the ward and administrative causes. The most prominent reasons for cancellation were lack of operating room time followed by medical reasons of the patient.

We concluded that most of the causes of delays and cancellations of surgeries were avoidable with proper preoperative planning and optimization of patients and resources and good communication between surgeon anesthesiologists and the nursing staff.

4. Title – An Analysis of time utilization and cancellation of scheduled cases in the main Operation Theatre Complex of a tertiary care teaching institute of North India

Author - Shweta Talati, AK Gupta, A Kumar, SK Malhotra, A Jain

Conclusion/Results - Of the total 325 scheduled cases, 252 were operated and 73 (22.5%) were cancelled. There were delays on 15 days (15.63%) in starting the OT table at the scheduled time. Of the total resource hours (46,080 min), the mean "Raw utilization" was 37,573 min (81.54%) and the "Adjusted utilization" was 39,668 min (86.09%). The mean time spent on "supportive services" was 5539 min (12.02%) and on "actual surgery" was 28,277 min (61.37%), and the "room turn over time" was 2095 min (5.39%). Among the stated reasons for cancellations, lack of operating time — 57 cases (78.1%) — was the most common.

Study of time utilization and cancellation are important tools in assessing the optimal utilization of available resource hours in an OT.

5. Title – Audit of Operation Theatre Utilization in General Surgery Author- K Vinukondaiah, N Ananthakrishnan, M Ravishankar Conclusion/Results- Delay in starting lists, under-scheduling, interruption due to emergency surgeries, administrative reasons, induction of anaesthesia and recovery policies are the main factors that account for inefficient use of operating facilities. The correction of these factors would increase the available operating time by nearly 20%.

RESEARCH METHODOLOGY

This study is conducted in the operation theatre of Bansal Hospital. The study period was from 1 June 2022 to 31 July 2022.

OT is divided into three zones:

ZONE 1: Pre operative area

ZONE 2: Operative area

ZONE 3: Post operative area

For OT utilization and the recovery area utilization, the data was collected directly that included:

- Time at which patient is brought inside pre-op area time of movement of patient from ward to pre-op recovery.
- Time at which patient is taken out from pre op to main OT.
- Scheduled time of surgery.

- Exact time of surgery.
- For how long the surgery took place.
- When was the patient brought into post-op recovery area.
- Time of movement of patient from post-op to ward.

DATA ANALYSIS

Proper functioning of OT depends on a good hospital management, provision of multiple medical and surgical services such as equipment, drugs, time utilization, sterilization, and control of infections. Studies showed that the measurement of time utilization has always been of greater interest among researchers.

In this study, there were a total of seven OT of that two were allotted to general (gynae, ENT, ophthalmology)/ Laparoscopy, one for orthopaedic, one for urology/Transplant, one for Neurology, and one for oncology/plastic surgery and one for cardiac.

Since ENT surgeries like thyroid surgeries and commando operations take longer time the total theatre utilisation time was maximum with ENT speciality whereas it was least with obstetrics since most of the surgeries are of shorter duration.

This observed difference was statistically significant the increased room turnover time in obstetric theater is mainly attributed to last moment reshuffling of scheduled cases to accommodate emergency caesarean sections and minor surgeries and haphazard scheduling of surgeries on the routine list.

Whereas the study found the reason for variation in time spent on supportive services included, for example, time spent in positioning of patient for surgery or catheterization. Other reasons included the patient's medical condition, for example, an increase or decrease in blood pressure on the table requiring time for stabilization. The case duration of surgeries conducted by various surgical specialties is different. In fact, in the same specialty, each procedure requires different length of time. The time spent on supportive services, time spent on actual surgery, time between entry and exit of patient (raw utilization), and total time for the procedure (adjusted utilization) were significantly different among the 7 OT tables.

OT Utilization Rate	for Month of
JUNE,2022	
Days of Month	31
Working Days	26
Available Hours	208:00:00
Hours Utilized	101:49:00
Percentage Utilization	48.79326923
OT Utilization Rate	for Month of
JULY,2022	
Days of Month	31
Working Days	25
Available Hours	208:00:00
Hours Utilized	138:05:00
Percentage Utilization	66.37



- The total time for procedure was more for ENT followed by orthopedics, general and oncosurgery, ophthalmology, and obstetrics and gynecology in that order
- The room turnover time was maximum obstetric theatres followed by for general and oncosurgery and least for ophthalmology
- The total number of case delays was maximum in general and oncosurgery followed by orthopaedic, obstetrics and gynecology, ENT, and least for ophthalmology
- The most common reason for delay in starting the operation table was patient getting shifted late from the ward, followed by administrative causes, medical condition of the patient, and operating surgeon reporting late
- The cancellation percentage was maximum in general and oncosurgery and least for obstetrics
- The most prominent reasons for cancellation were lack of operating room time, medical reasons
 of the patient, patient not getting admitted, last moment change in the surgical plan,
 administrative reasons such as nonavailability of linen and autoclaved instruments.
 Miscellaneous reasons such as nonavailability of senior surgeon, ICU bed, adequate blood
 products, and refusal of consent by patient also emerged as causes for cancellations of
 scheduled cases.

SUGGESTIONS

- Hospital should work as much as possible to provide enough intensive care beds for operation theatre.
- Surgeons should attend to work at operation room at the right time and they should start working with the first case at the right time.
- The staff should be motivated by different incentives to start the operation on time.
- Proper communication among surgeon, anaesthesiologist, and nursing staff to provide improve operating room time utilization.
- Standardised booking forms with time allocations per case and predicted operating times to aid in appropriate scheduling of cases.
- Clearly defined first-case start times that must be communicated to all theatre users. The feasibility of staggered start times can be explored by theatre managers.

- Senior anaesthetists and surgeons should scrutinise potentially early-terminating lists, and plans for adding an additional case to the list should be made early.
- A minor surgical case should be pre-emptively dedicated as the first emergency theatre case of the day, to allow prioritising of the subsequent emergency cases while minimising wasted time from delayed starts.
- Scheduling of a single high-output list monthly may serve to limit long surgical waiting times.
 Additional staff should be reallocated to this list to aid with parallel processing of patients for the list.
- Plans for the introduction of electronic recording systems should be made, as these will make data readily available, allowing for easy monitoring of theatre performance.

CONCLUSION

This study highlights that most causes of cancellations and delays of surgeries are avoidable, and efforts should be made to prevent cancellation of surgery by careful planning and utilization human and material resources. Delays in starting the OT table in the mornings cause considerable wastage of productive OT time and lead to cancellations of surgeries in the later part of the day which in turn hampers the daily OT utilization. Therefore, proper communication among surgeon, anaesthesiologists, and nursing staff on the night before surgery can help in morning delays. Room turnover time can be improved by keeping a dedicated theater for emergency procedures can avoid rescheduling of cases due to last moment entry of emergency cases.

Adequate staffing and meticulous preanesthetic check-up and proper screening of patients preoperatively, proper arrangements for blood and blood products, ICU backup required instruments, and linen beforehand can go a long way in avoiding last moment cancellations.

By making OT end within scheduled hours, we are saving on overtime costs. Also repeatedly running OT late is hard on staff morale and makes recruiting and retaining already scarce staff more difficult. Using the concept of overutilization and underutilization allows us to put a cost to running late and to quantitate the quality of OT scheduling. The OT runs maximally from 11 am – 6 pm, which is the time when we have maximum resources at hand, whether it be availability of nursing staff, technicians, or anaesthetists. Both surgeons as well as anaesthetists are overall satisfied with the running of OT. Start time and close time are predictable most of the days, unless some emergency comes or if an unforeseen event occurs, like equipment malfunction. But there being a separate OT for emergency, and shared equipment between OTs, these problems are also taken care of at the earliest. Also with 2 in-house biomedical engineers, equipment down time is very less. Hence Bansal Hospital being an established, reputed hospital, having good infrastructure in place, effective administrative staff, adequate resources available and standard policies and protocols, OTs are run smoothly and efficiently and to an optimal level of utilization.

REFERENCE

- The Impact of Late-Starts and Overruns on Theatre Utilisation Rate <u>https://doi.org/10.1177%2F175045891202200603</u>
- Evaluation of the reasons for cancellations and delays of surgical procedures in a developing country

https://doi.org/10.1111/j.1742-1241.2004.00354.x

- Audit of the Utilization of Time in an Orthopaedic Trauma Theatre <u>https://doi.org/10.1111/j.1445-2197.2009.05043.x</u>
- Theatre time utilization in elective orthopaedic surgery https://doi.org/10.1177/175045891202200803
- Teaching speed in the operative theatre: should case duration benchmark efficiency in general surgical residency programs? <u>https://doi.org/10.1016/j.pcorm.2016.05.001</u>
- Efficiency of the operating room suite <u>https://doi.org/10.1016/S0002-9610(02)01362-4</u>

