

Study to Analyze the Pre-Operative Waiting Time and OT Cancellations

By

Shivangi Gupta

*Dissertation submitted in partial fulfillment of the requirements of the degree
MBA Hospital and Health Management*

Academic year, 2017-2019



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TO WHOMSOEVER MAY CONCERN

This is to certify that **Dr. Shivangi Gupta**, student of MBA Hospital and Health Management from The IIHMR University, Jaipur has undergone internship training at **Medanta - The Medicity, Gurgaon** from **15th February to 14th May 2019**.

The Candidate has successfully carried out the study designated to her during internship training and her approach to the study has been sincere, scientific and analytical.

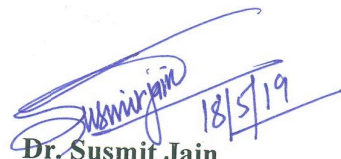
The Internship is in fulfilment of the course requirements.

I wish her all success in all her future endeavors.



Dr. Ashok Kaushik
Dean, Academics and Student Affairs
The IIHMR University, Jaipur

18 May 19



Dr. Susmit Jain
Associate Professor & Guide
The IIHMR University, Jaipur

Date: 14th May 2019

INTERNSHIP COMPLETION LETTER

This is to certify that **Dr. Shivangi Gupta**, student of MBA (Hospital and Health Management) Batch 2017 -2019 IIHMR University, Jaipur has successfully completed her internship with **Global Health Private Ltd. (GHPL) Medanta – The Medicity** Hospital Sec-38, Gurgaon - 122001 (Haryana).

- Department - Quality & Medical Administrations.
- Project Title - Pre-operative waiting time, delay and OT cancelations.
- Project Duration - 14th Feb'2019 to 14th May'2019

During the period of her internship with us she was committed, sincere & diligent learner.

We wish her all the best for future endeavors

For **GLOBAL HEALTH PVT LTD**


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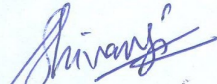
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CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled "A study to analyze the Pre-Operative waiting time and OT cancellations" and submitted by Dr. Shivangi Gupta Enrollment No. 0668 under the supervision of Dr. Susmit Jain for award of MBA in Hospital and Health of the University carried out during the period from 15FEB 2019 To 14MAY 2019 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in thesis or any other institute or other similar institution of higher learning.


Signature

ABSTRACT

A study to Analyze the Pre-Operative Waiting Time and OT Cancellations

By- Dr. Shivangi Gupta

INTRODUCTION:

Surgery delays have negative effects on both hospital and patients. Therefore, efficient management of pre-operative and operating rooms is crucial for both, the efficiency of hospitals and for a positive experience for patients. Last minute cancellations of pre-booked operations causes anxiety, interruption and anger in patients and leads to the inefficient use of valuable operating theatre time and resources. Studies have reported that cancellations have depressive effects on patients and families due to the emotional involvement prior to surgery.

OBJECTIVES:

- To find the pre-operative waiting time for patients stay in the hospital.
- To find out the reasons responsible for the delays.
- To find the number of OT cancellations in a month and reasons attributing to it.
- To suggest relevant measures for optimal utilization of pre-operative room, operation theatre time and reducing surgery cancellation rates.

METHODOLOGY:

- Study type: Observational Cross-sectional Descriptive study.
- Study duration: Three months (February 2019- May 2019)
- Sample size: The number of patients admitted in pre-operative room for the study period and the number of surgery cancellations through the study period.
- Data collection technique: The primary data was collected through informal discussions with patients, doctors and staff to explore their experiences. The secondary data was collected through the handover registers and data maintained by the nursing staff in the Pre-operative room and by the OT reception staff.

CONCLUSION:

- The mean delay in pre-operative waiting time is maximum in breast surgery followed by ENT, gynecology, plastic surgery and vascular surgery. The maximum number of patient delays were found in urology department followed by GI, plastic surgery and orthopedics.
- The number of OT cancellation was found to be 257 cases in a month from 1176 scheduled surgeries which attributes to 22% of cancellations.

The causes for pre-op delay were patient related or management related:-

- The day care patients didn't arrive on time
- Delay in financial clearance.
- Incomplete documentation or pending reports
- Patient not fasting as per schedule.
- Incomplete preoperative assessment.
- Delay in availability of equipment, machines or instruments (unavailable or undergoing sterilization).
- Emergency cases.
- Non-availability of staff for shifting patient.
- Prolonged ongoing surgery due to change of plan or complication.
- Increased time for OT cleaning in-between surgeries.

The reasons for OT cancellations on the day of surgery were found to be:-

- Patient was declared medically unfit.
- Patient was not admitted on the day of planned surgery.
- The financial clearance was due.
- The patient was discharged before the schedule due to unforeseen or personal causes.

SUGGESTIONS:

- A call from the hospital two days prior to scheduled surgery to make sure of the availability and fitness of the patient.
- Emphasis on prior financial clearance.
- Adherence to the document checklist and conducting compliance audits.
- One operation theatre exclusively prioritized to cater emergency cases first.
- Well estimated time duration for surgeries considering chances of complications and operation room sterilization time.
- Patient involvement in deciding the date for planned surgery.

Acknowledgements

I would like to express my sincere gratitude to the following people for their help and support throughout my dissertation period, without which my learning would have been incomplete. I am grateful to the hospital for giving me such an opportunity.

It has been enriching experience for me to work under **Dr.Shaveta Dewan**, Head Quality & Medical Operations, Medanta - The Medicity, Gurgaon. It was my honor to have worked under her guidance.

Words are insufficient to express my gratitude towards the Doctors, Nursing supervisors, Team Leaders and the nursing staff for the help they have provided and their contribution to my project.

I am grateful to my Guide- **Dr. Susmit Jain**, Associate professor, IIHMR University for his supervision and always guiding me when I needed him.

I thank my parents for their support and constantly motivating me.

(Shivangi Gupta)

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ABBREVIATIONS

OT: Operation theatre

CR: Cancellation rate

OR: Operation room

PRE-OP: Pre-operative

DOS: Day of surgery

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TABLE.1.: patient delay mean time.

TABLE.2.: causes of OT cancellation.

TABLE.3.: department responsible for maximum cancellations.

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GRAPH.1.: Average time delay

GRAPH.2.: Number of patients delay according to departments

GRAPH.3.: Reasons for pre-operative delays

Chapter 1 : BACKGROUND

1.1 INTRODUCTION:

When the patient attains in the hospital for surgery, he needs to be properly analyzed and prepared for surgery in pre-operative room.

A significant amount of work needs to be undertaken to prepare the patient for a surgical procedure. This includes the patient notes being written on the day of admission, the consultant taking the time to review the notes, OT staff ensuring the correct surgical instruments are available, ward staff preparing the ward for the patient, staff preparing theatre lists, the patient preparing self for admission to hospital, and measures for postoperative care. Last minute cancellations result in unproductive use of resources, not in the interests of the patient or the hospital, and result in lost capacity.

Operating rooms form a key area of service within hospitals for patient care, with the highest initial investment cost per unit area and an extensive amount of time required for training of the workforce. Therefore, efficient management of operating rooms has direct effects on the surgery of hospitals. Merely increasing the number of operating rooms to house the rising number of surgeries is not a cost-efficient method and, consequently, there have been various suggestions for more efficient management of operating rooms. In this situation, there is a need to determine an active method to improve the operating room turnover time in order to maximize the productivity of operating room management without additional facility investment.

Several facilities provided by hospitals need prior appointment or registration and efficient management of these appointments or reservations allows smooth management of the workload between the diagnostic and supporting departments. Surgery is no exception, with different departments providing varied surgeries for numerous patients. However, surgery cancellations often occur, which is a major problem that most hospitals are yet to resolve acceptably. One of the major questions arising due to surgeries being cancelled on the day of surgery is that the workforce, surgical tools and space for the prearranged surgery are unable to be utilized, which results in wasted hospital resources. cancelled surgeries lead to an buildup of surgeries and reduce the number of patients who could otherwise undergo scheduled surgeries and then be discharged on time, thereby limiting the number of new patient admissions.

Operation delay and cancellation puts huge burden on hospital and negatively affects patients and their families. Operation cancellation is defined as cases that appeared in the final OR list that ultimately were not performed on that day.

The surgeons have a fixed operating day and theater for elective procedures. There are also theaters reserved for emergencies. They prepare their operation lists for elective procedures and send them to the theater; while emergency lists are sent over as soon as they come.

Overall, surgery cancellations have negative effects on both hospitals and patients. Therefore, efficient management of operating rooms to reduce the number of surgery cancellations is crucial for both the efficient surgery of hospitals and for a positive experience for patients.

1.2 RESEARCH QUESTIONS:

- To find is there any delay in the pre-operative room in the hospital.
- To find what is the percentage of OT cancellations in a month.

1.3 OBJECTIVES:

- To find the pre-operative waiting time for patients stay in hospital.
- To find out the reasons responsible for delays.
- To observe the number of surgery cancellations in a month and finding reasons attributing to it.
- To suggest measures for optimal utilization of operation room time and reducing operation theatre cancellations.

Chapter 2:

2.1 LITERATURE REVIEW

According to the study conducted by Dr. Mahmoud Abu Abeeleh for reasons for operation cancellations at a teaching hospital, During the period of study, 6,431 cases (9.31%) were cancelled out of 69,066 listed cases. Patient no-shows accounted for 62.52% of cancellations. A Pareto analysis showed that around 80% of the known reasons for cancellation after admission were due to a lack of surgical theatre time (30%), incomplete preoperative assessment (21%), upper respiratory tract infection (19%), and high blood pressure (13%). This study identified the most common reasons for operation cancellation at a teaching hospital. Potential avoidable root causes and recommended interventions were suggested accordingly. Future research, available resources, hospital policies, and strategic measures directed to tackle these reasons should take priority.

A Study was conducted by Dr. P. Weinmeister, at a tertiary hospital in Oman. This study researched related causes that make scheduled surgeries canceled not to be conducted and based on the research it is to derive issues in order to reduce surgery cancellation. analyzed the association of surgery cancellation with patient characteristics, surgical characteristics and surgery schedule related characteristics, using electronic medical record (EMR) data on surgeries conducted at a university hospital in Korea over 10 years. Additionally, we examined the reasons for surgery cancellation based on patient and hospital characteristics. We used chi-square tests to analyze the distribution of various characteristics according to reasons for surgery cancellation. Multivariate logistic regression analyses were conducted to evaluate the factors associated with surgery cancellation. *Results:* Among 60,333 cases, surgery cancellation rate was 8.0%. The results of the logistic regression indicated a high probability of surgery cancellation when the patient was too old. This study found that there are related various causes to cancel operations, including patient characteristics, surgery related characteristics and surgery schedule related characteristics and it means that it would be possible for some reasons to be prevented. Every medical institution should consider the operation cancellation as an important issue and systematic monitoring should be needed.

According to a study by Department of Anesthesiology, Mayo Clinic in Arizona, 238/12176 (1.96%) were cancelled on the day of surgery. In six cases, no explanatory documentation could be found. Therefore, 232 cases were available for analysis. One-hundred nine cases were judged to be avoidable cancellations versus 123 that were judged unavoidable. Of the avoidable cancellations, 85% were hospital related versus 15% that were patient related causes. Of the avoidable, hospital related cancellations, the most common event were cases that were cancelled

but not communicated. The greatest numbers of cancellations were deemed unavoidable and patient related. He concluded that cancellation rate of less than 2% is achievable. Advanced verification of complete surgical and medical evaluations may minimize this event.

According to cohort study of planned adult inpatient surgery in a National Health Service hospitals. they analysed data from 14 936 patients undergoing planned surgery. A total of 1499 patients (10.0%) reported previous cancellation for the same procedure; contemporaneous hospital census data indicated that 13.9% patients attending inpatient operations were cancelled on the day of surgery. Non-clinical reasons, predominantly inadequate bed capacity, accounted for a large proportion of previous cancellations. Independent risk factors for cancellation due to inadequate bed capacity included requirement for postoperative critical care [odds ratio (OR)=2.92; 95% confidence interval (CI), 2.12–4.02; $P<0.001$] and the presence of an emergency department in the treating hospital (OR=4.18; 95% CI, 2.22–7.89; $P<0.001$). Patients undergoing cancer surgery (OR=0.32; 95% CI, 0.22–0.46; $P<0.001$), obstetric procedures (OR=0.17; 95% CI, 0.08–0.32; $P<0.001$), and expedited surgery (OR=0.39; 95% CI, 0.27–0.56; $P<0.001$) were less likely to be cancelled. A significant proportion of patients presenting for surgery have experienced a previous cancellation for the same procedure. Cancer surgery is relatively protected, but bed capacity, including postoperative critical care requirements, are significant risk factors for previous cancellations.

Chapter 3:

METHODOLOGY

3.1 Study type: Observational Cross-sectional Descriptive study

3.2 Study duration: Three months (February 2019- May 2019)

3.3 Sample size: The number of patients admitted in the pre-operative room were taken under the study and the number of surgery cancellations made in a month were studied.

3.4 Data collection technique: The data has been collected through the handover registers and data maintained by the nursing staff in the Pre-op and by the OT reception staff. The in-time, out-time and the patient stay time in pre-op was recorded for each department over the time period of one month. Also, qualitative data was collected through interviews with patients, doctors and staff to explore their experiences. The various aspects were studied to come up with relevant suggestions to reduce the pre-op waiting time, delay and OT cancellation rates in the hospital.

3.5 Limitation of study:- Since the data taken depends on the handovers taken by the nursing staff, there is possibility of confounding and information bias due to human errors. The study was conducted in a short period of time which further restricts the analysis.

4.0 STUDY AND RESULTS:

A significant amount of work needs to be commenced to prepare the patient for a surgical procedure. This includes the patient notes being written on the day of admission, the consultant taking the time to review the notes, OT staff ensuring the correct surgical instruments are available, ward staff preparing the ward for the patient, staff preparing theatre lists, the patient preparing self for admission to hospital, and preparations for postoperative care. Last minute cancellations result in inefficient use of resources and result in lost capacity.

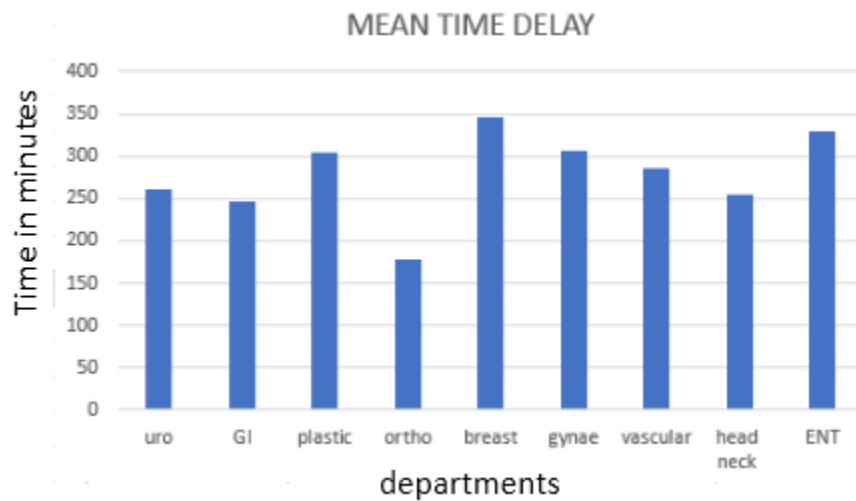
The pre-operative time for the patients taken in for surgery is noted in registers maintained by the nursing staff with the in and out time. This time was noted and the time delay for each patient in a month time was registered. Since, there is no benchmark for the appropriate pre-op time, the average mean time of 120 minutes as per observation was taken as average time that a patient takes for pre-op assessment.

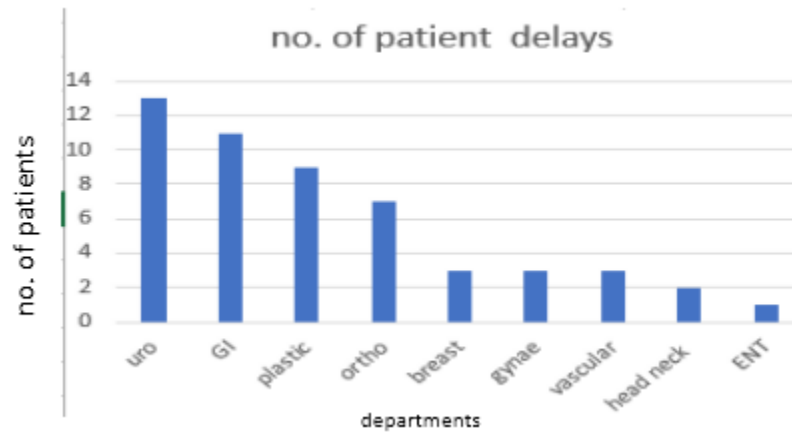
This data was then segregated department wise to analyze which departments cater to maximum and consistent delays.

TABLE 1

DEPARTMENT	NO. OF PATIENT DELAYS	TIME DELAY (max-min)	MEAN TIME DELAY (MIN)
UROLOGY	13	420-150	261.53
GASTROENTEROLOGY	11	410-130	235
PLASTIC SURGERY	09	395-210	264.44
ORTHOPAEDICS	07	220-170	170
BREAST SURGERY	03	490-120	313.33
GYNAECOLOGY	03	415-225	306.66
VASCULAR	03	360-140	273.33
HEAD & NECK	02	300-210	255
ENT	01	330	330

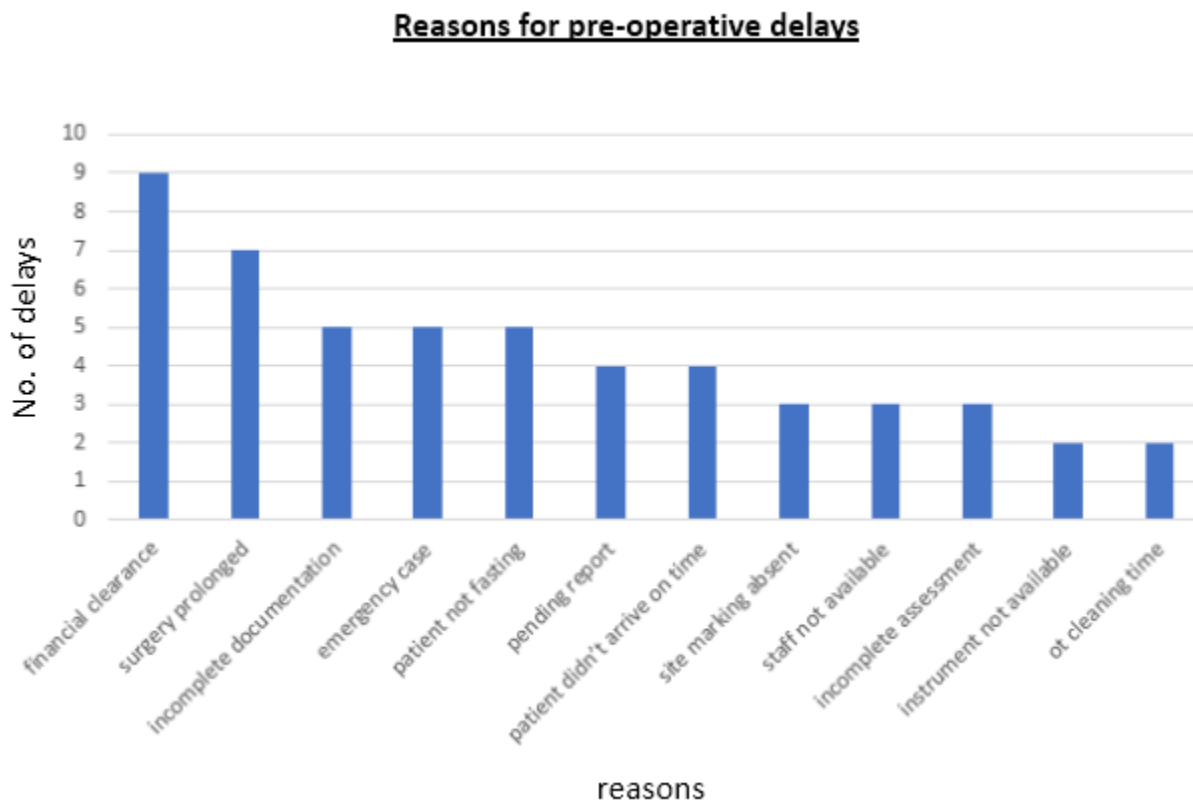
GRAPH 1.





GRAPH 2.

GRAPH 3.



Among other causes, unforeseen anesthetic or surgical problems may also delay the planned list. The time taken for a particular surgery also depends on the skill of operating surgeon. Less

experienced surgeons and trainees often take more than the expected time. For some surgeries, the total duration exceeded the usual surgical time due to an unexpected surgical complication, juniors being taught and allowed to do the surgery especially for laparoscopic or robotic procedures.

The study emphasizes on finding the departments causing the most delays and the reasons responsible for such delays were observed to find out most appropriate suggestions for compliance and efficiency.

Operation cancellation is defined as cases that appeared in the definitive OR list that ultimately were not performed on that day. Such cancellations drain the hospital resources. The study tries to prioritize the reasons for operation cancellation to thereby direct efforts of improvement.

It is important that a surgical list is planned to utilize as much of the scheduled time as possible while not over-running. The objective is to establish the rate of elective surgical cases cancellations on the day of surgery and the reasons for these cancellations stratified by departments. In order to improve efficiency and reduce the magnitude of this problem, the immediate and remote causes of cancellation of cases scheduled on the day of surgery were analyzed. This will assist in suggesting initiatives that would help to reduce the avoidable cancellations.

The OT reception staff prepares the list of surgery cancellations per month. The causes listed are mainly patient being medically unfit, financial non-clearance, patient didn't show up on the day of scheduled surgery, patients discharged prior to the day. Patient no-shows for the scheduled surgery is a multifactorial and challenging problem and there has been no consensus regarding the acceptable cancellation rate. Root causes identifying patient no-shows were not investigated in this study. Potential root causes may include inconvenient date of surgery, patients forgetting about their appointments, or patients' fear and doubt.

Over-booking of operative lists is a potential avoidable root cause. Surgeons may feel optimistic in their estimates, pressured from the long waiting lists.

Reasons for cancellations are composite because they are related to patients, organizational issues, and clinical staff. The main reasons are patient no-shows, patients' medical conditions, overbooking of lists, and facility shortcomings. Redesigning work processes, improving management, and performing early clinical evaluation of patients have been suggested to reduce cancellation rates. Information about the influence of contextual factors on developments and knowledge about the factors that contribute to sustained improvements do not have to be unique to one particular quality problem. Cancellations could be avoided by redesigning work processes, improving planning and coordination, and performing earlier clinical pre-assessment of the patients. Cancellations of planned surgeries cannot be simply reduced to a quality problem regarding the inefficient use of resources.

Quality of care is the degree to which health services for individuals and populations increase the probability of desired health outcomes and are consistent with existing professional knowledge. Contextual factors, such as resources, information technology, and leadership, can affect the

improvement process contextual factors that may impact the success of quality improvements around main categories: external environment, organization, quality improvement support and capacity, microsystem, quality improvement team.

To achieve perfection, an organization needs to modify its behavior, and the behavioral changes must be replicable to sustain the improvements. Sustained improvement can thus signify a case of organizational learning, and organizational learning frameworks can be suitable for exploring the factors that affect the sustainability of improvements.

Further, the number of OT cancellations in a month was observed to analyze the cancellation rate and the reasons accrediting to it. The overall cancellations were then separated as per different departments to find out which departments cater to maximum cancellations. The various aspects were analyzed and relevant suggestions were made to reduce the cancellation rates and increasing the OT time utilization.

The various reasons responsible for OT cancellation were as:-

TABLE.2.

OT CANCELLATION REASON	PERCENTAGE
MEDICALLY UNFIT	30.35
NOT ADMITTED	45.91
FINANCIAL CLEARANCE	20.62
UNPLANNED	2.35
DISCHARGED	0.77

The departments were studied having the maximum cancellation rates and the major reasons for the surgery cancellations: -

TABLE.3.

DEPARTMENT	NO. OF CANCELLATIONS	MOST COMMON REASONS
GASTROENTEROLOGY	45	Not admitted, financial dues
CARDIOLOGY	38	Medically unfit
ORTHOPAEDICS	38	Not admitted, medically unfit
UROLOGY	37	Not admitted, medically unfit
VASCULAR SURGERY	24	Medically unfit, not admitted
NEUROLOGY	21	Not admitted
ENT	21	Not admitted
PLASTIC SURGERY	13	Not admitted, financial dues
GYNAECOLOGY	06	Not admitted
THORACIC SURGERY	04	Not admitted
HEPATOLOGY	02	Medically unfit
HEAD & NECK	02	Not admitted, financial dues
BREAST SURGERY	02	Medically unfit, financial dues
OPHTHALMOGY	01	Medically unfit
PEDIATRICS	01	Not admitted

The patient's medical fitness is assessed before surgery and sometimes due to clinical reasons they are medically unfit for surgery and that results in cancellation. The patients sometimes don't appear on the day of their scheduled surgery due to personal reasons. The surgeries are usually not very economical, and medicines may be expensive which causes delay in financial clearance. Patients may even look for a second opinion or give a second thought to their willingness to undergo surgery which leads to discharge before surgery. These reasons could be avoided by precautions and improving communication with the patients and hospital.

Chapter5.-

DISCUSSION AND CONCLUSION:-

It's obvious from the data that the mean delay in pre-operative waiting time is maximum in breast surgery followed by ENT, gynecology, plastic surgery and vascular surgery. The maximum number of patient delays were found in urology department followed by GI, plastic surgery and orthopedics.

The OT cancellation was found to be quite high (being 257 cases in a month), where GI had maximum cancellations followed by cardiology, orthopedics, urology and vascular surgery. The major reasons responsible for the high cancellation rates were medically unfit patients, patient not being admitted prior or on the day of surgery and financial dues. The unplanned cases that were que in to prevent any OT time wastage were another cause for cancellations. Over-booking due to underestimating surgery time was major issue. Emergency cases that need immediate attention further delay surgeries.

This data was used to find the causes which were as follows:-

CAUSES:-

5.1 The causes for pre-op delay were patient related or management related:-

- The day care patients didn't arrive on time
- The surgeon/ anesthetist are occupied in another ongoing surgery.
- Delay in financial clearance.
- Incomplete documentation or pending reports.
- Patient not fasting as per schedule.
- Incomplete preoperative assessment.
- Delay in availability of equipment, machines or instruments (unavailability or undergoing sterilization).
- Emergency case.
- Non-availability of staff for shifting patient.
- Prolonged ongoing surgery due to change of plan or complication.
- Absence of site markings.
- Increased time for OT cleaning in-between surgeries.
- Queuing in surgeries planned by surgeon on days not assigned to him.
- Lack of available theatre time due to over-booking.

5.2.The reasons for OT cancellations on the day of surgery were found to be:-

- Patient was declared medically unfit.

- Patient was not admitted on the day of planned surgery.
- The financial clearance was due.
- The patient was discharged before the schedule due to unforeseen or personal causes.

Chapter6.-

SUGGESTIONS:-

- A call from the hospital two days prior to scheduled surgery to make sure of the availability and fitness of the patient. Improving communication between patient and hospital shall improve patient compliance to schedule.
- Emphasis on prior financial clearance.
- Adherence to the document checklist and compliance audits.
- A pre-op clinic setup for complete pre-op work-up and complete documentation, reports, consent forms.
- Scheduling surgeries in such a way that there is enough time in between similar procedures requiring the same instrument or equipment.
- Adequate well trained staff for in-between cleaning of OT.
- Proper patient counselling for why and how long he/she is supposed to be fasting.
- One OT exclusively prioritized to cater emergency cases first.
- Well estimated time duration for surgery considering chances of complications and OT sterilization time.
- Patient involvement in deciding the date for planned surgery.
- A prior pre-op work-up is must to rule out or manage any ongoing medical condition and also gives opportunity to clear patient's fear or doubts regarding his surgery.
- Overlapping induction, i.e. induction of anesthesia with an additional team while the previous patient is still in the OR to increase the OR productivity by decreasing the non-operative time. Also, we can save OR time by inserting epidural catheters and peripheral, central intravenous access in the side room prior to shifting the patient while the previous patient is still in the OR .
- The discharged, DOR, LAMA patients could be contacted again for a suitable appointment as per their convenience for counselling and re-consideration.

Chapter7.

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