

**Improvising of Operation Theatre Utilization in a Multispecialty
Hospital**

**Internship Training
at
QRG Central Hospital and Research Centre, Faridabad
(February 8 to April 30, 2014)**

**By
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**Under the guidance of
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**Post Graduate Diploma in Hospital & Health Management
2012–14**


**Institute of Health Management Research
Jaipur
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TO WHOMSOEVER MAY CONCERN

This is to certify that **Dr. Neha Makker** student of Post Graduate Diploma in Hospital and Health Management (PGDHM) from Institute Of Health Management Research Jaipur has undergone internship training at **QRG central hospital and research centre, Faridabad** from **February 2014 to May 2014** on the project **"Improvisation of operation theatre utilization in multispecialty hospital"**.

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

The internship is in fulfilment of the course requirements.

I wish him all success in all future endeavours.



Dr. Ashok Kaushik

Dean, Academics and Student Affairs

IIHMR, Jaipur



Prof. P.R. Sodani

Dean (training)

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**QRG****Central Hospital
& Research Centre**

CERTIFICATE

This certificate is awarded to **Dr. NEHA MAKKER** in recognition of having successfully completed her internship in DEPARTMENT OF QUALITY and has successfully completed her project on

'IMPROVISATION OF OPERATION THEATRE UTILIZATION' from Feb 2014 to Apr 2014 in **QRG Central Hospital & Research Centre.**

She comes across as a committed, sincere and diligent person who has a strong drive and zeal for learning.

We wish her all the success in all her future endeavours.


Dr. Mohan Dubey  Medical Superintendent
QRG Central Hospital & Research Centre Ltd.
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Medical Superintendent

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CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled 'IMPROVEMENT OF OPERATION THEATRE UTILIZATION IN A MULTISPECIALITY HOSPITAL' and submitted by Dr. Neha Makker Enrollment No. 1347 under the supervision of Prof. P.R. Sodani for award of Post Graduate Diploma in Hospital and Health Management of the Institute carried out during the period from February 2014 to April 2014 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.



Signature

4.1INTRODUCTION

The managerial aspect of providing health services to patients in hospitals is becoming increasingly important. Hospitals want to reduce costs and improve their financial assets, on the one hand, while they want to maximize the level of patient satisfaction, on the other hand. One unit that is of particular interest is the operating theater. Since this facility is the hospital's largest cost and revenue center, it has a major impact on the performance of the hospital as a whole.

Enhancing the efficiency of operating theatre has been always a challenging process especially in a quick changing healthcare sector with increased patient care complexity.

Balancing the needs to satisfy surgeons, support staff, and meet the patient high expectations in healthcare would require clinical and cost effectiveness and require critical and close monitoring of business management inside the operating theatre to ensure efficient resource supply, guarantee quality safe care provided, and maintain fiscal sustainability.

“Management of operating theatres requires the coordination of human and material resources in such a way that surgery can be performed efficiently, cost effectively, and safely” within the rules of clinical governance of standards.

Managing the operating theater is hard due to the conflicting priorities and the preferences of its stakeholders. Staff managing scheduling of cases in Operation Theatre was facing many problems. Normal OT timings are from 9:00 A.M to 5:00 PM. However percentage of on-time starts is very few, leading to wastage of resources and mismanagement of OT and hence less utilization of OT. Surgeons schedule their patients without confirming to the readiness of patient leading to increase number of cancellation of cases. They even do not provide sufficient information regarding cases. Many of the surgeons schedule their elective cases on the same day without prior OT booking and thus create the problem in managing the scheduled cases.

Staff raised many criticisms reflecting lack of communication among the different groups or stakeholders. All this reflected a non-coherent and poor workflow within the theatres. It was essential to address this area seriously. Trying to understand the operating theatre status and the contributing factors to this ailment I decided to start with Process mapping.

4.2 LITERATURE REVIEW

Operating Theatre scheduling is a major contributing factor to enhance the efficiency of operating theatres. Accurate and real time scheduling assist in predicting staffing needs, ensuring availability of required equipment and supplies and thus contribute to a smooth running operating theatre [1].

[2] Literature review on surgical demand scheduling and distinguishes between advance scheduling and allocation scheduling. Advance scheduling is the process of fixing a surgery date for a patient, whereas allocation scheduling determines the operating room and the starting time of the procedure on the specific day of surgery.

An accurate schedule must list realistically the starting and ending time of each surgery. In addition, conflicts of schedules shall be resolved by the operating theatre manager. Schedules need to be rearranged according to agreed-on principles among all surgeons, on condition that guidelines are developed to define elective versus non-elective cases [3]

Accordingly literature does not question or challenge the level of urgency however recommend classifying surgeries as elective, where patient condition will not be affected as a result of delaying the surgery for a minimum of forty-eight hours. Under the concept of creating a realistic operating schedule, reflected on the importance of having a real time based. Schedule which is essential to predict human and resource needs.

The real time schedule requires accurately specifying the starting and ending time of surgeries with as much as possible accurate surgery duration. This real time requires timely updating as the day goes on. In addition, literature reflected the importance of defining the start time of each surgery and the impact of providing a precise duration to avoid confusion, allow proper allocation and distribution of surgeries and standardize data collection [4]. Moreover, the importance of developing policies to streamline scheduling procedures was highly stressed.

The procedure requires setting certain guidelines of what cases are to be scheduled as first day case, what is an elective case versus non elective. [5] Listed four important steps to assist in scheduling urgent cases and the related process to follow. Of these steps he included

patient medical condition, evaluating patient waiting time, impact on OT efficiency and patient safety. Within 13 these definitions it is essential to secure the surgeons agreement and commitment to abide by these guidelines and accordingly to abide by the scheduling process. This will reflect caring for all the surgeons similarly [6]. This is important from the surgeons' perspective, their surgery is the ultimate goal and the most important to perform.

An approach to decrease the first case delay along with an accurate recording and booking time with no "to-follow" schedule should be put in place. It was categorically rejected, as per literature, to have a "To Follow" designation of surgery.

Managing all these factors besides decreasing staff scheduling variation and ensuring adequate housekeeping services contributed in many studies to decrease the prolonged operating theatre turn-over time.[7]

The turn over time describes the time delay between the first and the second surgery and measured by calculating the time the first case leaves an operating theatre on that day schedule to the time the second patient enters that same theatre and the impact of this delay on the suspension of all consecutive surgeries which will result in stretching the schedule time and extending the operating theatre working hours. [8] Scored the value of turn over time in his study so that it reflects poor performance if it is more than forty minutes and for good performance it shall be less than twenty five minutes.

[9] Elaboration on this taxonomy in their literature review and add the domain of external resource scheduling, which they define as the process of identifying and reserving all resources external to the surgical suite necessary to ensure appropriate care for a patient before and after an instance of surgery. They furthermore divide each domain in a strategic, administrative and operational level, although these boundaries may be vague and interrelated.

4.3 OBJECTIVE-

The main objective of the study is to improve the operation theatre utilization of QRG Central Hospital and Research Centre, Faridabad.

The following are the specific objectives of study-

- To assess the utilization of Operation Theatre.
- To determine the efficiency in functioning of Operation Theatre by calculating efficiency metrics.
- To assess satisfaction of surgeons, anesthesiologists and OT staff with the functioning of operation theatre.
- To assess the gaps in the working of operation theatre and give recommendations for the same.

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OBSERVATION-

PROCESS MAPPING-

Process mapping began with, manpower available for efficient and optimum utilization of OT.

Table 4.1;TOTAL MANPOWER-

CATEGORY	NUMBER OF STAFF
OT In charge	1
OT Technician	7
Anesthesiologist	2
Nursing Staff	7
Ward Boy	3
Housekeeping	2

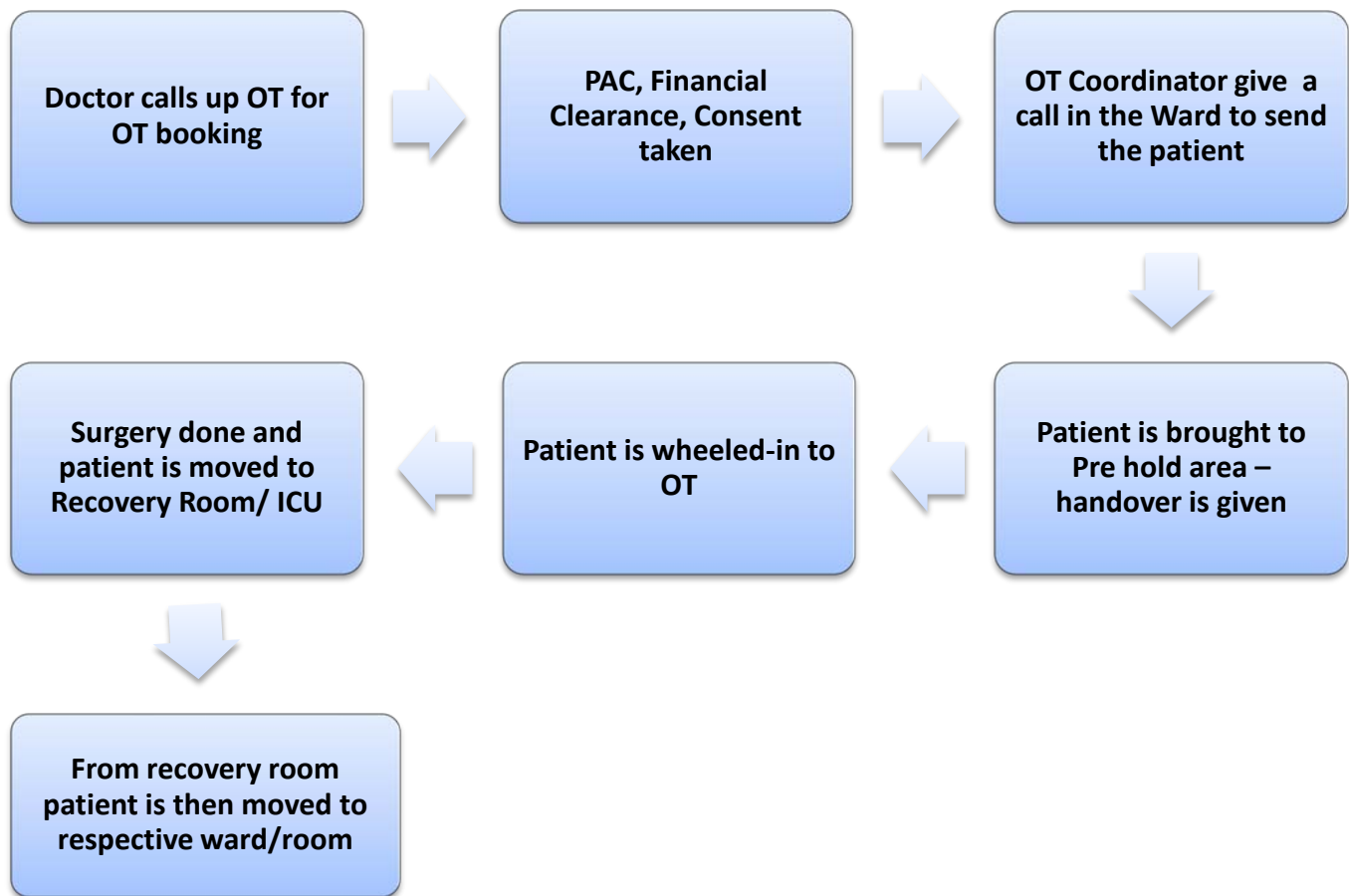
The general operating theatre (OT) complex is composed of three operating theatres for high standard clinical care. The theatre receives multiple varieties of surgical cases extending from minor to major ones.

There are three Operation theatres in the hospital. The standard operating hours are Monday to Saturday from 9:00am to 5:00pm for all the OR's. Moreover emergency cases are also conducted if need arises at any point of day.

Different OT's are individually designated for different Surgeries.

1	Eye cases
2	Orthopedic cases
3	General surgery cases

PROCESS FLOW



OT BOOKING

After taking decision for surgery of a patient, Surgeon /doctor inform the OT co-coordinator for OT booking. OT booking register is to be filled by OT co-coordinator at the time of booking.

OT booking register contains the following head:

1. Booking date and time
2. Name of patient
3. Age/sex
4. UHID no/IPD no
5. Room no
6. Diagnosis
7. Procedure/Surgery
8. Name of the Surgeon
9. Wheel- in time
10. Approximate duration
11. PAC
12. Special requirements if any

CLEARANCES, INVESTIGATION AND CONSENT

A typical surgical patient undergoes several preoperative activities that varies from physical examination, investigations, and consent taking to different clearances as PAC (Pre Anesthetic check-up), financial clearances etc. Once all these activities are completed the surgical procedure is performed.

At each activity, different stake holders are involved who contribute in the efficient scheduling of cases in Operation Theatre.

CLEARANCES: Mainly two clearances are needed before a patient undergoes a surgery in OT

1. PAC (Pre-Anesthetic check-up) clearance
2. Financial Clearance

PAC (Pre-Anesthetic check-up)

Prior to administration of any type of anesthesia, the patient has to be checked up by a doctor specialist-anesthesiologist who get information on the physical and mental condition of the patient. Apart from the detailed examination, the checkup also includes getting information on all prior examination made and respective results thereof.

This is rather helpful when making the decision whether the administration of certain type of anesthesia will be contraindicated or possible after appropriate preparation made in order to optimize the patient's condition for the purpose of carrying out the surgery and administering the anesthesia. PAC is done on prior day of surgery and in case of emergency; PAC is done in the Operation theatre.

Stakeholders involved

1. Patient
2. Surgeon
3. Anesthesiologist
4. Nursing staff

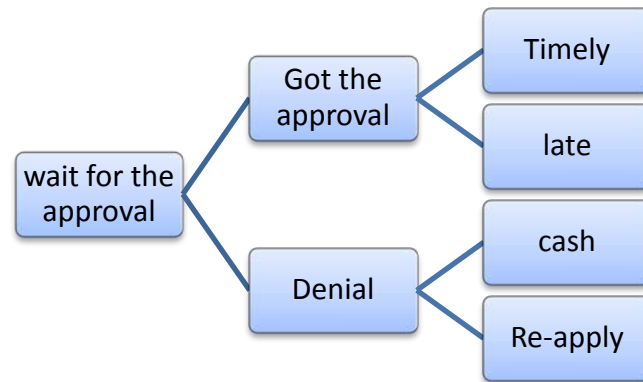
Financial Clearance

There are three categories, under which financial clearances are done.

1. TPA patients
2. CGHS/ESI patients
3. Cash patients

TPA patients:

TPA patients have to wait for their approval for getting the financial clearance. TPA cases can be preplanned or emergency cases. Ideally, surgery should be scheduled and patient should be admitted after the approval has come. In normal cases, the usual time for the approval is 15min to 6 hrs. Delayed approval can take 3 days.

**CGHS/ESI patients:**

CGHS /ESI patients also have to bring the approval.

Cash patients:

Cash patients have to deposit the surgery amount before the admission for surgery.

INVESTIGATIONS

Patients have to go undergo certain investigations before undergoing any surgery. Surgeons have to plan the surgery based upon the results of investigation report.

CONSENT

Prior to the surgery, consents have to be taken by the patient after explaining the need of the procedure and the risk and the complication associated with the procedure. It has to be duly signed and dated by the patient/relative and surgeon. It should be taken a day before the surgery.

PATIENT TRANSPORTATION FROM WARD TO OPERATION THEATRE

On surgeon's call, OT coordinator communicates in the wards to send the patient in OT. Patient is brought to presold area from the ward. Where all the documents are checked and antibiotic prophylaxis is given if required. Part preparation is also done and then patient is wheeled in into OT

Graph 4.1 NUMBER OF SURGERIES PERFORMED

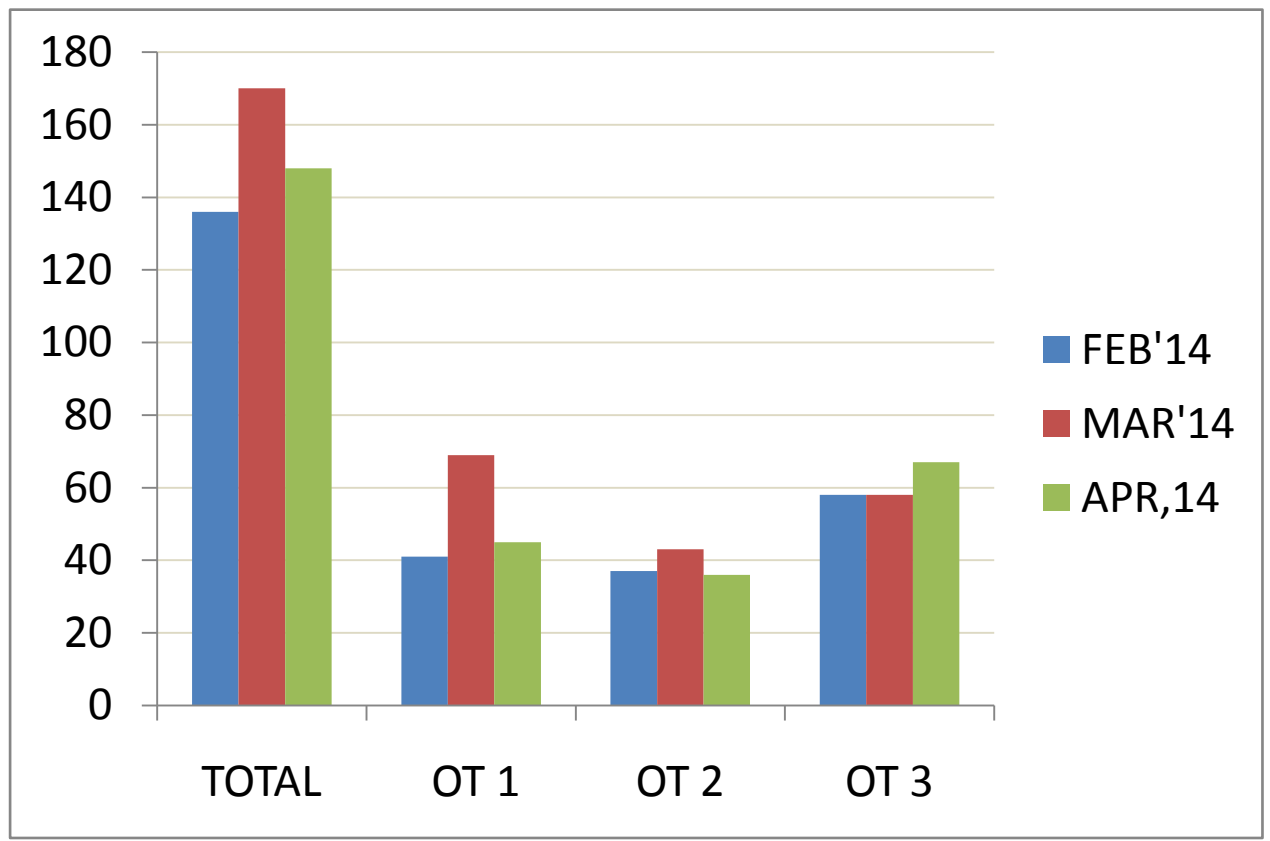


Table 4.2 SPECIALITY WISE UTILIZATION OF OPERATION THEATRE-

NO. OF CASES	FEBRUARY'14	MARCH'14	APRIL'14
GENERAL	30	56	25
ORTHO	22	13	27
E.N.T.	10	29	15
UROLOGY	14	12	15
GYNAECOLOGY	23	18	33
PLASTIC SURGERY	6	04	15
PAEDIATRIC	5	17	7
GASTROLOGY	5	04	6
NEUROLOGY	1	06	0
OPHTHALMOLOGY	19	12	7
DENTAL	1	0	0
TOTAL	136	170	148

4.5 METHODOGY:

❖ Study design and approach

Descriptive study design was used to conduct study and study was conducted in operation theatre complex of QRG Central Hospital and Research Centre, Faridabad.

❖ Time frame

This study was conducted for a period of three months (Feb 2014 to Apr 2014) which included all working days for Operation Theatre excluding the Sundays and gazette holidays.

❖ Data source

This includes collection of primary data from the hospital MS-OT records to describe and interpret the utilization pattern of multispecialty operation theatre. The data regarding the scheduling and utilization pattern was collected from records obtained from MS-OT in the format of OT schedule list and OT performance list. OT schedule list for next day is generated everyday at 16:30 hours including patient name, MR. No., IP no. , diagnosis, surgical procedure to be performed, surgeons' name, anesthesiologist's name and scheduled time of surgery and operation room allotted .OT performed list is also released everyday at 17:00 hours recording the actual wheel in and wheel out time of patients in operation theatre and operation room where the surgery was performed along with all other patient details.

Another source of data was monthly census of surgeries and satisfaction survey done by self-administered questionnaires to surgeons, Anesthesiologists, nurses, technicians and other OT staff.

❖ Method of data collection-

Various methods of data collection used to perform the study are-

- Observations

The entire process starting from booking till wheel in of patient in OT was mapped .Moreover, the cases in scheduled list and the updated list were observed to analyze the number of problematic cases. The cases were individually studied and mapped to identify the causes for the same.

- Interviews-

Interviews were conducted with each stakeholder to identify and understand the problems faced at their level. During interviews stakeholders were asked regarding various issues faced by them which hamper the smooth functioning of operation theatre

A qualitative approach was also adopted by administering written questionnaires to OT staff, Anesthesiologists and Surgeons for getting the perspectives of all concerned persons with functioning of operation theatre.

-Record review-

Various records were been reviewed for collection of data.

These records involves operation theatre main register, advance booking register, billing register, stock maintainence register, fumigation records.

❖ Data collection tool -

A self administered questionnaire was used to analyze the satisfaction of all OT users with various parameters.

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Table 4.3; SATISFACTION SURVEY SCORES

(1=strongly agree, 2= agree, 3=neither agree nor disagree, 4=disagree, 5= strongly disagree)

Q.no.	Parameter	Surgeon	Anesthesiologist	Staff
1.	Surgeries always start on scheduled time			
2.	Adequate nursing support			NA
3.	Surgeons are always on time	NA		
4.	OT is ready at the time of surgery			NA
5.	We have adequate nursing support			NA
6.	OT runs as per OT schedule list			NA
7.	Patients have to wait for minimum time before surgery			NA
8.	There is short turnover time between two cases			NA
9.	We are satisfied with the sterilization practices of OT Between two successive cases.			NA
10.	We usually get the desired OT booking slot for Elective surgery while booking.		NA	NA
11.	We have ability to add non elective cases		NA	NA
12.	Anesthesiologists are always on time		NA	
13.	We have adequate technician support			
14.	Shifting of patients from wards/rooms is always on time	NA	NA	
15.	We get sterilized instruments on time	NA	NA	
16.	There is never a delay in surgery due to arrangement of blood and other prosthetics.	NA	NA	
17.	Patient instructions, consent and other formalities are already complete before surgery.	NA	NA	
18.	We are satisfied with the support of helping staff and housekeeping staff.	NA	NA	
19.	We have adequate communication across Various departments.	NA	NA	

4.6 RESULTS AND DISCUSSION

All the above data collected during study was used to compute efficiency of operation theatre using efficiency metrics. The factors were computed using averages, percentages, frequency and descriptive statistics. This study measures operation theatre efficiency on following efficiency metrics parameters as follows:

1. **OT Utilization:** Utilization of MS-OT as per specialty, OR and elective day care and emergency was calculated. End utilization of planned hours and raw as well as adjusted utilization was calculated.
2. **Delay in first case start:** Calculation of mean delay in start of first cases as it creates ripple effect throughout the schedule.
3. **Case cancellation rate:** Reasons and Percentage of 'on the day of surgery cancellation' were computed.
4. **Turnover time of OTs:** calculating average turnover time between two successive operations and also prolonged delays beyond 45 minutes for turnover.
5. **Prediction bias:** Bias in case duration estimates per 8 hours of OR time and average bias per case and percentage of cases over running and over-booked.
6. **Satisfaction score:** The perspective of surgeons, anesthesiologists, nurses and technicians were evaluated through a satisfaction schedule.

OPERATION THEATRE UTILIZATION

- Raw utilization = Total hours of cases performed / Total resource hours of OR's
Where, Total hours of cases performed= Sum of total wheel out time of all surgeries - Sum of total wheel in time of all surgeries.
Total resource hours = Total working days of operation theatre * number of Working hours per day (8)
- Adjusted utilization = Total hours of cases + 'Credit' /Total resource hours of OR
Where, total hours of cases performed= Sum of total wheel out time of all surgeries – Sum of total wheel in time of all surgeries.

Credit time= Time taken between two surgeries for preparation of operation theatre for next case.

Total resource hours = Total working days of operation theatre * number of Working hours per day (8)

TABLE 4.4, OPERATION THEATRE UTILIZATION

		OR 1		OR2		OR3
	MINUTES	UTILIZATION %	MINUTES	UTILIZATION %	MINUTES	UTILIZATION %
RAW UTILIZATION	1480	12.8%	3290	28.5%	3885	33.7%
ADJUSTED UTILIZATION	2505	21.7%	4215	36.6%	5335	46.3%
TOTAL RESOURCE MINUTES	11,520		11,520		11,520	

PROBLEMATIC AREAS-

Table 4.5, PROBLEMATIC AREAS IN OPERATION THEATRE

MONTH	Scheduled cases	Cancelled cases	Postpone cases	Emergency cases
Feb '14	118	7	35	22
Mar'14	129	5	22	16
Apr'14	143	9	18	31

- Reasons for cancellation-

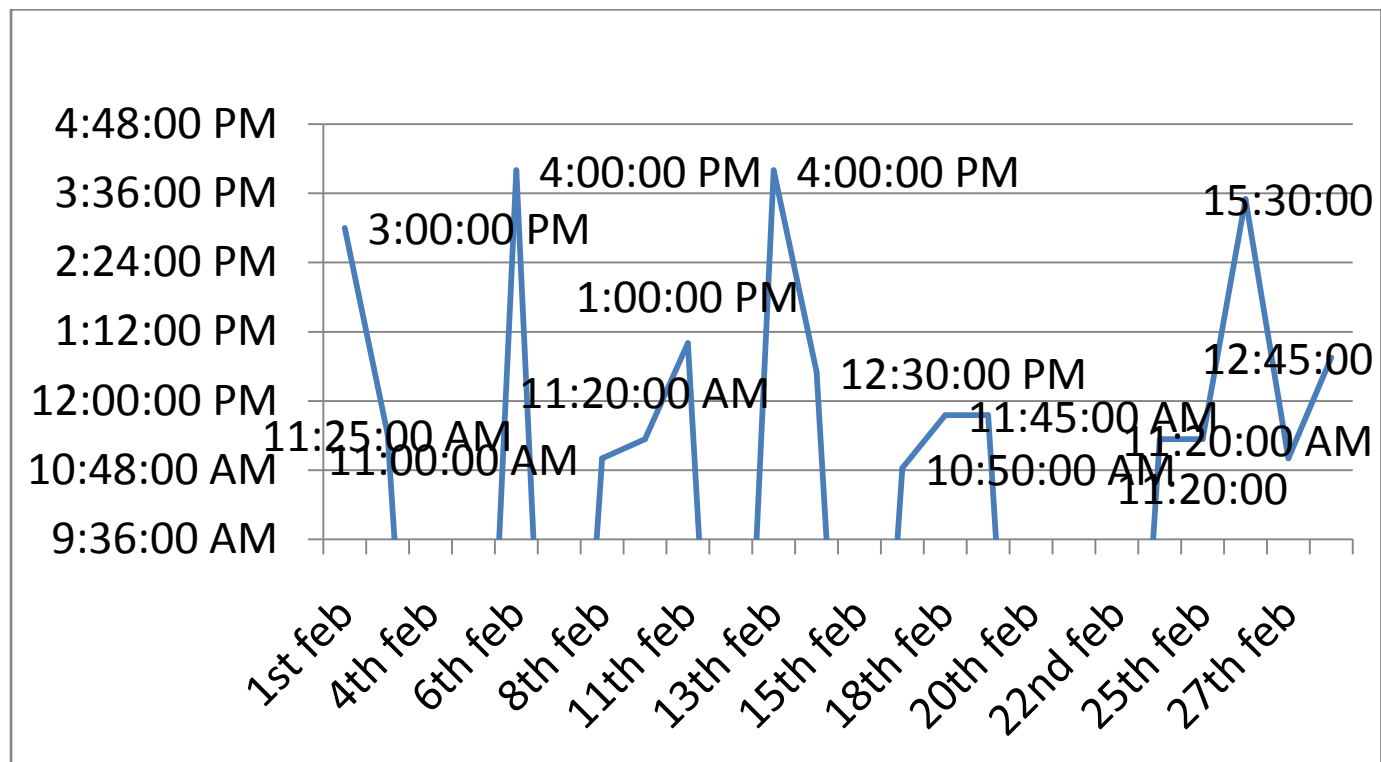
- Patient reason-patient did not turn up for surgery.
- Medical reason- patient unfit for surgery.
- Financial clearance pending

- RECOMMENDATIONS –

Cancellation rate should be less than 5%

FIRST CASE DELAY

Graph 4.2, FIRST CASE DELAY IN OPERATION THEATRE



- GENERALLY OT STARTS AFTER 1 PM(except for eye cases)
- At few days OT remains UNUTILIZED FOR WHOLE DAY.
- Ripple effect

❖ REASONS-

- Delay in admission process of day care / late reporting of patients
- Surgeons reporting late
- Patient condition not stable for surgery.

❖ RECOMMENDATION-

Less than 15 minutes delay for less than 10% cases

SATISFACTION INDEX

- Illuminating prospective of all members
- Dissatisfaction factors

Table 4.6, SATISFACTION INDEX AMONG VARIOUS OPERATION THEATRE STAFF

SURGEONS	ANAESTHESIOLOGIST	OTHER OT STAFF
Delay due to inefficient Admission process	Delay due to inefficient Admission process	Delay due to inefficient Admission process
	Surgeries do not start on scheduled time	Surgeries do not start on scheduled time
Inadequate nursing support	Surgeons are not on time	Surgeons are not on time
Shifting of patients from ward is not on time	Inadequate nursing support	Shifting of patients from ward is not on time

Table 4.7; SATISFACTION SURVEY SCORES

(1=strongly agree, 2= agree, 3=neither agree nor disagree, 4=disagree, 5= strongly disagree)

Q.no.	Parameter	Surgeon	Anesthesiologists	Staff
1.	Surgeries always start on scheduled time			
2.	Adequate nursing support			NA
3.	Surgeons are always on time	NA		
4.	OT is ready at the time of surgery			NA
5.	We have adequate nursing support			NA
6.	OT runs as per OT schedule list			NA
7.	Patients have to wait for minimum time before surgery			NA
8.	There is short turnover time between two cases			NA
9.	We are satisfied with the sterilization practices of OT Between two successive cases.			NA
10.	We usually get the desired OT booking slot for Elective surgery while booking.		NA	NA
11.	We have ability to add non elective cases		NA	NA
12.	Anaesthesiologist are always on time		NA	
13.	We have adequate technician support			
14.	Shifting of patients from wards/rooms is always on time	NA	NA	
15.	We get sterilized instruments on time	NA	NA	
16.	There is never a delay in surgery due to arrangement of blood and other prosthetics.	NA	NA	
17.	Patient instructions, consent and other formalities are already complete before surgery.	NA	NA	
18.	We are satisfied with the support of helping staff and housekeeping staff.	NA	NA	
19.	We have adequate communication across Various departments.	NA	NA	

The following factors influencing OT functioning were evaluated for satisfaction on a Likert scale and an average score was calculated for each respondent group.

Table 4.8; SATISFACTION SURVEY SCORES

(1=strongly agree, 2= agree, 3=neither agree nor disagree, 4=disagree, 5= strongly disagree)

Q.no.	Parameter	Surgeon (n=12)	Anesthesiologist (n=4)	Staff (n=14)
1.	There is no delay in OT due to efficient patient Admission process. (spl. Day care)	3.4	3.75	2.8
2.	Surgeries always start on scheduled time	2.9	2.75	2.4
3.	Adequate nursing support	2.5	3.75	NA
4.	Surgeons are always on time	NA	3.25	2
5.	OT is ready at the time of surgery	2.4	2.75	NA
6.	We have adequate nursing support	2.5	3.8	NA
7.	OT runs as per OT schedule list	2.3	2.3	NA
8.	Patients have to wait for minimum time before surgery	2.7	2.5	NA
9.	There is short turnover time between two cases	2.9	2.3	NA
10.	We are satisfied with the sterilization practices of OT Between two successive cases.	2.1	1.8	NA
11.	We usually get the desired OT booking slot for Elective surgery while booking.	1.8	NA	NA
12.	We have ability to add non elective cases	2	NA	NA
13.	Anesthesiologists are always on time	2.1	NA	1.5
14.	We have adequate technician support	2.2	2	1.9
15.	Shifting of patients from wards/rooms is always on time	NA	NA	2.2
16.	We get sterilized instruments on time	NA	NA	1.5
17.	There is never a delay in surgery due to arrangement of blood and other prosthetics.	NA	NA	2
18.	Patient instructions, consent and other formalities are already complete before surgery.	NA	NA	1.4
19.	We are satisfied with the support of helping staff and housekeeping staff.	NA	NA	2.5

20.	We have adequate communication across various departments.	NA	NA	2.2
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Table 4.9; TOTAL SATISFACTION INDEX

OT	Satisfaction score(out of 5)	Percentage(%) dissatisfaction
Surgeons	2.5	50.4%
Anesthesiologists	2.9	57.2%
OT staff(nurses, technicians)	2.2	43.7%

TURN AROUND TIME

- ❖ Making OR ready for next case
- ❖ Too long a turnover time is a turnover delay practices
- ❖ Too less a Turnover time Indicates inadequate sterilization.
- ❖ Improving turnover time can help us with following-
 - Opportunity to add procedure
 - Increase clinicians productivity

Table 4.10, TURN AROUND TIME FOR CASES-

Turnover time	No. of cases
Less than 25 minutes	28% of cases
25-45 minutes	15% of cases
More than 45 minutes	57% of cases

4.7 GAPS IN WORK FLOW PROCESS

OT INFRASTRUCTURE ISSUES-

- Laundry making is done inside OT complex (not CSSD)
- Presence of NICU and Labor room inside the OT complex
- Cardiac OT is present on diff. floor which causes distribution of resources.
- OT STORE not present.
- No disposal zone of OT complex present.

OT SCHEDULING PROBLEM-

- No advance booking for cases been done (advance booking register not used by doctors mostly)
- Incomplete entries in register.
- Tentative duration of Surgery is not filled and not defined, hence next case start time could not be defined for booking
- No option for slot booking is available.
- In some of the cases, no information is given beforehand if there is any special requirement for any case/surgery

COMMUNICATION GAP BETWEEN OT AND PHARMACY -leading to indenting issues

- Out of stock problems
- Near expiry drugs and consumables are given by pharmacy to O.T.

MANPOWER SHORTAGE IN OT-

- Movement of staff to cardiac OT whenever needed.

LAUNDRY ISSUES IN OT-

- Laundry and linen making is done in OT-source of infection
- Laundry received very late (around 1 pm)
- Shortage of laundry

MANPOWER SHORTAGE IN

- Movement of staff to cardiac OT whenever needed.

DELAY IN CLEARANCES, INVESTIGATION AND CONSENT-

Delay in clearances or investigation report lead to either delay or postponement of cases. This delay can occur at any end or by any stakeholder involved, which will alter the OT scheduled and which can affect the OT utilization rate.

Lack of Ownership in taking Consent

Ideally consent should be explained and taken by Surgeons a day before the surgery. However, it was observed that, even though doctor explain the risk and the complication associated with a surgery. But they fail to document it which leads to delay in process and moreover nurses have to document the consent form.

Next, it was found that, patient is wheeled in with improper/incomplete consent form.

Improper Consent includes:

- Absence of Doctor's signature
- Absence of Patient's signature
- Risk not mentioned
- Procedure not mentioned

CANCELLATION OF CASES-

Causing loss of revenue and wastage of operation theatre complex resources.

INSIDE THE OPERATION THEATRE

- Movement of staff is considerably more.
- Use of gloves was not done at times by doctor during patient handling (anesthesia).
- Use of mobile phones inside OT by doctors and staff leading to increase chance of infection.
- Instrument washing is done immediately after surgery if staff doesn't have to rush for other case

PROBLEMS FACED BY PATIENTS-

- TPA patients have to bring certain medicines and consumables from pharmacy(not included in TPA list)
- Lack of prior information to patient regarding the time of surgery by doctors.

PROBLEMS FACED BY OT STAFF-

- Laundry making
- Recovering medicines and consumables from patient.
- No shoe covers present in OT, and deficiency of OT slippers.
- Non availability of RO Water in OT Complex for instrument washing and scrubbing.

4.8 RECOMMENDATIONS;

Redesigning of MS-OT

As the MS-OT complex of this hospital poses a serious problem in zoning with no separate disposal zone available for patient wheel out.

Labor room and NICU should be made outside the OT Complex.

Cardiac OT can be brought along with general OT inside the same complex region.

OT store should be there for keeping stock of resources required in OT.

Proper documentation of policies and procedures

Establishing OR rules and regulations, strict adherence to and enforcement of policies and procedures along with continuous monitoring is required as an essential ingredient for efficient OT management.

There is strong need of proper documented set of policies and procedures to be followed in MS-OT. A comprehensive set of SOPs or standard operating procedures should be developed for MS-OT. These standard operating procedures should not only be documented but staff should be trained accordingly. The compliance of staff with the policies should also be ensured.

These policies should include all aspects of OT functioning accounting from OT discipline to cancellation, scheduling, postponement, preparation, maintenance, patient flow, safety and sterilization standards to be followed. It should also include job responsibilities of the staff clearly.

Accuracy and timeliness of data is essential as it is used to provide vital information to managers and supervisors for tracking purposes and to follow-up on key process performance.

OT booking-

1. HMIS OT module is proposed for scheduling the OT cases. Module is designed in such a way that OT will not be booked until all the relevant fields are filled.
2. OT will be booked one day prior to surgery till 2:00PM only.

3. To make the module user friendly, a list to be prepared consisting of Surgery, surgery code and tentative duration. As soon as the name of the surgery will be entered, surgery code and tentative duration of the surgery will be automatically displayed on the module.

Clearances, Investigation And Consent

PAC

Once the OT booking is done till 2:00 PM, Anesthetist should make sure that the PAC is done one day prior to surgery of all the booked cases. Moreover surgeon should make sure one day prior to Surgery that PAC is done.

FINANCIAL CLEARANCE

TPA

1. OT booking should be done after getting the TPA approval only.
2. In case there is change in care plan, Surgeon is suppose to inform the patient , so that TPA could be informed for the change in care plan on time otherwise, strict action should be taken from management for the defaulters
3. For timely TPA approval, investigation report should be send to TPA on time. Nurses should send X-ray back to lab, for getting reports on time.

PREHOLD AREA

GDA from OT complex should be responsible for transfer of patients from wards

Adding surgeries

As the utilization of the ORs is suboptimal so to increase the use of resource hours more cases can be added. More surgeons can be appointed on board to increase surgical load of hospital to match its actual capacity.

When cases are less it is more advisable to conduct back to back cases and shut down the facility as it results in decreased stress on infrastructure. All the high cost running equipments except for air handling unit can be shut saving resources.

Strengthening OTMIS (OT management information system)

Presently the OT- MIS utilization is limited, as it is used only for indenting of stock.

Strengthening of OT-MIS with new modules is required for smooth functioning.

The OT-MIS use should be increased for the purpose of OT booking, OT scheduling, patient transfer indication, OR functioning status flags and OR delay or over run notifications also. All the surgeons should be given access to OT-MIS for better planning of their cases and precious time.

OT managers

Operation theatre management is a task where function follows the form of management. The capacity needs to be increased or modified according to demand. As no dedicated operation room is there for emergency so there are emergent case additions to MS-OT to be managed. Management is an art of coordinating, monitoring and controlling and OT is a crucial area requiring management. Thus there is a need for operation manger. Every day one staff nurse of OT should be assigned on OT duty and the staff on OT duty should not scrub in for any procedures. OT duty on rotational basis should include assuring OT running as per schedule, managing all requirements, patient transfers, handovers and turnovers of OT. Appraisal of OT nurses should include this as one of the criteria.

Audits

Regularly audits should be done for quality assurance, safe surgery practices and infection control practices. Timely, effective OT utilization should be calculated and every effort should be made to reduce the idle theatre hours. The audit should also include checking of documentation accuracy of booking, cancellation, indicator and all registers.

Introducing lean six sigma approach

Six sigma approach should be introduced which will help decrease the defect and variability in outcome such that 99.99966% of the outcomes are free of defects. It can be introduced with lean methodology addressing process flow and waste issues increasing the utilization of OT.

Anesthesia induction room

Studies have shown that a separate anesthesia induction room increases the utilization of OR for actual surgical time. A single induction room for all the OT can considerably streamline the patient wheeling in all operating rooms.

Change of flow of patients to OT

The flow of patients to OT should be modified specially for day care patients so that they report to OT in scheduled time. Generally day care surgeries planned at around 08:00 hours are delayed because of patient unpunctuality or admission process delays. The admission process of day care patients should be hastened by doing maximum formalities before the day of surgery. Pre surgical counselling of patients should be done and proper instructions regarding the surgery given. Patients should be encouraged to follow the instruction and show compliance with reporting time of surgery. Usually day care patients should be scheduled early for surgery so that they can be discharged on same day after post operative care but patients should not be scheduled too early so that admission process delay affects the OT scheduling.

Continuous quality improvement

The efficiency metrics could be used by OR managers for evaluating baseline performance and identifying areas that need improvement. Certainly, safety and patient outcomes can't be compromised when aiming for a more efficient OR suite.

To Avoid Cancellation Of Cases

Following are the suggestion made to avoid cancellation of cases.

- Charge some booking amount at the time of booking
- Give some discount on high value surgeries

4.9 LIMITATIONS

- **From patient's end**

There are many factors from the patient's end that cannot be controlled for avoiding the problem as delays, cancellation or postponements as

1. Late arrival of patient despite patient education and counseling.
2. Non submission of documents on time leading to late approval
3. Change in decision for having surgery

- **Resistance to Change**

1. As the Surgeon's are not very much tech-savvy , It will be difficult for surgeons to acclimatize to OT- HMIS module
2. The surgeons are habitual to work according to their own convenience, therefore, adherence to protocol such as booking OT on time, on time starts, being punctual would be difficult.

4.10 CONCLUSION

As healthcare workers we have to believe that our main responsibility is to maintain our accountability and to deal with issues with a professional point of view. This project enriched my portfolio with a success story based on a determination, understanding and implementing change where change is needed.

Describing my project it is very important to conclude its significance for me as a manager in a new

role, understanding all contributing factors, exchanging ideas with people, learning new strategies, failing at times. Tackling such an important area as the operating theatre was an important decision and a challenging job since it is well known that operating theatres are the money generating areas in any private healthcare institution. Recommendations given into this area will not only improve the OT efficiency, but quality of care in general will be improved by raising the bar for better practice and enhanced communications.

OT can be an asset for QRG Central Hospital, Faridabad.

Modifications are needed in its infrastructure and working, to fill the gaps and improve the patient care.

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4.12 ANNEXURE

Table 4.7; SATISFACTION SURVEY SCORES

(1=strongly agree, 2= agree, 3=neither agree nor disagree, 4=disagree, 5= strongly disagree)

Q.no.	Parameter	Surgeon	Anesthesiologists	Staff
1.	Surgeries always start on scheduled time			
2.	Adequate nursing support			NA
3.	Surgeons are always on time	NA		
4.	OT is ready at the time of surgery			NA
5.	We have adequate nursing support			NA
6.	OT runs as per OT schedule list			NA
7.	Patients have to wait for minimum time before surgery			NA
8.	There is short turnover time between two cases			NA
9.	We are satisfied with the sterilization practices of OT Between two successive cases.			NA
10.	We usually get the desired OT booking slot for Elective surgery while booking.		NA	NA
11.	We have ability to add non elective cases		NA	NA
12.	Anaesthesiologist are always on time		NA	
13.	We have adequate technician support			
14.	Shifting of patients from wards/rooms is always on time	NA	NA	
15.	We get sterilized instruments on time	NA	NA	
16.	There is never a delay in surgery due to arrangement of blood and other prosthetics.	NA	NA	
17.	Patient instructions, consent and other formalities are already complete before surgery.	NA	NA	
18.	We are satisfied with the support of helping staff and housekeeping staff.	NA	NA	
19.	We have adequate communication across Various departments.	NA	NA	