A STUDY ON IMPROVISING OPERATION THEATRE UTILIZATION IN A MULTISPECIALTY HOSPITAL

PREPARED BY
Dr. NEHA MAKKER
PGDHM 2012-14
IIHMR, Jaipur

UNDER THE GUIDANCE OF
Prof. P.R. SODANI
Dean(Training)
IIHMR, Jaipur

INTRODUCTION

- 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 work on **“ improvisation of operation theatre utilization” .**

AIM OF THE STUDY

- To examine the entire process starting from booking till wheel in of patient in OT was mapped for the month of Feb, Mar, Apr 2014.
- Evaluating the current utilization of Operation theatre
- Define the defects causing underutilization of operation theatre.
- Measure them using efficiency metrics and Suggest improvements

OBJECTIVE-

- General objective

  To study the utilization and efficiency of operation theatres of QRG Central Hospital.
- Specific objectives

  -To evaluate the utilization of OT complex.

  -To determine the efficiency in functioning of OT complex by calculating efficiency metrics.

  -To evaluate the satisfaction of surgeons, anesthesiologists and OT staff with the functioning of Operation theatres.

  -To determine the efficiency in scheduling and running of OT.

IMPORTANCE/NEED OF STUDY

- Operation theatre complex can be an asset for QRG Central Hospital and Research Centre ,Faridabad
- Can be cultured as USP.
- Optimize its utilization
- Light on present utilization status
- In- depth analysis of reasons of such utilization
- Help management in deciding augmentation or downsizing of facility resources accordingly

METHODOLOGY AND DATA COLLECTION

- **Study Setting:** QRG Central Hospital and Research Centre, Faridabad
- **Study Period:** Feb 10th to April 30th 2014
- **Study Population**: In patients Surgery Cases
- **Study Sample:** In patient Surgery cases between Feb to April 2014
- **Study design:** Descriptive, Cross-sectional and combination of retrospective and prospective study
- Includes all surgeries done in OR-1,OR-2 and OR-3

✓ **RETROSPECTIVE STUDY**

The data of OT Scheduling was analyzed for the month of Feb 2014 and March 2014. Based on the analysis, problems were identified which were effecting the OT utilization.

✓ **PROSPECTIVE STUDY**

Based on the retrospective study, the OT scheduling was mapped for the month of April 2013 by analyzing scheduled and updated list of each day and interviews were conducted with each stakeholder. Along with this, reasons for the problematic areas were being tracked simultaneously on daily basis.

DATA COLLECTION

- **Primary Data:** Real time data of OT – Scheduling was collected for the month of Feb 2014 till April 2014.

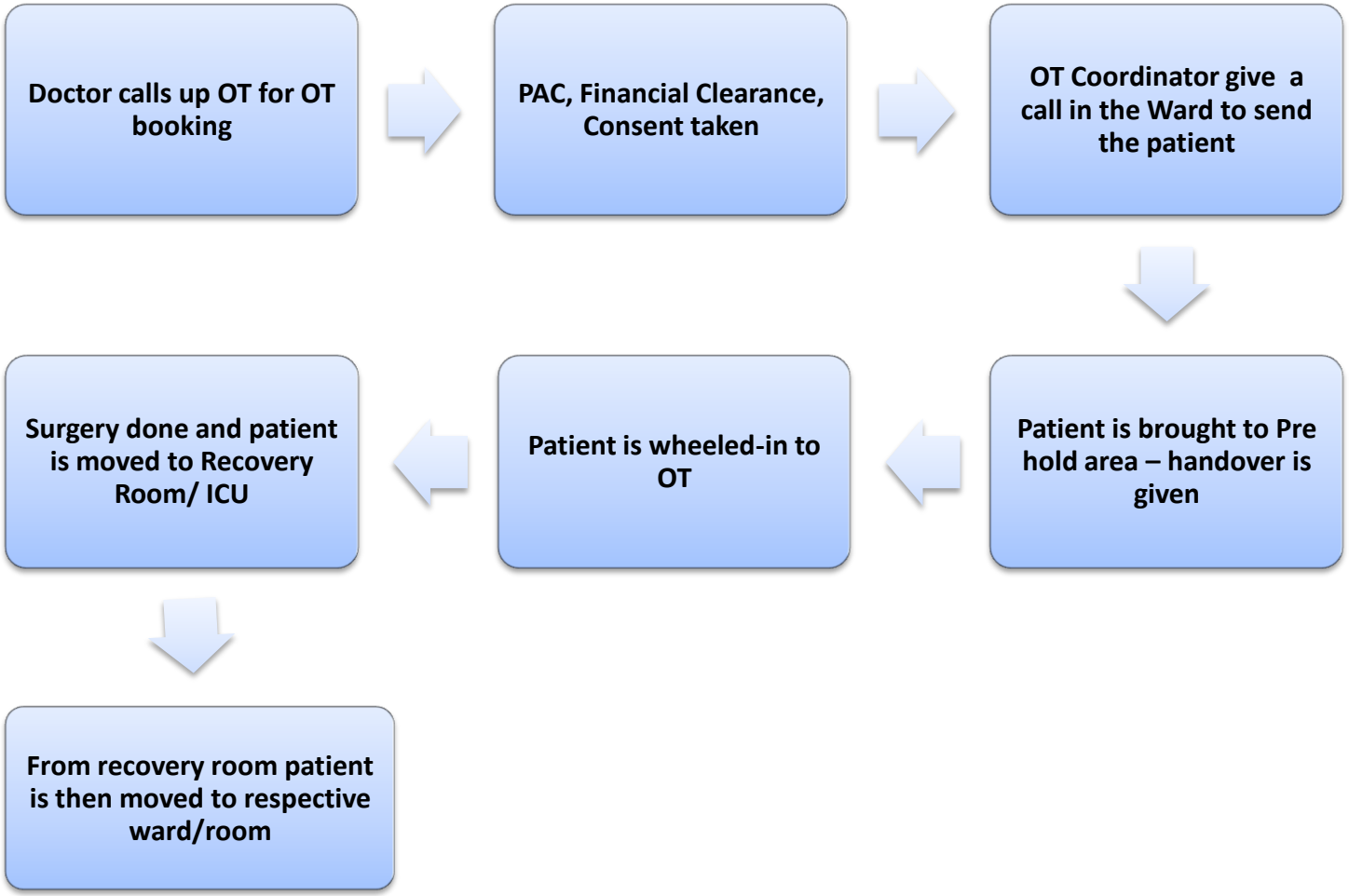
- **Process mapping and observations**

  The entire process starting from booking till wheel in of patient in OT was mapped for the month of April 2014. 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**

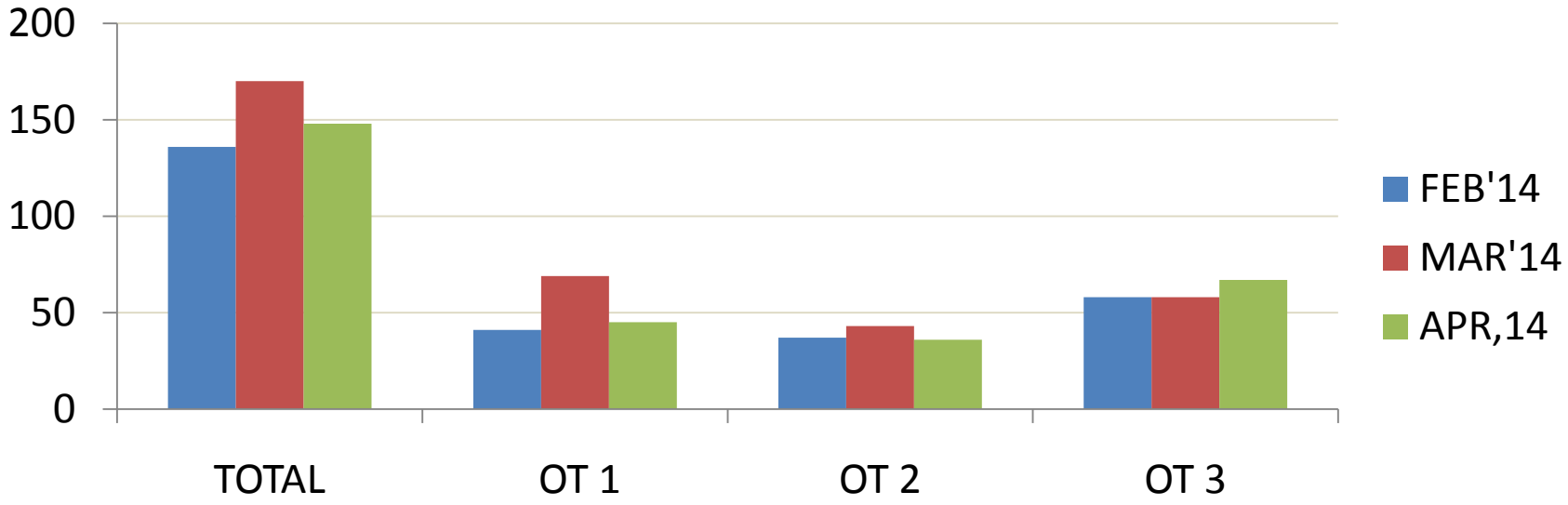
  Interviews were conducted with each stakeholder to identify and understand the problems faced at their level.

PROCESS MAPPING



OBSERVATION

NUMBER OF SURGERIES PERFORMED



MONTH	TOTAL	OT 1	OT 2	OT 3
FEB’14	136	41	37	58
MAR’14	170	69	43	58
APR’14	148	45	36	67

OR EFFICIENCY METRICS

- **OT Utilization:** Utilization of MS-OT as per specialty was calculated. Operation theatre utilization of planned hours and raw as well as adjusted utilization was calculated.
  - Raw utilization = Total hours of cases performed / Total resource hours of OR's
  - Adjusted utilization = Total hours of cases + 'Credit' /Total resource hours of OR

- **Delay in first case start**: Delay in start of first case of operation theatre causes postponement of subsequent cases .Calculation of mean delay in start of first cases as it creates ripple effect throughout the schedule.

- **Case cancellation rate**: Reasons and Percentage of 'on the day of surgery cancellation' were computed. Case cancelled causes revenue losses and wastage of operation theatre resources.

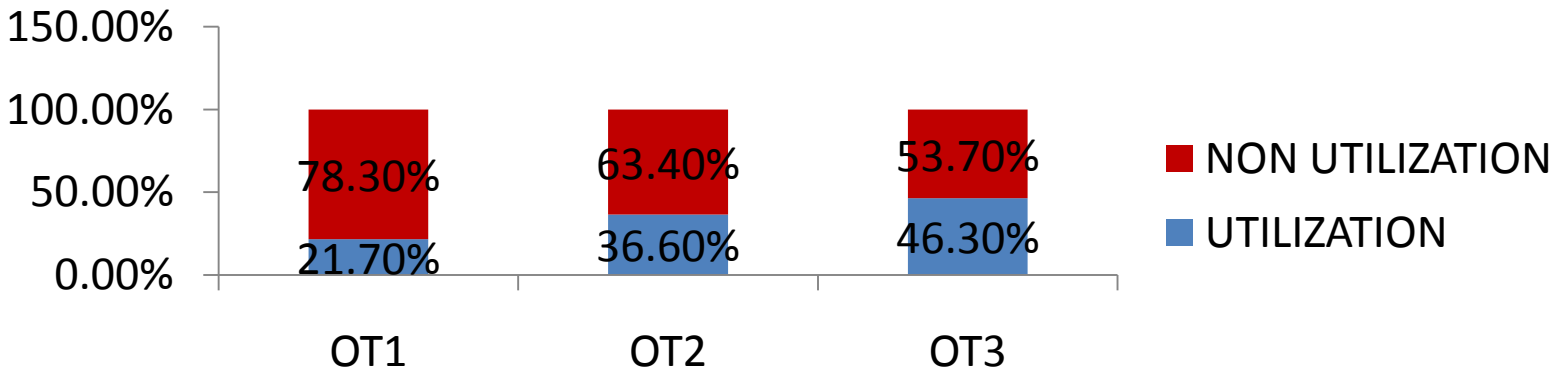
- **Turnover time of OTs**: calculating average turnover time between two successive operations and also prolonged delays beyond 45 mins for turnover.

- **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.

- **Satisfaction score**: The perspective of surgeons, anesthesiologists, nurses and technicians were evaluated through a satisfaction schedule.

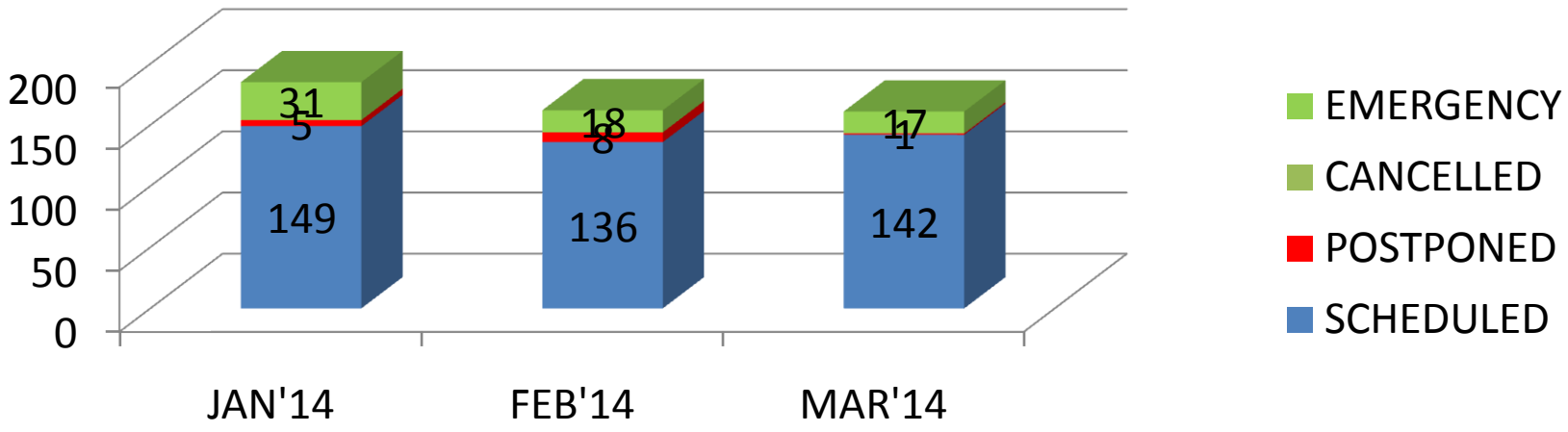
OT UTILIZATION

- Raw utilization = Total hours of cases performed / Total resource hours of OR's
- Adjusted utilization = Total hours of cases + 'Credit' /Total resource hours of OR



	OR 1		OR 2			OR 3
MIN	UTILIZATION %	MIN	UTILIZATION%	MIN	UTILIZATION%	MIN
RAW UTILIZATION	**1480**	**12.8%**	**3290**	**28.5%**	**3885**	**33.7%**
ADJUSTED UTILIZATION	**2505**	**21.7%**	**4215**	**36.6%**	**5335**	**46.3%**
TOTAL RESOURCE MIN	**11,520**		**11,520**		**11,520**	

PROBLEMATIC AREAS



✓Reasons for cancellation-

•Patient reason-patient did not turn up for surgery.

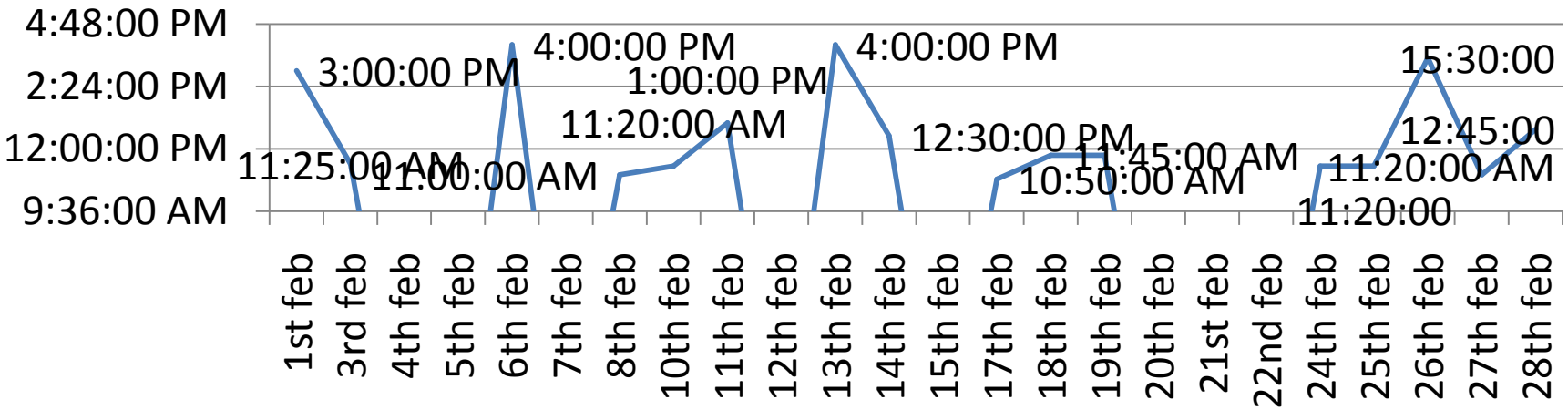
•Medical reason- patient unfit for surgery.

•Financial clearance pending

✓RECOMMENDATIONS –

Cancellation rate should be less than 5%

FIRST CASE DELAY



- GENERALLY OT STARTS AFTER 1 PM(except for eye cases)
- At few days OT remains UNUTILIZED FOR WHOLE DAY.
- Ripple effect
- <u>REASONS</u>-
  - -delay in admission process of day care / late reporting of patients
  - -surgeons reporting late
  - -patient condition not stable for surgery
- <u>RECOMMENDATION-</u>

Less than 15 minutes delay for less than 10% cases

SATISFACTION INDEX

- Illuminating prospective of all members
- Dissatisfaction factors .

SURGEONS	ANAESTHESIOLOGIST	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

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
  - Opportunity to add procedure
  - Increase clinicians productivity

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

GAPS IN WORK FLOW PROCESS

- **OT INFRASTRUCTURE ISSUES-**

-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.

GAPS IN WORK FLOW PROCESS

- **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 OT-**

-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.

- **CANCELLATION OF CASES**-.

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

GAPS IN WORK FLOW PROCESS

- **INSIDE THE OPERATION THEATRE**

-Movement of staff is considerably more
-Infection control protocol - maintained
-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

RECOMMENDATIONS

- Redesigning of MS-OT
- Proper documentation of policies and procedures
- OT booking
- Clearances, Investigation And Consent
- Adding surgeries
- Strengthening OTMIS (OT management information system)
- OT Managers
- Audits and management
- Introducing lean six sigma approach
- Anesthesia induction room
- Change of flow of patients to OT
- Continuous quality improvement
- To avoid cancellation of cases

CONCLUSION

- 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 improvise 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 improvise the patient care.

THANK YOU