Study of Utilization, Turn over time, and cancellation of cases in OT

Presented By
Dr.Milin M Kavanar
(0306)
MBA Hospital Management

Introduction

The operation theatre complex of a hospital represents an area of considerable expenditure in a hospital budget and requires maximal utilization to ensure optimum cost-benefit.

Optimum utilization of the OT time has always been a priority area for hospital administrator's. In order to improve utilization of operating room it's essential to know how much time is spent on each activity.

Cancellation of elective scheduled operations on the day of surgery leads to an inefficient use of operating room (OR) time and a waste of resources.

Prolonged turnover time in OT causes potential loss or deferment of revenue for the hospital and internal customer dissatisfaction.

Patient is admitted in the evening just before the scheduled date or in early morning at day of surgery.

PAC Done

Anesthetist and Surgeon arrives

Patient called from ward 15 minutes before scheduled surgery time

GDA from OT goes to respective ward to bring patient

Immediately after surgery patient is taken to recovery room or directly to ICU

After gaining consciousness patient is sent to ward

- Research Questions

i. What is the Utilization of OT in Max Vaishali Hospital?

ii. What are the factors causing prolonged turn over time?

iii. What are the factors causing cancellation of cases in OT?

Objectives

- To collect the baseline utilization data of operating theatres in the operation theatre complex of Max Hospital, Vaishali.
- To capture the start time for the first case of the day and analyze the causes of delay.
- To measure the turnover times for subsequent cases in the operating rooms and determine the reasons behind the long turnover periods.
- To analyze the causes of cancellation of Scheduled cases.

METHODOLOGY

Study design: The prospective, observational study was conducted at Max Vaishali Super specialty Hospital.

Study duration: This study was carried out for a period of 24 days from 15th March to 8th April 2017 in Operation theatre complex.

Study area: Operation theatre complex (Operation theatre 1 to Operation theatre 7) of Max Hospital Vaishali.

Sample Technique: Non-Probability Convenient sampling.

Sample size:

- A total data of 535 cases was examined during the period of study.
- Out of which 406 cases underwent surgeries, which included planned as well as add on cases.
- And 129 cases were who had their operations cancelled on the day of surgery.

Data collection:

- Primary data collection: - Data was collected from personal observation and information gathered by discussion with staff.
- Secondary data collection: Data was collected from OT Register and OT records.

The following times were recorded for each operated case:

- In time: The time at which the patient entered the OT.
- Out time: The time at which the patient was shifted out of the OT

Results

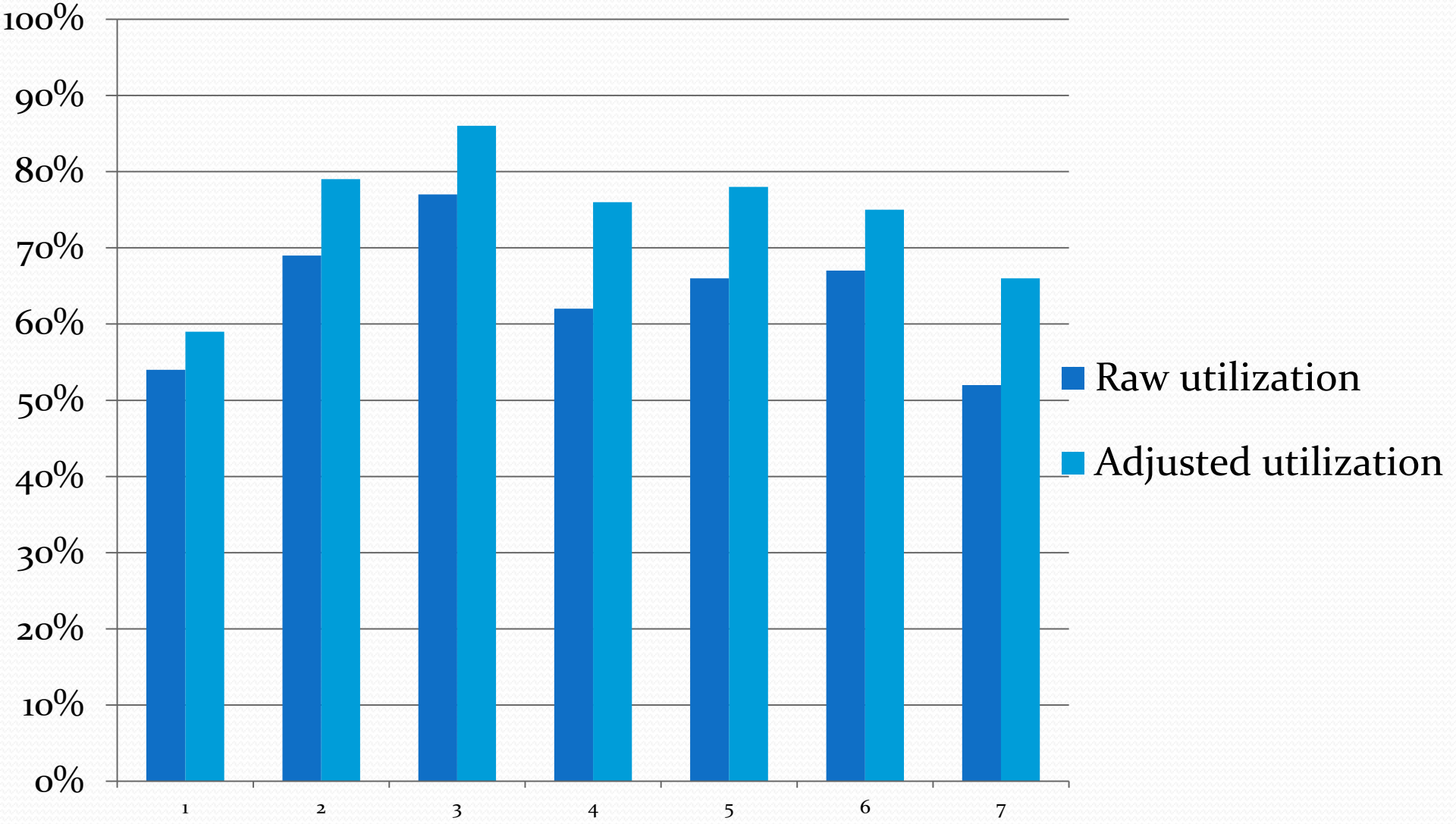
Raw and Adjusted Utilization OT wise

OT.NO	No. of surgeries	Raw utilization	Adjusted utilization
1	20	54%	59%
2	61	69%	79%
3	51	77%	86%
4	81	62%	76%
5	71	66%	78%
6	44	67%	75%
7	77	52%	66%

- It was expected to have minimum 75% adjusted utilization in each OT.
- The average adjusted OT Utilization was 75%.
- The average Raw Utilization was 64%.
- OT 1 was having the lowest adjusted utilization as it was exclusively used for cardiothoracic cases and there were only 1 case on average per day.

- When OT1 was excluded the average adjusted utilization was 77%
- OT1 was excluded from the further study of Turnover time or Non productive time as no. of cases on average in OT1 was **1.**

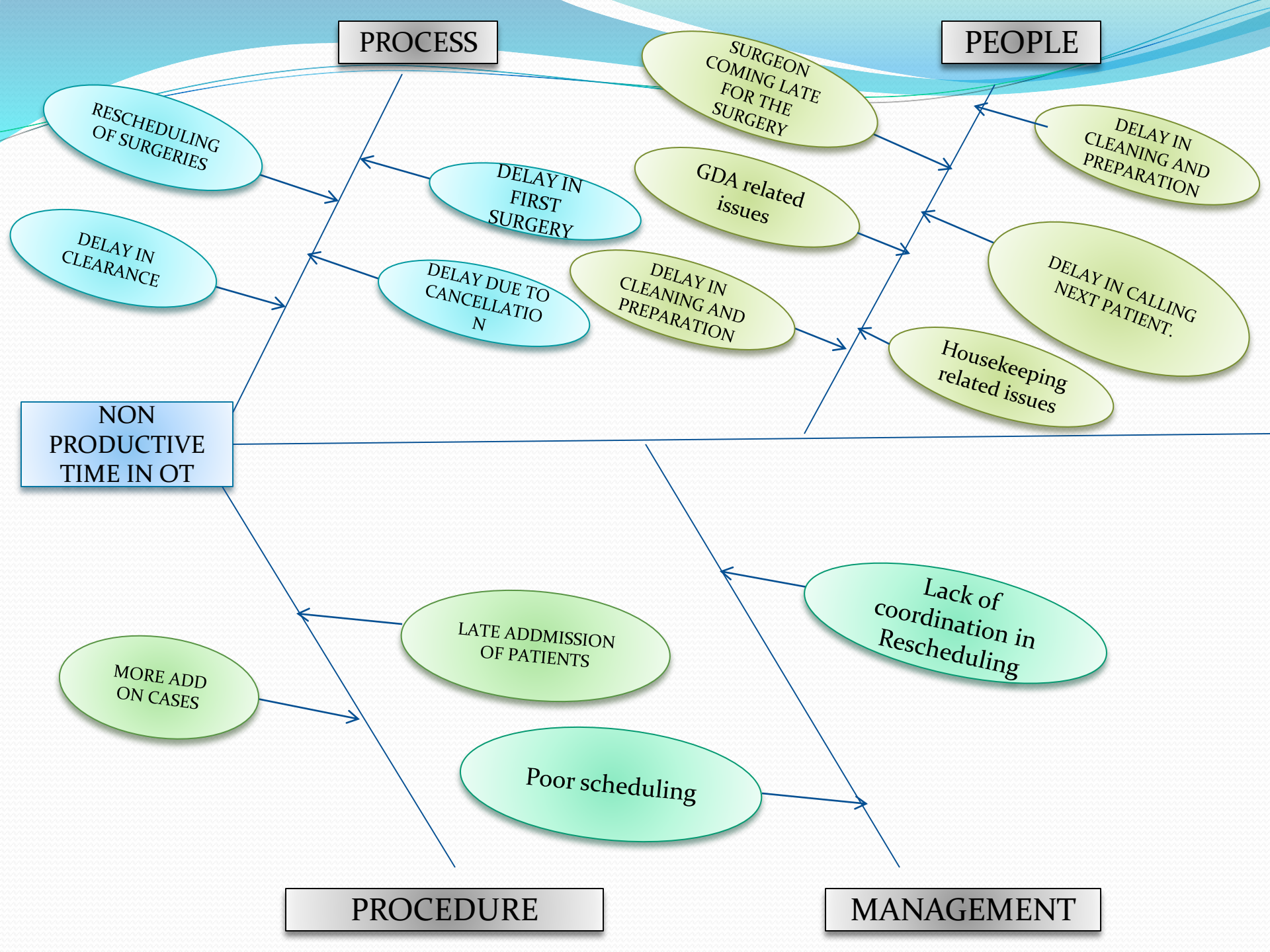
OT wise utilization



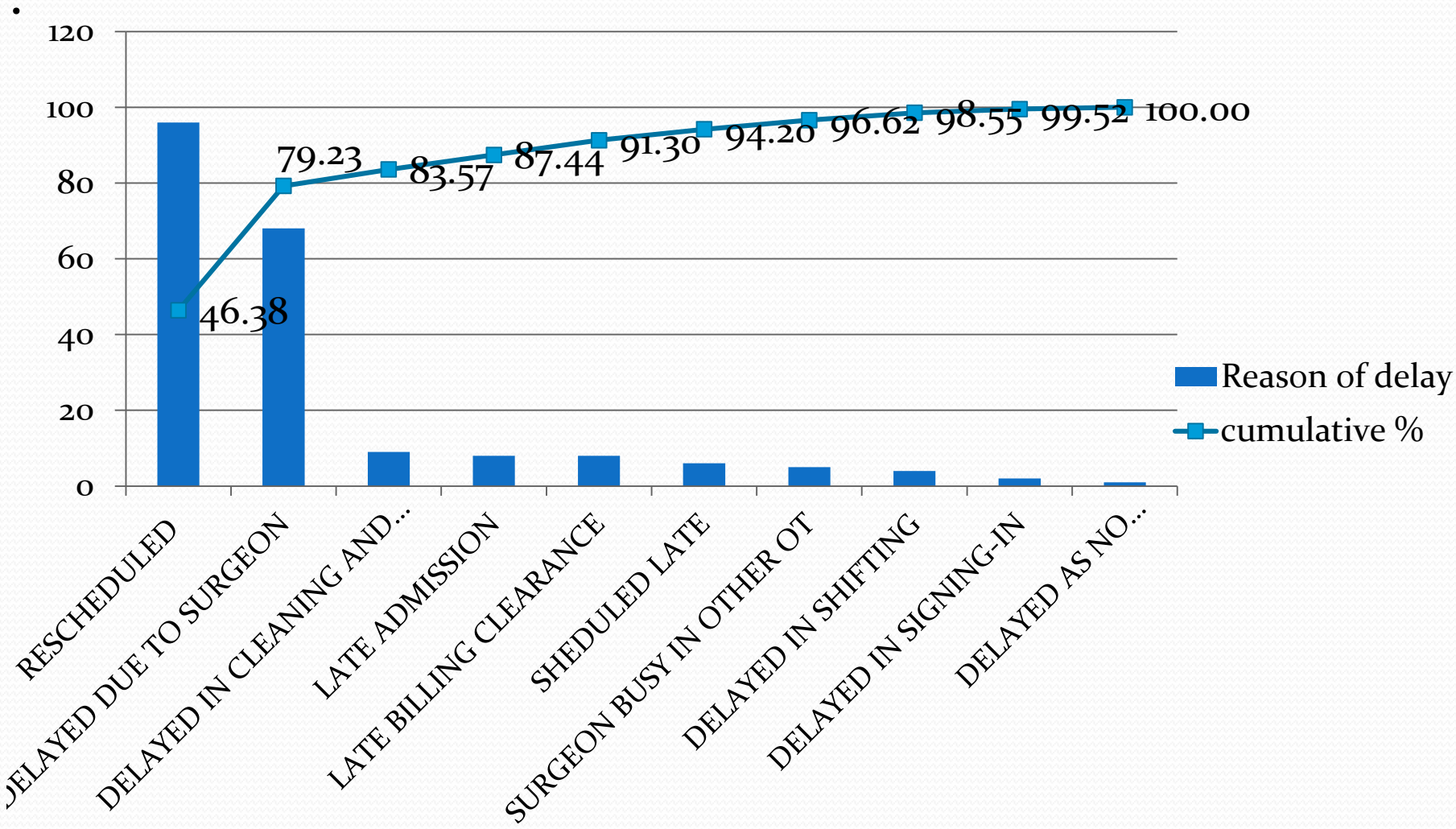
Turnover Time

AVG TURNOVER TIME OT WISE	
OT2	52MIN
OT3	1HR
OT4	50MIN
OT5	53MIN
OT6	1HR21MIN
OT7	56MIN

Cause and effect Diagram

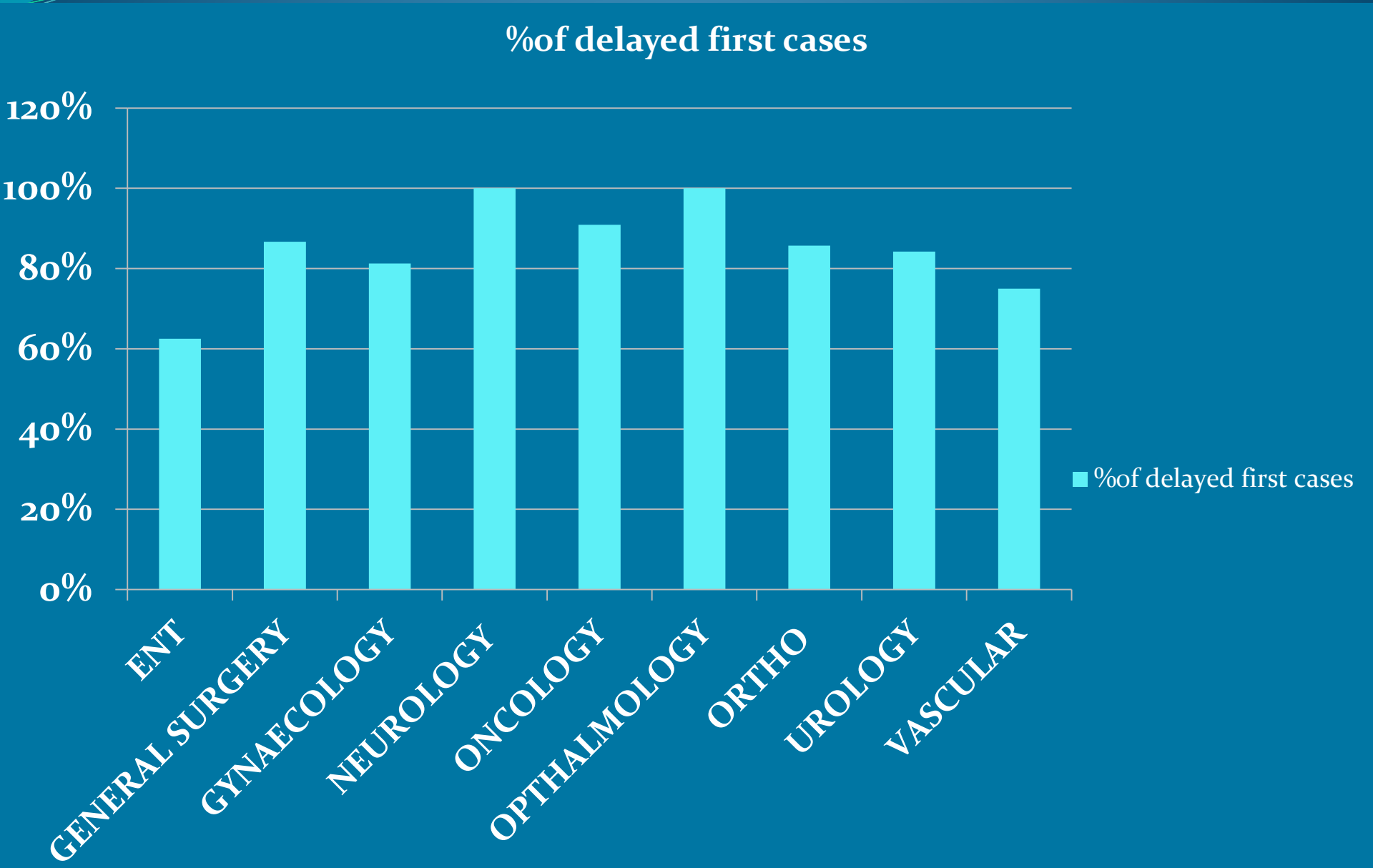

PROCESS
PEOPLE
RESCHEDULING OF SURGERIES
SURGEON COMING LATE FOR THE SURGERY
DELAY IN CLEANING AND PREPARATION
DELAY IN FIRST SURGERY
GDA related issues
DELAY IN CLEARANCE
DELAY DUE TO CANCELLATIO N
DELAY IN CLEANING AND PREPARATION
DELAY IN CALLING NEXT PATIENT.
Housekeeping related issues
NON PRODUCTIVE TIME IN OT
Lack of coordination in Rescheduling
LATE ADDMISSION OF PATIENTS
MORE ADD ON CASES
Poor scheduling
PROCEDURE
MANAGEMENT

Pareto diagram



- This diagram helped to find out the vital few causes (20%, 2 out of 10 cases) that contributed for 80% of the problem in prolonged turnover time.
- Rescheduling and surgeon coming late for surgery constituted 80% of the problem for prolonged turnover time in OT.
- Rescheduling was the most common cause of prolonged turnover time. However cancellation of cases mainly first case and more add on cases were the causes for Rescheduling.

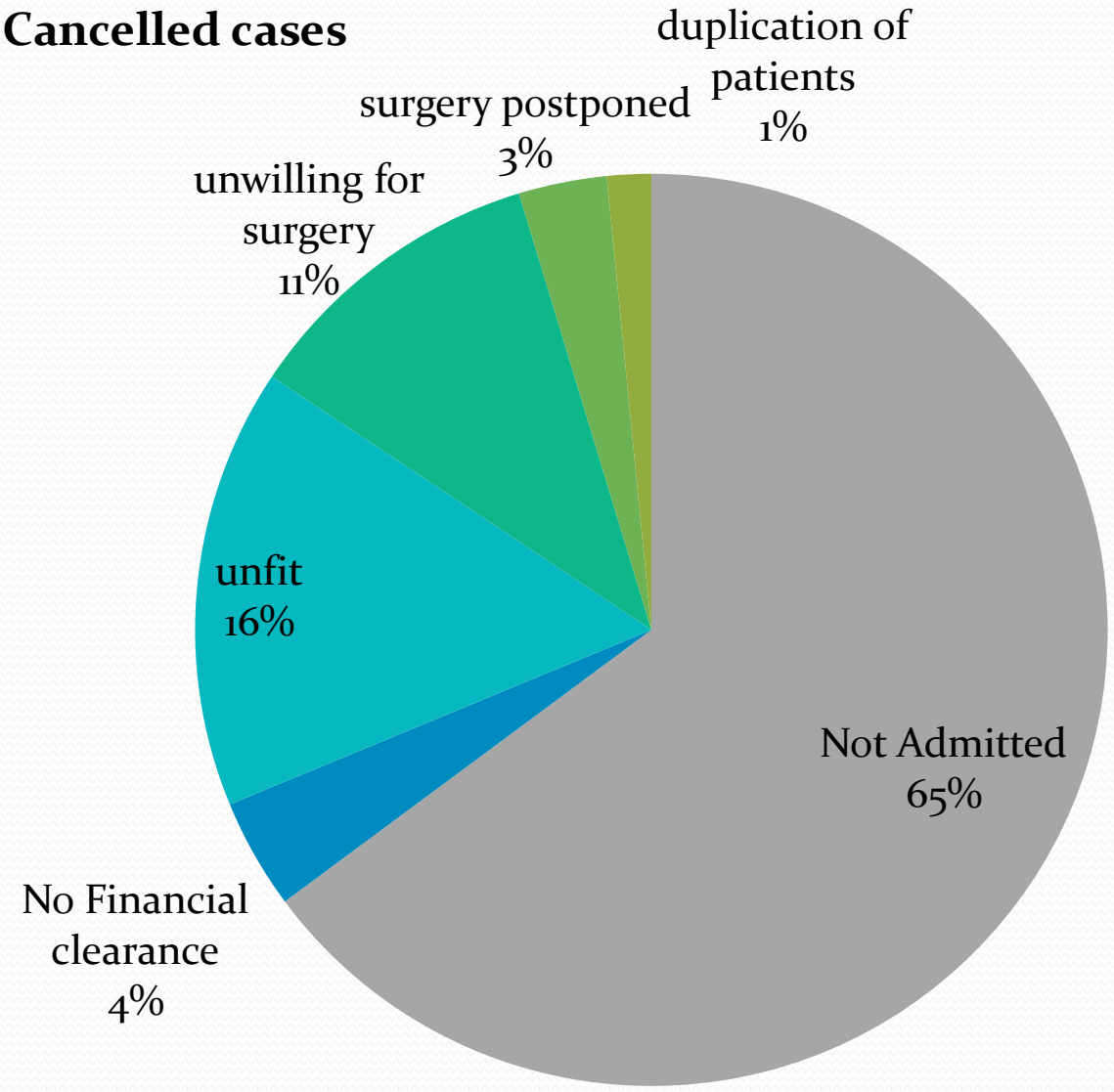
Delayed first cases speciality wise


%of delayed first cases
120%
100%
80%
60%
40%
20%
0%
ENT
GENERAL SURGERY
GYNAECOLOGY
NEUROLOGY
ONCOLOGY
OPTHALMOLOGY
ORTHO
UROLOGY
VASCULAR
%of delayed first cases

SPECIALITY	NO.OF FIRST CASES	FIRST CASES DELAY	%of delayed first cases	CASES STARTED BETWEEN 8am to 8.15am
ENT	8	5	63%	3
GENERAL SURGERY	15	13	87%	2
GYNAECOLOGY	16	13	81%	3
NEUROLOGY	15	15	100%	0
SURGICAL ONCO	11	10	91%	1
OPHTHALMIC	3	3	100%	0
ORTHOPAEDIC	21	18	86%	3
UROLOGY	19	16	84%	3
VASCULAR	4	3	75%	1

Cancelled cases

Reasons of Cancelled cases



- 20% of the cases were cancelled during the study.
- 65% of the cases were cancelled as patients didn't get admitted on the day of surgery
- 16% of the cases were cancelled as they were unfit for the surgery

Conclusion

- OT attained optimum utilization of 75% as per the literature. However in spite of attaining optimum utilization there was long turnover time even for the OT3 which had 86% Adjusted Utilization. The average turnover time of OT's was 59 minutes. This long Turn over time created the scope of improvement in obtaining more efficient Utilization.
- Turn over time was long mainly due to Rescheduling and surgeon coming late for surgery.
- Rescheduling was done mainly due to cancellations of the first case and more add on cases. Cancellations of scheduled first case made further delays in preparation of patient in ward and administration of any premedication which led to long delays .This was due to lack of communication between the patients prior to one day regarding surgery confirmation.

- The cancellations were known at morning 8am when patient didn't showed up for surgery. This created chaos in the OT. There were many add on cases as all the cases which were added prior one day after 4pm joined the add on case list. This led to more rescheduling which increased turn over time. This are the main factors that account for inefficient use of operating facilities. .
- Avoidable causes were Doctors coming late for surgery, Improper OT scheduling, communication failure between patient and Administration, and patient not ready in ward while Non avoidable causes were surgery postponed or cancelled by patient, patient unfit for surgery, and emergency add on cases. The correction of these avoidable factors would increase the Efficiency of Operation theatre

Recommendations

- Final OT list should be prepared till 5pm which is currently prepared till 4pm.This will reduce no. of add on cases
- OT list should be finalized after communication with patient, departmental coordinators and doctor one day prior to OT schedule .This will reduce cancellation rate.
- First case for the OT should be the patients who are already hospitalized.
- There should be OT booking and cancellations through HIS which will make booking transparent.
- Doctors should be reminded 1 Hour prior to their case on the day of surgery and 1 day prior for their first case.
- Integration of HIS on doctor's smart phone showing OT booking and scheduling.
- A checklist should be maintained by Departmental coordinators tracking patient's availability and the same should be shared with administration