

**Summer Training at
Max Superspecialty Hospital,
Mohali**

**A Time Motion Study to Explore the Reason for Delay in In-Patient
Discharges**

**By
Priyanka Sharma**

**Under the guidance of
Col (Dr.) Ashok Kaushik**

**MBA Hospital and Health Management
2015-2017**



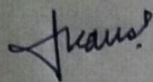
**The IIHMR University, Jaipur
2016**

CERTIFICATE

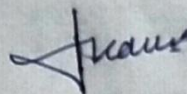
This is to certify that **Dr Priyanka Sharma** student of MBA hospital and health management (MBA-HM) from IIHMR University, Jaipur has undergone summer training at **Max Superspecialty, Mohali**, from **1st April 2016 to 31st May 2016**.

The candidate has successfully carried out the study designated to her during summer training and her approach to the study has been sincere, scientific and analytical. The summer training is in fulfillment of the course requirements.

I wish her all success in future endeavors.



Col (Dr) Ashok Kaushik
Mentor
Dean, Academic and Student Affairs
IIHMR University, Jaipur



Ref: MOH/TR/CP/J137

May 31st, 2016

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Dr. Priyanka Sharma D/O Dr. Shyam Dutt Sharma** has completed her training in the department of **Front Office** at Max Super Speciality Hospital, Mohali on 31st May 2016.

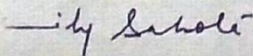
The project undertaken by her during the training period was "A time motion study to explore the reason for delay in inpatient discharges"

She possesses a keen observation and conducts herself with confidence.

During her training (April 01st 2016 to May 31st 2016) she was part of hospital set up and was reporting to **Dr. Abhinav Srivastava (Manager-Front Office)**.

We wish her all the best in her future endeavors.

For Max Super Specialty Hospital

A handwritten signature in dark ink, appearing to read "Lily Sahota".

Lily Sahota
AGM – Human Resources

ACKNOWLEDGEMENT

I am using this opportunity to express my gratitude to everyone who supported me throughout the course of this project. I am thankful for their aspiring guidance, invaluable constructive advice during the project work. I am sincerely grateful to the entire team of the Max hospital for sharing their truthful and illuminating views on a number of issues related to the project.

I express my profound gratitude and deep regards to my mentor Dr. Ashok Kaushik for his timely guidance and encouragement throughout the course of the project.

My sincere gratitude to my hospital mentor Mr. Abhinav Srivastav (Head Front Office), Mr. Subodh Kumar (Duty Manager, Front Office), and Mr. Ved Vyas Sharma (Patient care coordinator) for their active support and cooperation despite their busy schedule.

Dr. Priyanka Sharma

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ABBREVIATIONS

ABG : Arterial blood gas
AHU : Air handling unit
ASD : Atrial septal defect
AVR : Aortic valve replacement
BME : Biomedical engineering
CAG : Coronary angiography
CABG : Coronary artery bypass graft
CPR : Cardio pulmonary resuscitation
CCU: Cardiac care unit
CSSD : Central sterile supply department
CT : Computed tomography
CCD : Customer care department
CTVS : Cardio thoracic vascular surgery
ED : Emergency department
EEG : Electroencephalography
ECG : Electrocardiograph
F&B : Food and beverage
GDA : General duty assistant
HIS : Hospital information system
HCU : Health check up
ICU : Intensive care unit
LOS : Length of stay
MRD :Medical records department
MICU : Medical intensive care unit
MRI : Magnetic Resonance imaging
NICU: Neonatal intensive care unit
PCE : Patient care executive
PCC : Patient care coordinator
RICU : Renal intensive care unit
SICU : Surgical intensive care unit

HISTORY OF MAX HOSPITALS

Max Healthcare Institute is a healthcare institute based in New Delhi, India. The Institute is a wholly owned subsidiary company of Max India Limited. Established in 1985, Max India Limited is a Public Limited company listed in the Bombay Stock Exchange and National Stock Exchange of India with more than 37,000 shareholders.

The institute operates eleven centres in Delhi, NCR and neighbouring Punjab region, providing health care services in more than 30 disciplines. The company provides patient services including nuclear medicine and cardiac imaging, labs, scans, interventional cardiology, cardiac pacing and electrophysiology, neurosciences, orthopedics, gynecology and obstetrics, pediatrics, cancer care, kidney transplant, bone marrow transplant, maternity services, diagnostic services, paediatric, neurophthalmology, internal medicine, general surgery, urology, nephrology, gastroenterology, mental health and behavioural sciences, rehabilitative services, and pulmonology.

Mr. Anajit Singh is the Founder & Chairman Emeritus of Max India Limited, Chairman of Max Life Insurance Company Limited, Max Healthcare Institute Limited and Max Bupa Health Insurance Company Limited.

With over 2600 beds and 13 top hospitals in Delhi-NCR, Punjab and Uttarakhand, 2300 world-class doctors, Max Healthcare is one of the leading chain of hospitals in India. With over 500 ICU beds, the most advanced technology and state-of-the-art infrastructure, Max Healthcare is one of the best hospitals in India.

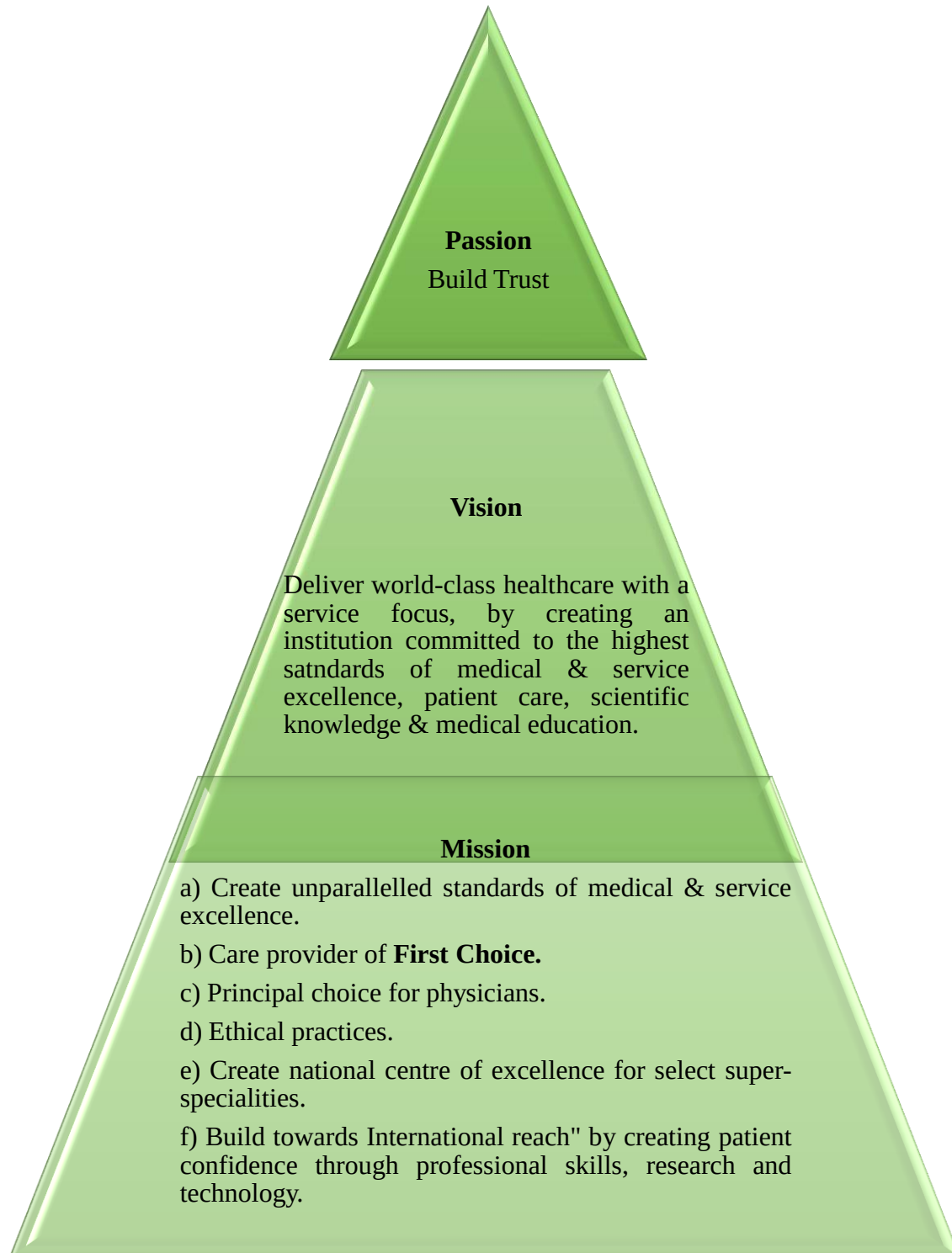
Max healthcare is committed in meeting all healthcare needs of customers, starting from the maintenance of good health to providing global standards in diagnostics, therapeutics and surgical requirements at the time of need.

It aims to exceed customer's expectations in terms of quality, service, safety and value for money through constant innovation and better product delivery.

Performance, Trust and Service excellence are enshrined in Max India Group's Vision, Mission and Values. In addition to these "life-centered" businesses, Max India manufactures speciality products for the packaging industry through its division-Max Speciality Products(MSP). MSP too has a strong service excellence orientation that strives on building long lasting partnerships.

The institutes focus is “completely satisfying customer needs profitably” by using DMAIC and Lean methodology.

Vision and Mission



Objectives



The Logo



The cross is the accepted symbol for Healthcare all over the world. It is a truly suitable symbol for a group that endeavors to enhance the quality of life through healing and care. The healthcare green is fresh, close to nature and symbol of life.

Max Super Speciality Hospital, Mohali

INTRODUCTION

Max Super Specialty Hospital, Mohali is another milestone towards realizing the dream of great visionary Mr. Analjit Singh, chairman and managing director of Max Healthcare Ltd.

The 217-bedded super specialty hospital is known for its personalized service and dedicated care for its patients.

Max Super Specialty Hospital, Mohali aims to bring comfort and convenience to its patients.

They believe in understanding their patients' health related problems and offer the right treatment to them. The hospital specializes in offering a broad array of services and amenities like Blood Bank, 24*7 Pharmacy for our-patients.

They use the most technologically advanced medical equipment to achieve excellence in research and treatment. They also have an art of diagnosis system to understand health problems better and choose the right treatment for their patients.

The state-of-the-art hospital extends dedicated care and personalized service to its patients: a pool of committed doctors and support staff help patients to get back to their normal routine at the earliest.

Facts & Figures

- Name: Max Super Speciality Hospital
- Location: Phase 6, Mohali (Punjab)
- Speciality: Tertiary Care Super Speciality Hospital
- Number of Beds: 217

Important dates:

- ***September 2011***- OPD was inaugurated by honourable chief minister of Punjab Sh. Prakash Singh Badal.
- ***December 2011***- IPD was inaugurated.

RESEARCH ACTIVITIES

- Disease Management Programmes
- Health Promotion and Counselling Services

Awards & Certifications

Max Super Specialty Hospital has been endowed with multiple certifications assuring the highest level of medical and service quality.



NABH Accreditation: The accreditation is a recognition of Max Healthcare's commitment to provide the highest quality of care to its patients.



NABL Accreditation: Max Healthcare laboratories have successfully obtained NABL accreditation in the field of medical testing.



They are **LEED certificate Green Hospital** - Four out of Six* such hospitals in India are Max Hospitals.

Collaboration:

Max healthcare and GE healthcare have joined hands to advance Cancer care in India through research and Co-creation of multifaceted cancer care solutions.

Collaboration between Max Planck Society: Germany and Department of Science and Technology, India to understand the role of Ubiquitin-related modifiers in regulation of RNA splicing.

Clinical Departments:

- Infection control
- Radiology
- General ward
- Laboratories
- MICU
- CCU
- Cath Labs
- Dialysis
- CSSD
- Physiotherapy
- CTVS ICU
- NICU
- LDR
- Operation Theatres
- Triage/Emergency
- HDU

Clinical Facilities:

- Blood Bank
- CT Scan
- ECG
- Endoscopy
- Histo Pathology/Laboratory
- Imaging Services
- MRI
- Radio Immuno Assay
- Sonography
- Integrated Hospital Information Systems
- Computerized Billing
- Documented Infection Control Policies/Manuals
- Other major equipment – Gamma Camera, TMT

Non-Clinical Departments:

- Reception/Helpdesk/Information Desk
- Cafeteria/ Canteen
- Insurance Desk
- Pharmacy inside the hospital
- Ambulance Service
- Bio- Medical Engineering
- Laundry Management
- Maintenance & Facilities Management like housekeeping etc.
- Management of Bio-medical waste
- Mortuary services
- 24 hours Security
- Social service
- Supply chain Management/ Material Management System
- Finance
- Human resource
- Medical records
- Quality assurance
- Research
- Patient welfare department
- Information technology

Outsourced staff

- Laundry- A-one, Maurya
- Food & Beverage- HighTech Hospitality
- House-keeping- Avon

SERVICES PROVIDED

Medical Specialities

› Anaesthesia
› Internal
› Cardiology
› Dermatology
› Gastroenterology
› Endocrinology
› Nephrology
› Neurology
› Medical
› Pediatrics
› Pathology
› Psychiatry
› Pulmonology
› Radiology

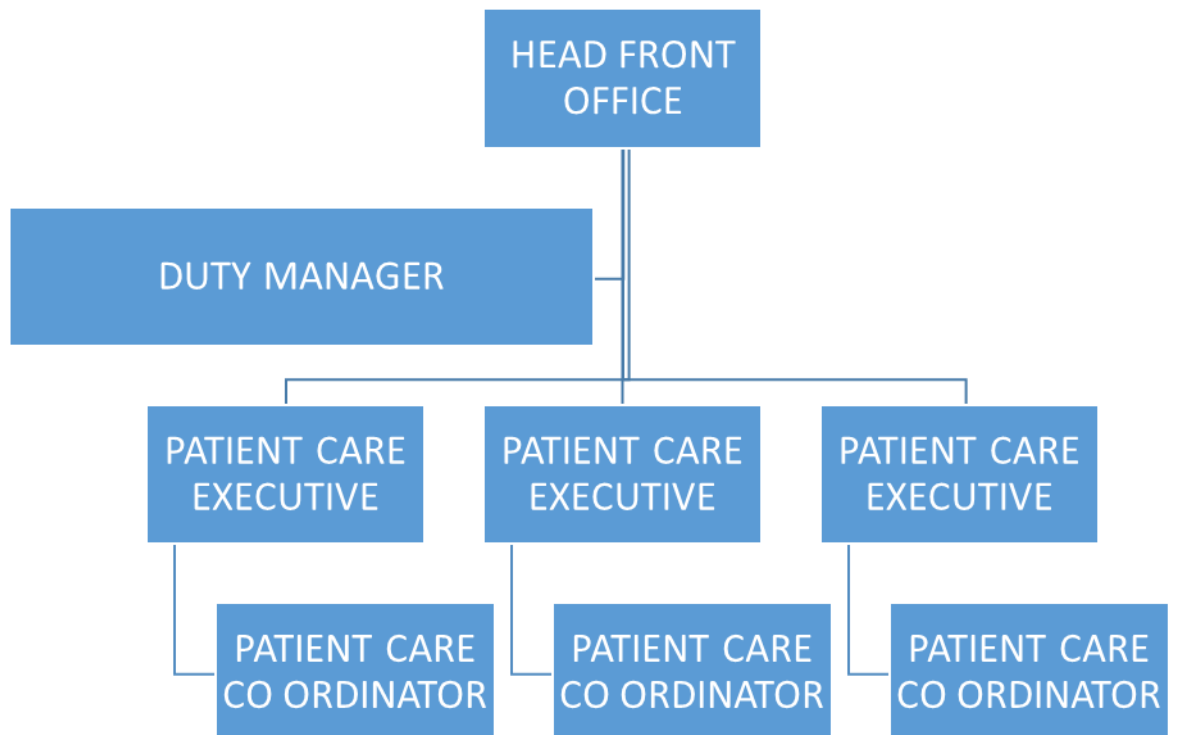
Surgical Specialities

› General
› ENT
› Neuro-Surgery
› Obstetrics & Gynaecology
› Surgical
› Ophthalmology
› Orthopaedics
› Paediatric
› Plastic Surgery
› Urology

Total number of beds	217
Number of General wards/classes	133
Number of Special wards/classes	Oncology Day-care Ortho ward Emergency ward Gynaecology wards Dialysis ward Multi-speciality-Single room, Twin sharing, Economy
Number of functional beds in Special wards	MSP Economy-82 Single-28 Twin sharing-30 Dialysis-10 ER-6 Oncology Day-care-15

Total number of Operation Theatres	8
Number of Emergency Wards	6
Number of functional beds in Emergency wards	6
Number of ICU	10
Total number of beds in ICUs	84
Number of Labor rooms(only for Gynecology& Obstetrics)	1
Number of NICUs	1
Number of Ambulances	3
Surgical Specialties	32
Number of minor OT's	0
Number of major OT's	8

Department Hierarchy chart



HANDLING VISITORS

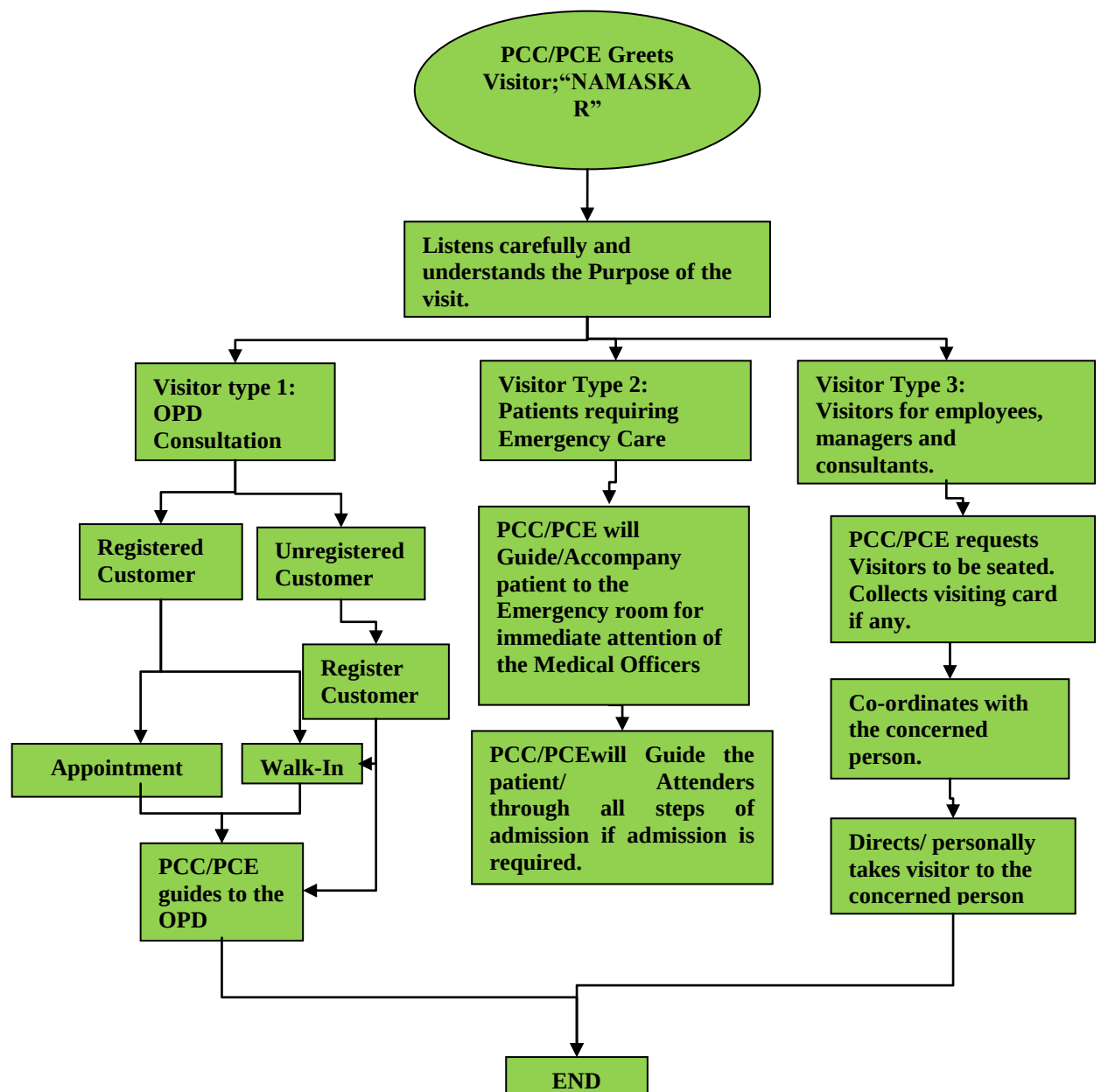


Figure 1 Handling visitors process flow

Out Patient Department

Outpatient department as defined in the UK, a hospital department where healthcare professionals see outpatients, which consists of consulting rooms and support areas—e.g. nurses station, treatment rooms, waiting rooms. Outpatient departments are often

physically located near support services (e.g. X-ray, ECG, surgical appliance department, pharmacy etc.).

HANDLING APPOINTMENTS

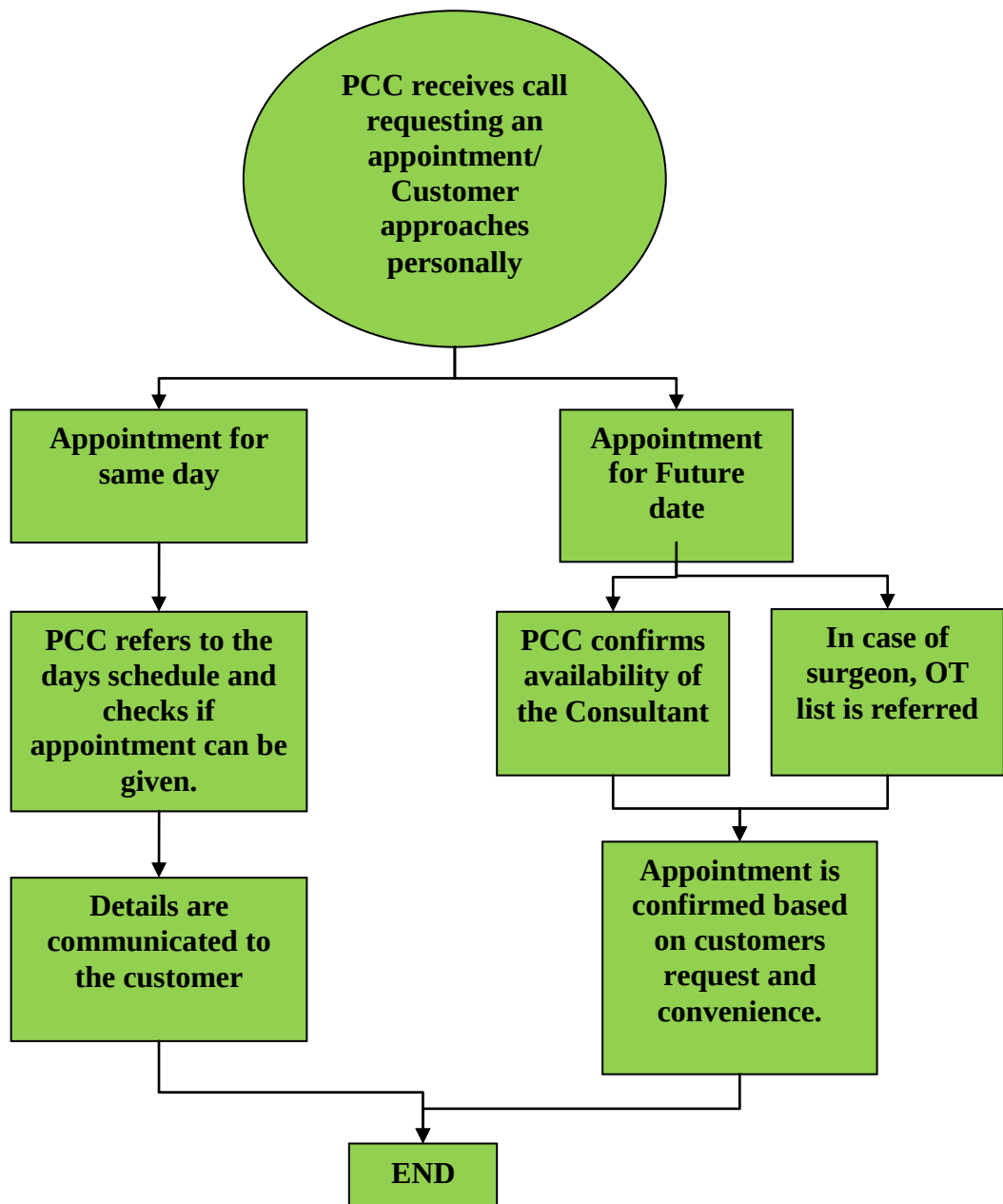


Figure 2 Handling appointments process flow

WALK IN APPOINTMENTS

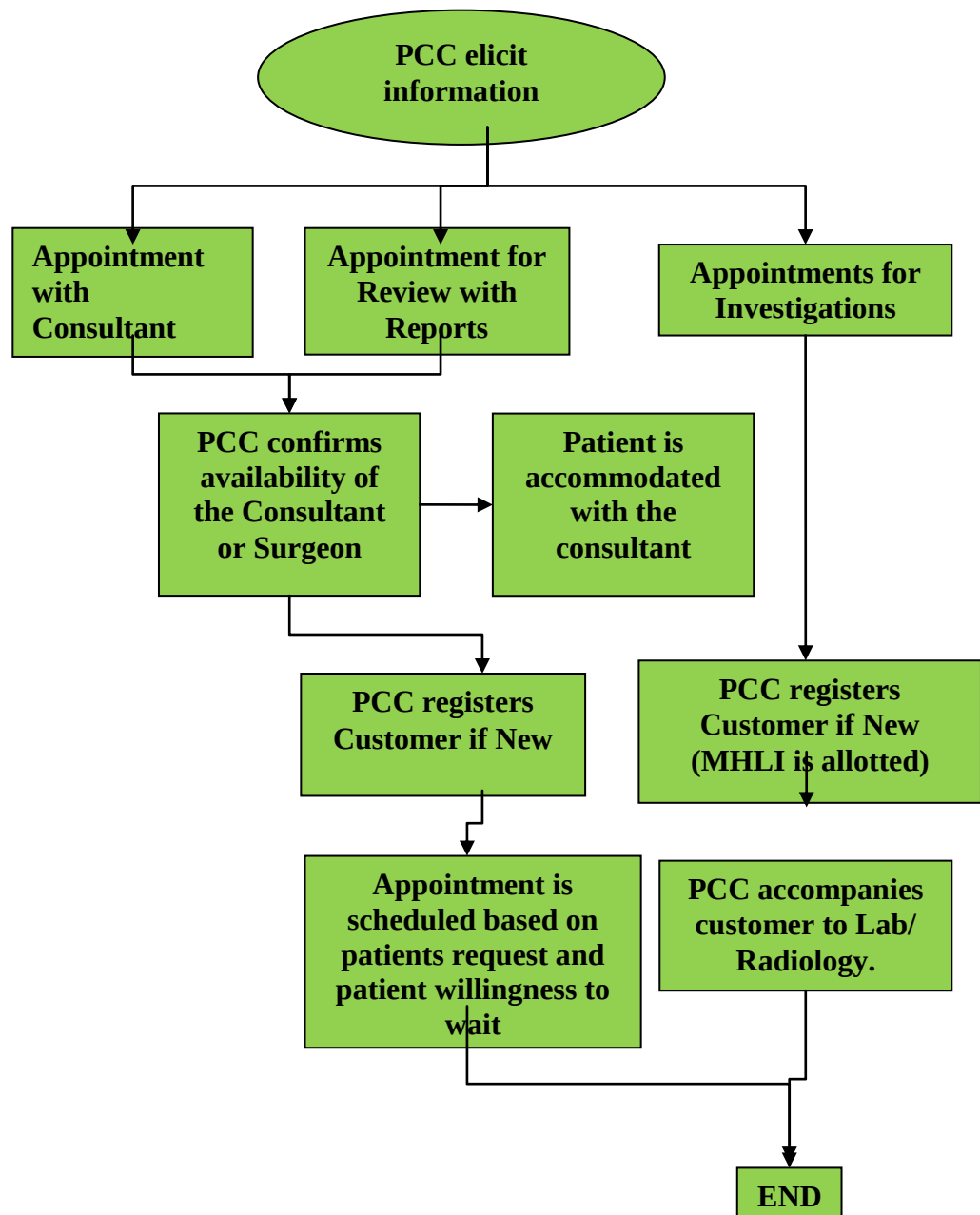


Figure 3 Walk in appointments process flow

Registration Form



Registration Form

Personal Details :

First Name _____ Last Name _____

Next of Kin _____ Relationship(Please specify) _____

Father's/Husband's Name (Please tick) _____

Nationality _____

Date of Birth ☐☐ DD ☐☐ MM ☐☐☐☐ YYYY Age ☐☐ Years

Gender ☐ M ☐ F Martial status ☐ Single ☐ Married

Contact Details

House / Flat No. _____

Locality / Colony _____

City _____ State _____ Country _____

Residence No. _____ Office No. _____

Mobile No. _____ Email _____

Other Details

Present Occupation

- | | |
|---|--|
| ☐ Corporate / Embassy Official | ☐ Govt / PSU Employee |
| ☐ Physician | ☐ Retired ☐ Bussinessman |
| ☐ Housewife | ☐ Others(Please specify) _____ |

How did you come to know of Max Healthcare?

- | | | |
|--|-----------------------------------|--|
| ☐ Referred by Doctor | ☐ Hospital | ☐ Friends/Relatives |
| ☐ Newspaper / Advertisement | ☐ Website | ☐ Other(Please specify) _____ |

Name of referring Doctor / Hospital _____

In case of emergency. contact Mr/ Ms _____

Phone No. _____ Local Address _____

Declaration

I here by declare that the facts stated above are true to the best of my knowledge and belief.

Signature of Patient / Relative _____ Relationship _____

For Office Use Only

Date & Time _____ Registration No. _____

PCC/ PCE Signature _____

All fields are mandartory, to be filled

Marketing / Registration Form / Rev. 1.0/ 1 April

OPD Patient Registration, Consultation, Diagnostic and Treatment Process

1. Setting up an appointment

- Patient Fixes OPD Consult or Diagnostics Appointment over phone / walk in.
- Appointment fixed in Appointment schedule / Equipment schedule
- Patient visits the facility and is guided to the OPD counter for Registration process by Helpdesk

2. Patient Registration & invoice generation

- Patient meets the PCE/PCC & fills the registration form or gives details if already registered.
- Patient Details entered in HIS
- Discount is given if patient is a senior citizen or from any corporate with which we have an arrangement
- Patient pays by Cash / Credit Card or Credit bill raised if corporate patient.
- Patient invoice generated (as per Standard Tariff list) with the Registration No. & service detail.
- If any wrong entry is made or test could not be conducted, refund voucher to be generated
- Manual invoice generated as per approved pricing policy incase HIS not working or if any new service or tariff introduced.
- The new service/ tariff is intimated to IT for incorporation into HIS
- Manual invoices are updated in HIS if incorporated in HIS same day.
- If tariff is not incorporated in HIS then approval from accounts taken to update the HIS whenever new service/ tariff incorporated in HIS and scrolls is signed by Duty Manager.
- At the End of shift, PCC/ PCE takes out cash scroll from HIS.

3. Patient Consult / Diagnosis & Treatment.

- Patient has been guided to the Nursing counter
Nurse records patients' vitals followed by consultation with Doctor.

4. Patient visits Labs/ Pharmacy

- Patient visits various Diagnostic dept. and tests are conducted in Labs and is informed about the date of collecting the Report
Patient visits pharmacy if Drugs prescribed by doctor.

5. Review Consultation appointment made

- Patient contacts PCC/PCE at OPD counter for fixing review appointment date.
Incase report not available, generate daily pending report list and follow up.

IPD Working

ADMISSION & DISCHARGE DESK			
GROUND FLOOR (2 DESKS)	ONCO DAY CARE	MAX ELITE	2ND FLOOR (2 DESKS)

Inpatient services are hospital services and items furnished to inpatients including beds, nursing, diagnostic, therapeutic, medical and surgical services.

Admission Procedure

Pre Admission Investigation Process

- Patient approaches IP desk with admission request form issued by the doctor
- Patient details entered in HIS, advance collected and Estimation is provided to the patient.
- Advance receipt & Pre admission no generated
- Patient is told about the reporting time and entry is made in Expected Admission register

Patient Admission Process

- Patient informed about the charges and other essential details like Estimated Expense, inpatient Information, etc. required during the stay.
- Availability of room is checked from the Bed manager.
- Patient details entered in HIS and face sheet generated
- Advance amount taken from the patient by cash / credit card / as per the estimated cost
- For TPA patient pre authorization form is given to be filled up by the patient and the doctor (see insurance process) and signature is taken on in patient Information Sheet for TPA Hospital Policy.
- Passes are issued to the patient as per visitor policy and entry made on Face Sheet (Office Copy).
- Patient folder is created & sent to the wards along with a Front Office Staff / GDA.
For any International patient International Patient Services are informed

Admission Process Map

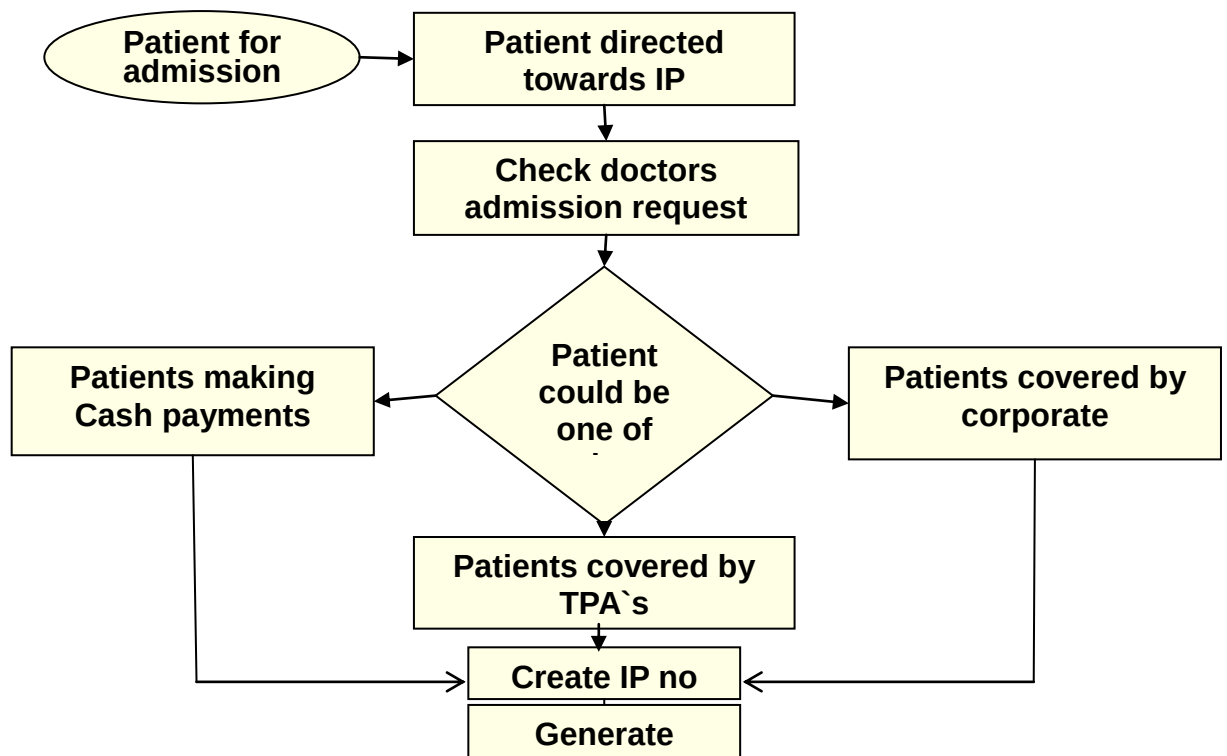


Figure 4 Admission process map

Admission Request Form



IN PATIENT ADMISSION REQUEST FORM

EMERGENCY ☐ ROUTINE ☐
EMERGENCY NO. _____

Name of the patient : _____

Age : _____ Sex Male ☐ Female ☐ Reg. No. _____

Admitting Doctor : _____

Provisional Diagnosis : _____

Proposed date & time of Admission : _____ Mode of settlement ☐ Cash ☐ Insurance ☐ Others ☐

(Please contact the Front Desk for details on approved "Bed category" & "Amount covered" for all other than CASH settlement mode)

MEDICAL		SURGICAL	
Estimated length of stay	_____	Estimated length of stay	_____
Ward/ Bed _____ ICU		Ward/ Bed _____ ICU	
Estimated Investigations	Routine _____ Medium _____ High _____	Procedure / Plan	_____
		Name of Surgery / Procedure/	_____
		Category	_____
		Type of anesthesia	_____
Estimated Pharmacy / Consumables	Routine _____ Medium _____ High _____	Estimated cost of implants	_____
		Estimated Investigations	Routine _____ Medium _____ High _____
		Estimated Pharmacy / Consumables	Routine _____ Medium _____ High _____
		Asst Surgeon (if any)	_____
		Special Equipment (if any)	_____
		Surgeon from any other speciality	_____

Other / Misc. Charges _____

Name of Doctor _____ Speciality _____

Signature _____ Date _____

Surgery patients to please note :

1. Please confirm the bed status for your admission before arrival to the hospital on the scheduled date (_____)
2. Please bring your OT booking slip on the day of admission.
3. Please bring all your reports/ Angio CD/ Cassette (if applicable) at the time of admission
4. Please refer to In Patients guide for further information.

Undertaking by Patient/ Attendant :

I _____ S/o, d/o, w/o _____ R/o _____ hereby undertake to pay all medical & services charges for treatment to be provided to _____ (name of Patient), by the Hospital. I have understood the above estimated amount may increase or decrease depending upon the actual treatment provided per the medical condition. _____ (Signature)

(For Office Use Only)

Emergency contact _____ Phone no. _____
Billing Contact _____ Phone no. _____
Informed Nursing station : _____ & time of info _____
Name of staff _____ Date & Time _____
PCC / PCE signature _____
Photo ID / Address proof collected _____

Disclaimer :

The estimate of _____ given for the proposed treatment of _____ [Name of Patient] has been calculated on the basis of preliminary assessment of the Doctor. This estimated amount may increase or decrease based on the actual treatment & services to be provided to the Patient during his/her stay in the Hospital. Hospital shall not be liable for any decrease/increase of the treatment expenses and Patient shall be responsible to clear all the dues as and when accruing against the services provided by the Hospital.

OBSERVATIONAL ANALYSIS

Positive Features

- All the signage is in local language and placed appropriately.
- Eleven steps of hand washing protocol, Mission-Vision and department specific charts are put up at every Nurses Station, desks and supervisor rooms.
- Security guards are assigned at the entrance of every ward/area and elevators to maintain decorum.
- In-house ATM facility available.
- Special play area for children

Limitations

- Number of washrooms in OPD area is less compared to patient load.
- According to NABH guidelines, there should be a prayer room in the hospital, which is not present in Max Super Speciality Hospital, Mohali.
- Radiation exposure is on three floors (Lower Basement- Radiation Therapy, Ground Floor- Radiology and Nuclear Medicine departments and First Floor- Endoscopy/Bronchoscopy, Cath Labs).
- IPDs and ICUs are supposed to be quiet, acknowledging the demand of the patients, but nursing staff creates lot of noise.
- There is no queue system in pharmacy.
- There is no waiting area for pharmacy. It's combined with the OPD waiting area.
- Space constraint in OPD and Cafeteria as well as less sitting arrangement.
- Delayed response of the staff to the bell alarm by patients in IPD.
- Despite of different coloured uniforms for clinical and non-clinical staff, there still is no distinction in the overalls of physicians and paramedical staff.
- Informed consent to be filled by patient or their family members before undergoing any procedure is not in local language and incompletely filled.
- Red and Yellow coloured bags are used in the OP-Pharmacy where only green coloured bags should be used. Red bags are used for high alert medication and the yellow bags are used for stat/now orders.

- Number of chairs at present is a big problem in IPDs.

Suggestions

1. Chairs in the waiting area can be better organized and more chairs can be added by utilizing space properly.
2. Only green coloured bags should be used in the pharmacy replenishing their stock well in time by setting an appropriate Re-Order Level.
3. Dress Code for all the staff should be properly worked out assigning different colours to different staff members to avoid confusion. Charts explaining the colour code can also be displayed at various places.
4. A floor monitor (Can be made someone from the supervisors' team) should be assigned specifically to maintain discipline among the staff members.
5. Proper queue system should be implemented in the OP-Pharmacy with a help of a security person or a token system.
6. Nurses should be briefed and strictly monitored to answer the in-patient's call.
7. More chairs and other furniture should be bought and adequately distributed.
8. Informed consent should be duly signed and completed there and then at the time of admission or procedure. Strict action should be taken against the assigned staff who fails to do so.
9. A pooja room/area should be accommodated near the front desk on ground floor.

Conclusion

Max Super Specialty Hospital, Mohali is one of the leading hospitals in Punjab providing healthcare services to patients from the whole of North India. Average OPD patients for a day sum up to 324 resulting a jam packed setting from morning to evening. The occupancy of IPD also reaches a 100 percent indicating heavy patient load. The three cafeterias present in the premises along with the Food and Beverage department fully cover the patients, their attendants and staff well. The staff is well mannered and courteous. But since nothing is perfect, the management of this hospital isn't free of errors either. However, the able and dedicated staff of the hospital leaves no stone unturned in minimizing those. Since we didn't get an opportunity to visit every department and observe their functioning in detail, we could only list down the more visible cases of mismanagement. But we can easily say that with a very skilled team of doctors and dedicated nursing, administration and non-administration staff, Max Super Specialty Hospital, Mohali can achieve greater heights.

PROJECT REPORT

A time motion study to explore the reason for delay in inpatient discharges

INTRODUCTION

Discharge process represents the final contact between patients and hospital health professionals and the outcome of all the procedures a patient has undergone are recorded at this stage.

Discharge process is defined as “Final step of treatment procedure during patient’s length of stay and ‘timely discharge as when patient is discharged home or transferred to an appropriate level of care as soon as they are clinically stable and fit for discharge”.

The process comprises of clinical, financial, legal and recordkeeping aspects which start right from writing of discharge orders to settlement of all kind of hospital bills, is a time consuming process but if executed in an organized way with assistance from trained medical, paramedical and administrative staff, can be completed as per the set standards of the hospital.

Discharge process is initiated when the patient’s consultant deems him/her fit for discharge. In case of planned discharges the entire process of documentation begins a day prior and are settled the next morning after visit by the consultant. However unplanned discharges occur the same day after consultant visit and discharge intimation. In unplanned discharges, no prior discharge planning is initiated. Ideally discharge time is before 12 AM. In case a patient does not wish to continue his/her stay at hospital, they can after consulting the doctor ask for LAMA (leave against medical advice).

The entire discharge process consists of intimation and approval by various departments before the patient finally exits the premises. Discharge planning is essential to the concurrent patient care review system as a part of the hospital’s utilization management effort. If discharge planning is delayed patient’s stay can be unnecessarily extended.

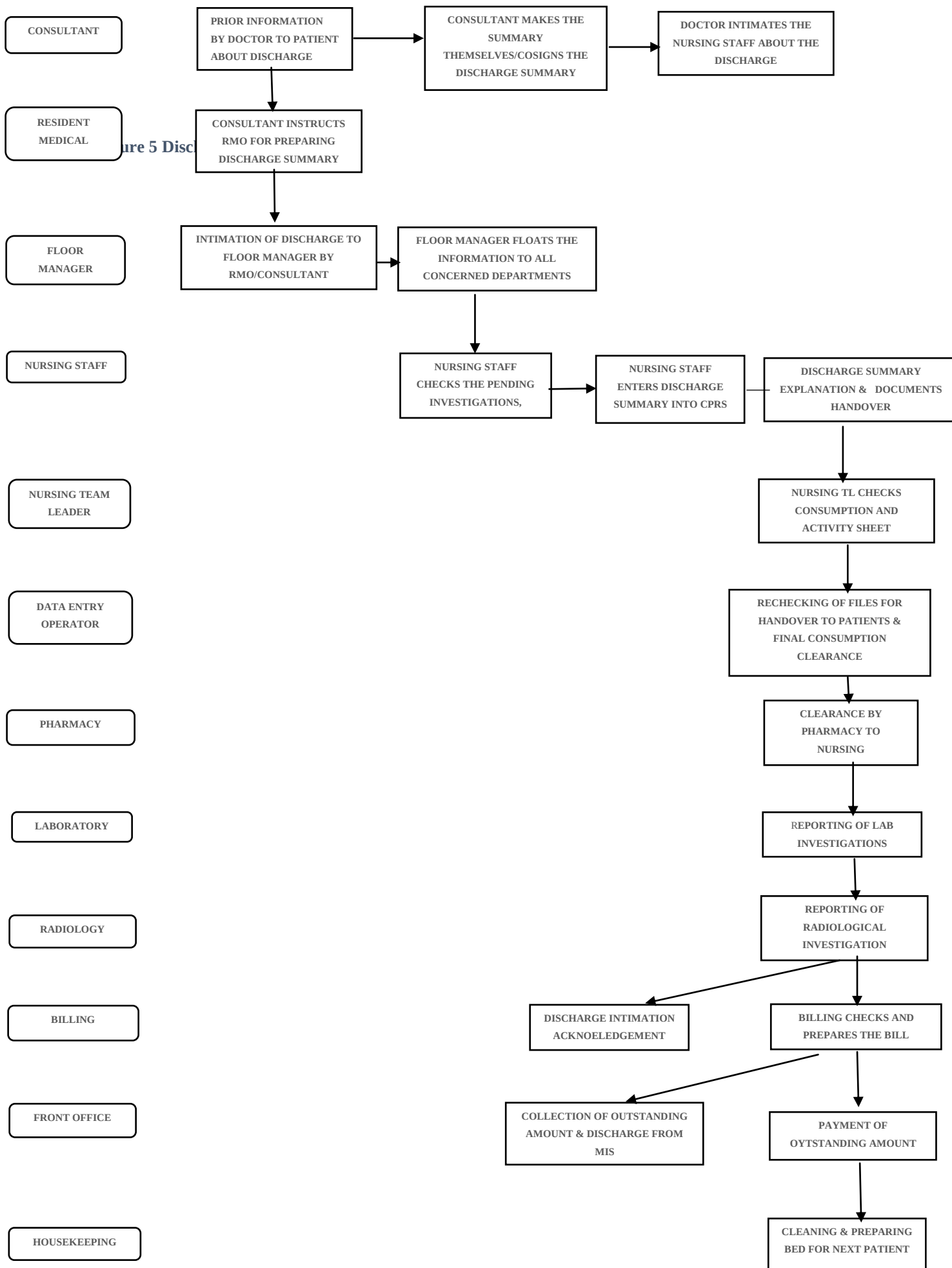
Discharge planning is centralized, coordinated effort, to ensure that each patient has a planned program for needed care and follow ups.

The time study measures the time required to perform a given task in accordance with a specified method and is valid only so long as the method is continued. If a new work method is adopted, the time study must be changed to agree with the new method.

It is a direct and continuous observation of a task. Time motion study is often used when:

- There are repetitive cycles of short to long duration.
- Wide variety of dissimilar work is performed.

The concept of motion studies is inherently tied to time studies. In any time study, the observer must have some basis for the categories in which they record time data. Traditionally, activities are broken down into categories. Motion studies are typically characterized by breakdown of motions into most basic movements..



REVIEW OF LITERATURE

Hospital is the most important service industry. Today, everybody is concerned about the quality of healthcare facilities and the term “Quality” becomes an essential element to combat competition in the healthcare sector.

In the process of attaining quality, each and every process in the hospital needs to be optimized to the fullest satisfaction of the patients. One such process that drives direct attention from the patients is the discharge process. By ensuring proper discharge process, we can assure patient satisfaction and proper utilization of resources for patient care. A lengthy inefficient discharge process is the common concern for hospitals in India.

A common tool by industrial engineers to gather detailed information on processes is time motion study. These studies, which typically entail a trained observer meticulously watching a process and recording data on their observations, were revolutionized in the early 20th century by Frederick W Taylor and team of Frank and Lillian Gilbreth.

Talking about the delivery of care in hospitals, one may in rough terms associate the act of discharging a patient to completion of final product in a manufacturing industry. For any in- patient their total hospital experience can be divided into three distinct phases: admission, intervention and discharge. With each phase come many administrative, medical, clinical and psychological aspects that have to be achieved to complete patient care. Focusing on the end of a patient’s episode, one recognizes that it finishes with the patient leaving the hospital.

In between the completion of intervention and discharge, several procedures have to take place by engaging various staff members. Linking it back to manufacturing industries, the inspection can be seen as the assessments carried out by a physician and other allied health professionals to clear the patient for discharge. Things like instruction manuals could be translated here as discharge summary. When properly and accurately defined processes in all industries can be studied and evaluated using familiar methods. This allows for the discovery of flaws, complexities and inefficiencies. It allows for

assessment and modification. The establishment of process standards also facilitates consistency, accuracy and efficiency. Therefore identifying patient discharge as a process and understanding how is it accomplished exposes all characteristics and improvement opportunities.

As a defect in the manufactured product will make it less durable, similarly any bottlenecks in the discharge process will not only cause mental agony to the patients but also may adversely affect the bed turnover rate. Also it might result in patient's readmission to the facility due to discrepancy in the discharge process, reflecting poorly on the hospitals standards and resource utilization.

Studies have shown that a streamlined discharge process will result in:

- The patients getting discharged much before the new set of admissions take place and the hospital is able to turn around more beds for new admissions.
- Increased operational efficiency. As a result the patient satisfaction index has also gone up as the hospital now rarely denies an admission due to non-availability of beds. Neither do the patients have to wait for allocation of a bed unless the hospital is completely full.

METHODOLOGY

This observational study was carried out in a tertiary care hospital in Mohali on 360 discharged patients comprising of Cash patients, TPA patients and Corporate patients(both planned and unplanned).

RATIONALE

Time studies have been used in healthcare for a while now. Throughout history, there has been a distinct interest in how to expedite the process flow while maintaining quality. Creating a culture of going and seeing processes in order to cite gaps/ delays and determine process improvement breeds the methodical elimination of waste based on facts about the present state. Such a culture is essential for managing more patients, indirectly increases bed turnover rate and enhancing patient satisfaction.

AIM

To analyze the reason for delay in in patient discharges and make recommendations for expediting the discharges before 2 PM.

OBJECTIVES

1. To identify the causes for delay in discharges.
2. To decrease length of stay and increase bed turnover rate.
3. To provide recommendations.

METHODOLOGY

STUDY AREA

Max Superspecialty Hospital Mohali

STUDY POPULATION

Patients discharges from MICU, CCU, MSP1, MSP2, NICU, HDU, ECOWARD, SICU, RICU, CTVS-ICU

SAMPLE SIZE

360 cases

STUDY METHOD

A prospective study was carried out in Max Superspecialty Hospital Mohali on patients of MICU, CCU, MSP1, MSP2, NICU, HDU, ECOWARD, SICU, RICU, and CTVS-ICU using both primary and secondary data to determine the reason for delay in discharges.

DATA COLLECTION TOOLS

Observation

SAMPLING METHOD

Simple Random Sampling

STUDY TYPE

Descriptive analysis of secondary data for the month of March and primary data for the month of April.

METHODS

The study was conducted at Max Superspecialty Hospital, Mohali to find out the underlying causes of delays in discharges before 2 PM. Both secondary and primary discharge data analysis was carried out for the months of March and April.

The mapping of discharge process was carried out using flowchart to analyse all the steps starting from discharge by consultants to final bed clearance. Patients were divided into 3 categories: Cash, Corporate and TPA. Time study was used to measure key process variable i.e. the time consumed at each step in the sequential discharge process. In Time motion study, the process was continuously observed using HIS and observing individually to record the time taken to accomplish each task. Then average was calculated for all the steps for 3 categories of patients: Cash, Corporate and TPA and compared with already set guidelines for the discharge process.

Data was collected for:

- Discharge Intimation time
- Pharmacy clearance
- Nursing clearance
- Bill preparation
- Bill settlement
- Bed release updation
- Housekeeping clearance

ROOT CAUSE ANALYSIS (FISH BONE DIAGRAM)

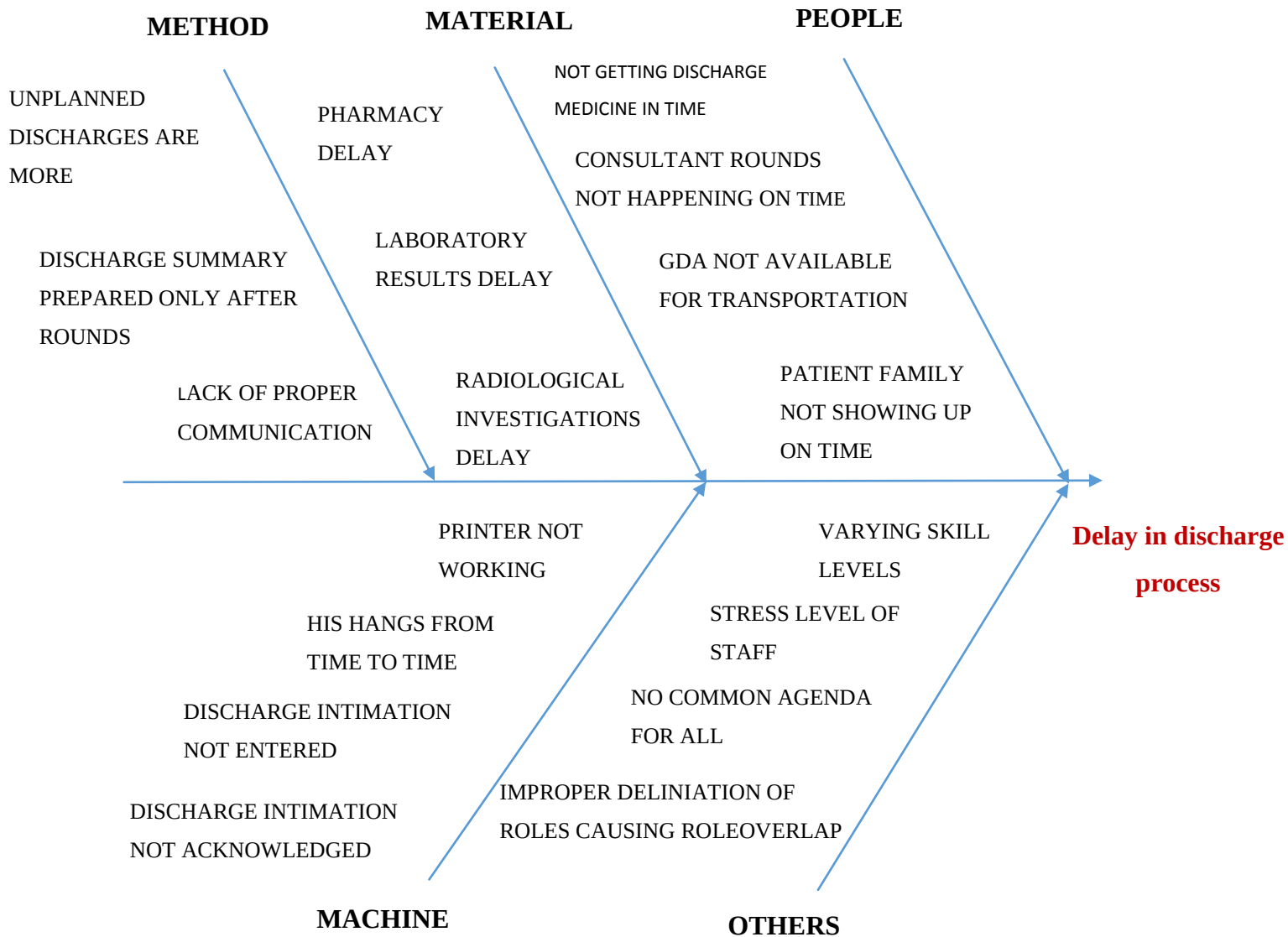


Figure 6Fishbone diagram

SUPPLIER		INPUT	
1	PHYSICIANS	1 2 3 4	ADMISSION ORDERS INTERVENTION DISCHARGE
2	NURSES	1 2 3	PATIENT CARE MEDICATION MONITOR STATUS
3	LABORATORY	1	LAB RESULTS
6	RADIOLOGY	1 2 3	X RAY CT SCAN MRI, OTHERS
7	EDUCATION	1	PATIENT EDUCATION
8	PHARMACY	1	PROVIDE MEDICATIONS
9	HOUSEKEEPING	1	CLEAN ROOMS AND UNITS
10	CENTRAL TRANSPORTATION	1 2	TRANSPORT FOR TESTS TRANSPORT FOR DISCHARGE
11	BILLING/FRONT OFFICE	1	BILLING AND DOCUMENTATION

Figure 7 SIPOC ANALYSIS

PROCESS	
START POINT	
PATIENT ADMITTED	
OPERATION/ACTIVITY	
1	INITIAL ASSESSMENT
2	TESTS/LAB PERFORMED
3	CARE DELIVERED
4	STATUS MONITORED
5	DISCHARGE ANTICIPATED
6	DISCHARGE SCHEDULED
7	DISCHARGE CONFIRMED
8	DISCHARGED SUMMARY WRITTEN
9	PATIENT EDUCATION
10	PATIENT INSTRUCTIONS PROVIDED
11	NURSING CLEARANCE
12	PHARMACY CLEARANCE
13	LAB/RADIOLOGY CLEARANCE
14	BILLING
15	PAYMENT AT FRONT OFFICE
16	TRANSPORTATION
17	HOUSEKEEPING CLEARANCE
END POINT	

OUTPUT	
1	PATIENT CARE DELIVERED
2	PATIENT DEPARTS ON TIME

CUSTOMERS	
1	PATIENT
2	PATIENTS FAMILY
1	PATIENT
2	PATIENT FAMILY
3	HOSPITAL

KANO MODEL

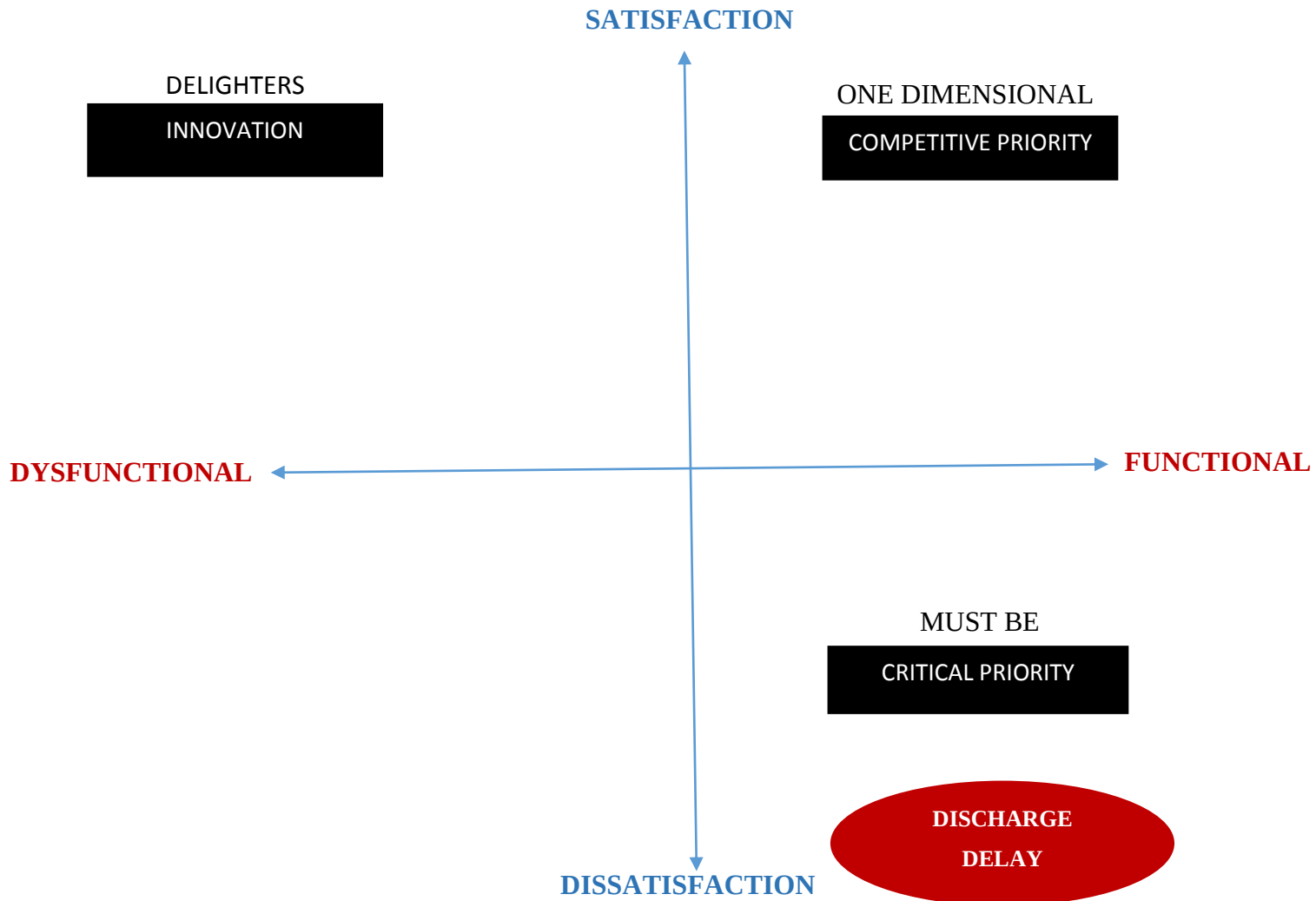


Figure 8 Kano model

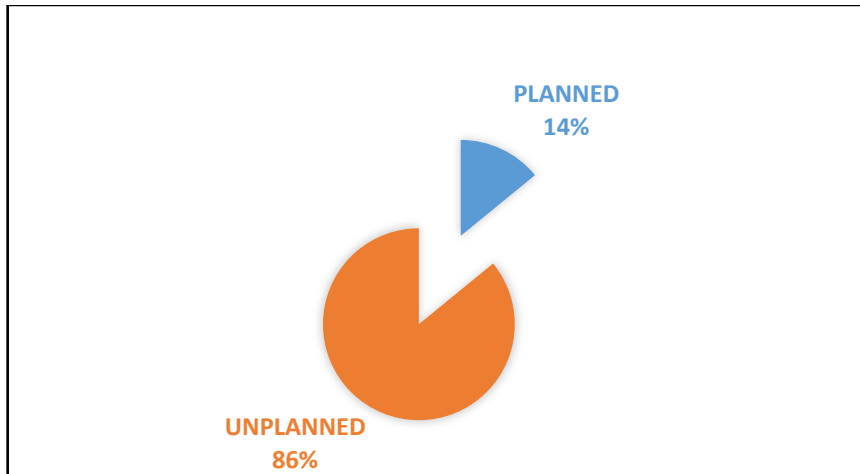
RESULT AND DISCUSSION

- After statistically observing, recording and analysing various steps in the discharge process of the sampled out patients belonging to Cash, Corporate and TPA categories, discharge delay has been observed in all the three categories of discharges that are occurring.
- For further analysis of the sub steps in the discharge process leading to delay, various graphs have been plotted showing the lag and duration.
- Following are the problem areas in the discharge process:
 - ✓ Smaller number of planned discharges.
 - ✓ Delay in discharge summary updation.
 - ✓ Delay in nursing clearance.
 - ✓ Consultant rounds are happening later in the mornings.
 - ✓ Cumbersome discharge process with multiple isolated players.
 - ✓ To get in control of the discharge situation, if more of attention is paid to TPA patients(as the process is lengthy) to minimize the discharge time, Corporate and Cash discharges are left out resulting in increased discharge duration.

STATISTICS

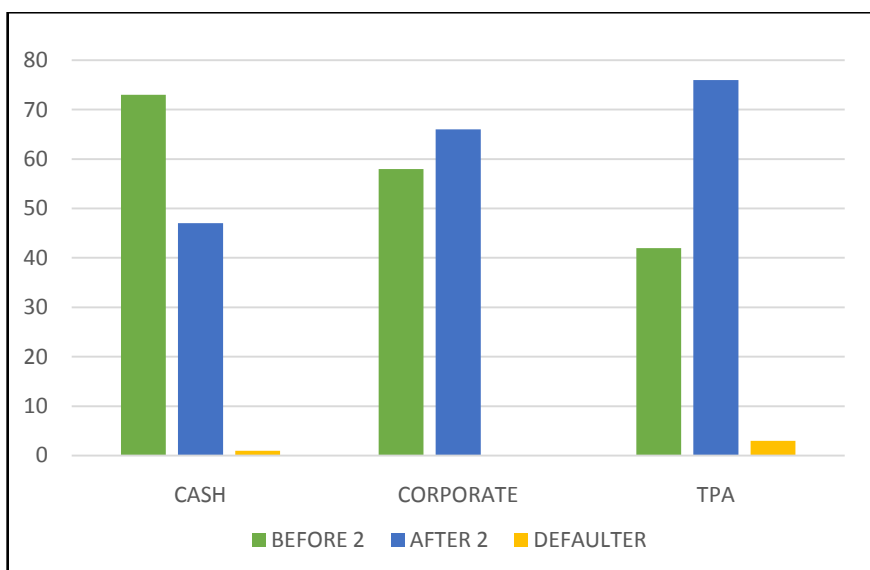
MONTH OF MARCH

GRAPH 1



- Graph represents the percentage distribution of patient discharges as planned and unplanned.
- The number of unplanned discharges occupy a higher share of discharge percentage.

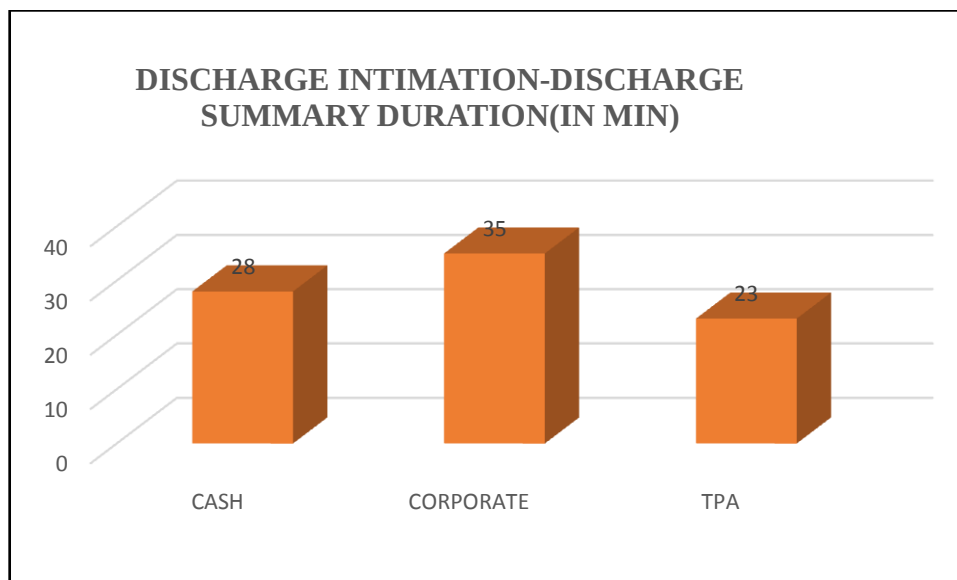
GRAPH 2



- Number of discharges happening before 2 PM are maximum for Cash patients and minimum for TPA patients.
- TPA patients account for maximum share of after 2 PM discharges indicating their long and lengthy discharge process.

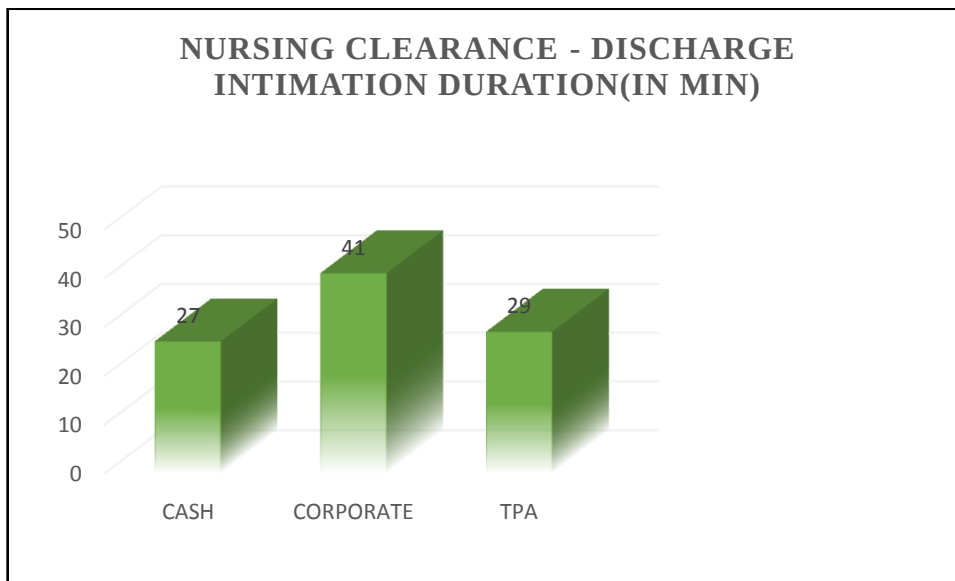
- Defaulters are the ones who had bill settled before 2 PM but the bed clearance came after 2PM. TPA discharges comprise of higher number of defaulters followed by Cash patients.

GRAPH 3



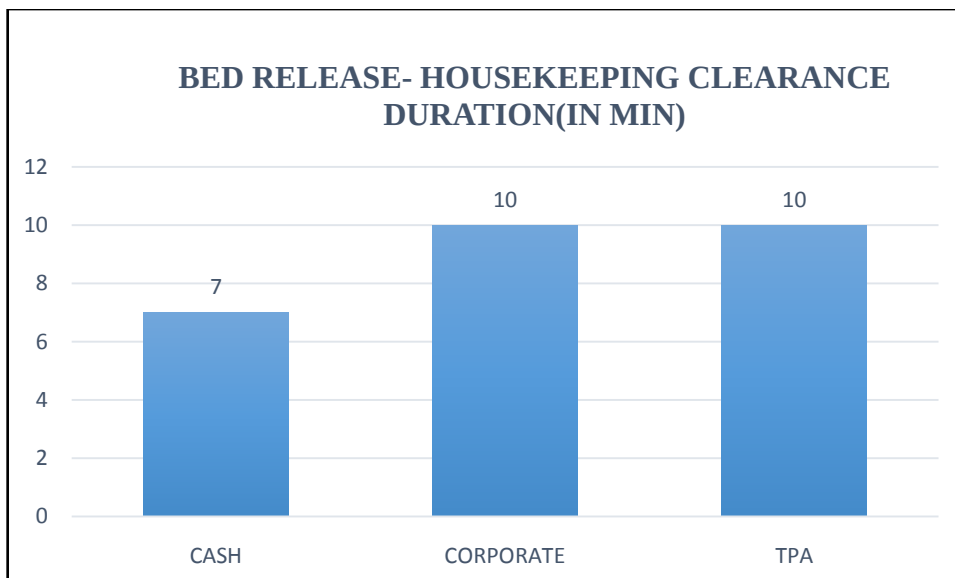
- Graph represents the average time taken for Cash, Corporate and TPA patients from the instance of discharge intimation till the time discharge summary is completed.
- The discharge intimation-discharge summary duration is maximum in case of corporate patients followed by cash and TPA respectively.
- Substantial time consumed at this phase is because of long procedure of writing, rechecking, getting final signatures of consultants and printing.

GRAPH 4



- Clearance from nursing comes only after all the unused medicines have been returned to pharmacy and all the pending radiological investigations are done.
- Substantial time for nursing clearance is due to pending pharmacy and radiology, lab investigations which begin only after discharge intimation.

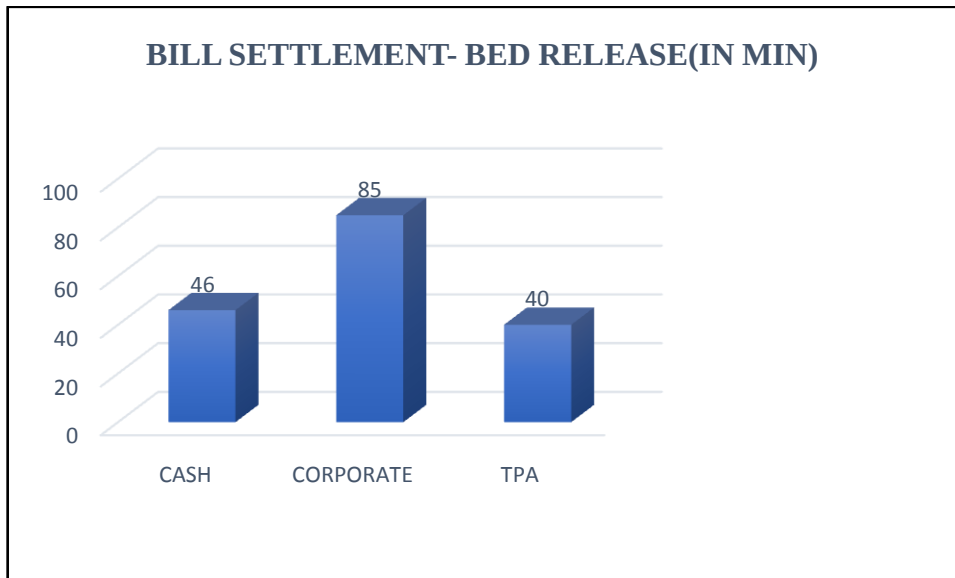
GRAPH 5



- Bed release – housekeeping clearance is the time taken by the housekeeping staff to prepare the room for the next patient.

- Bed release-housekeeping clearance time is comparable for Corporate and TPA patients and is lower for Cash patients.

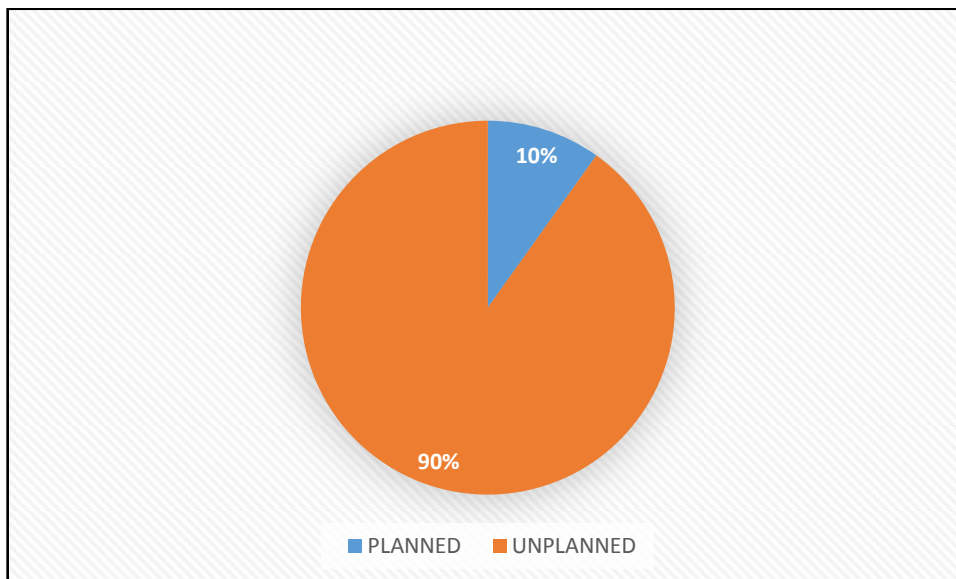
GRAPH 6



- Graph represents the total time taken from time bill is settled, discharge slip handover till bed is vacated by the patient.
- Large amount of time is spent in bill settlement in case of corporate patients followed by Cash and TPA.

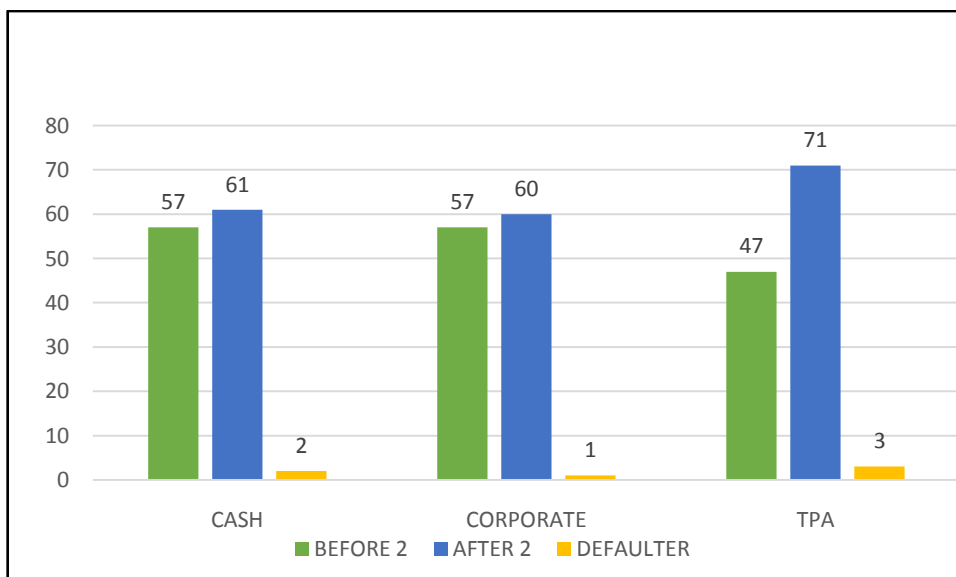
MONTH OF APRIL

GRAPH 7



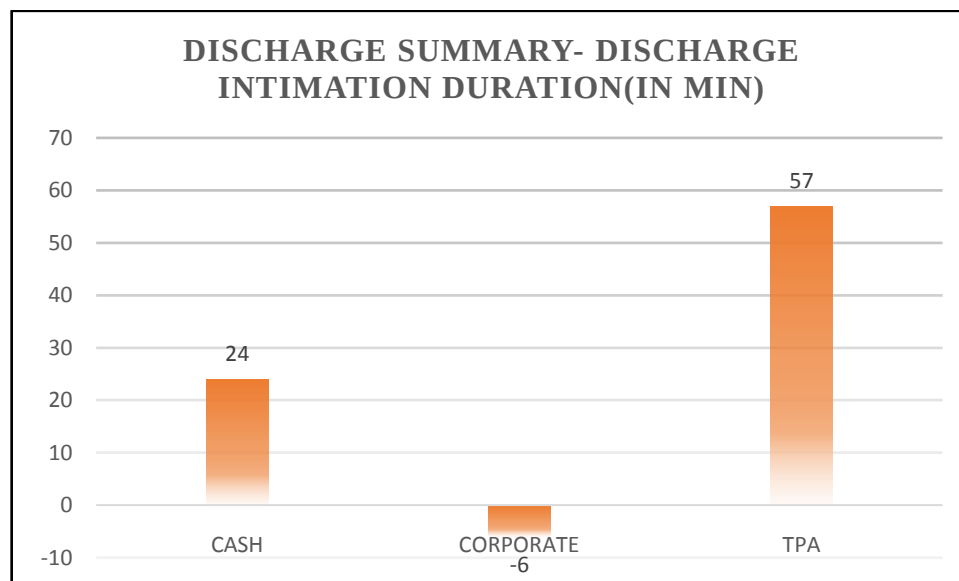
- Graph represents the percentage distribution of patient discharges as planned and unplanned.
- The number of unplanned discharges occupy a higher share of discharge percentage.

GRAPH 8



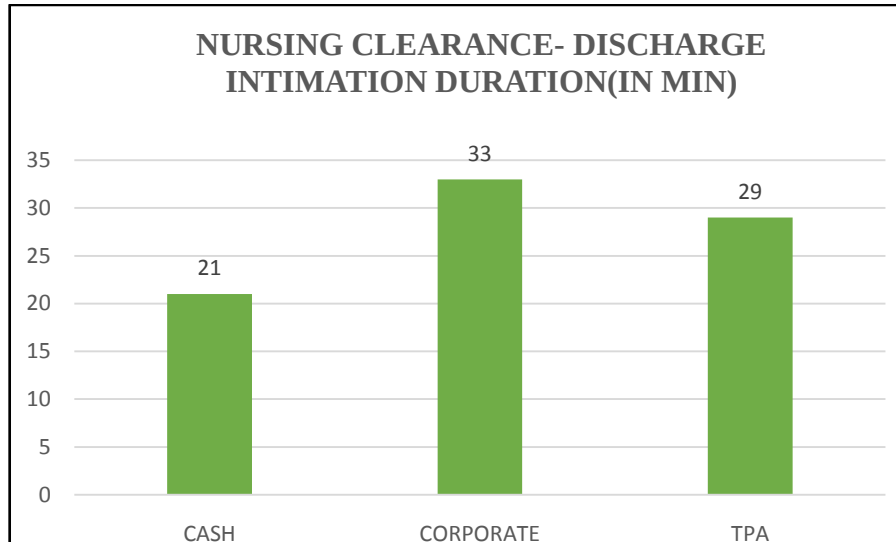
- Number of discharges happening before 2PM are almost same for Cash and Corporate patients whereas for TPA patients they are comparatively lesser in percentage.
- Defaulters are the ones who had bill settled before 2 PM but the bed clearance came after 2PM. TPA discharges comprise of higher number of defaulters followed by Cash patients.
- TPA patients account for the largest percentage of after 2PM discharges due to lengthy payment process.

GRAPH 9



- Graph represents the average time taken for Cash, Corporate and TPA patients from the instance of discharge intimation till the time discharge summary is completed.
- The discharge intimation-discharge summary duration is maximum in case of TPA patients followed by Cash.
- Time consumed by Corporate is negative indicating an improvement over the month of March showing it was completed way before the scheduled time.
- Substantial time consumed at this phase is because of long procedure of writing, rechecking, getting final signatures of consultants and printing.

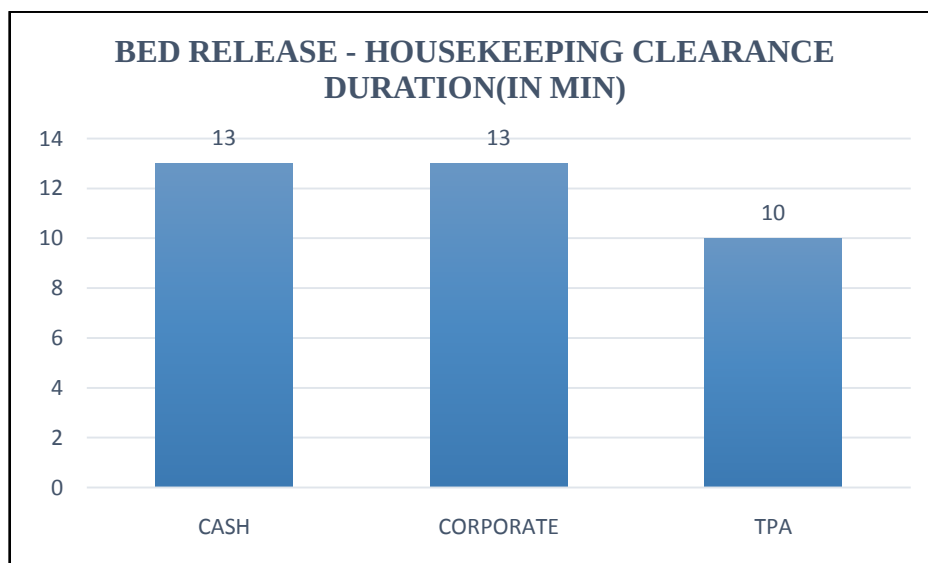
GRAPH 10



Clearance from nursing comes only after all the unused medicines have been returned to pharmacy and all the pending radiological investigations are done.

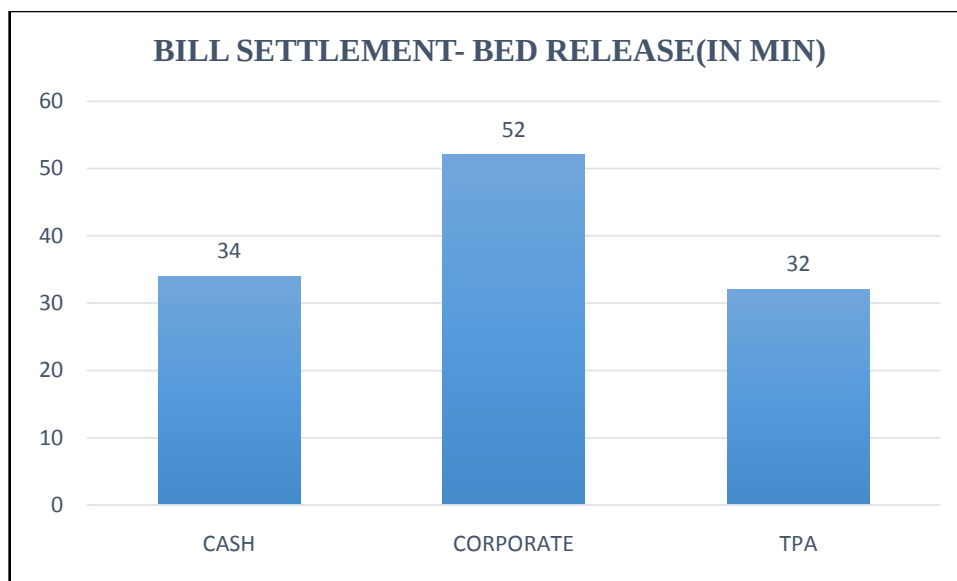
- Substantial time for nursing clearance is due to pending pharmacy and radiology, lab investigations which begin only after discharge intimation.
- Both Cash and Corporate have shown slight reduction in nursing clearance duration over the previous month.

GRAPH 11



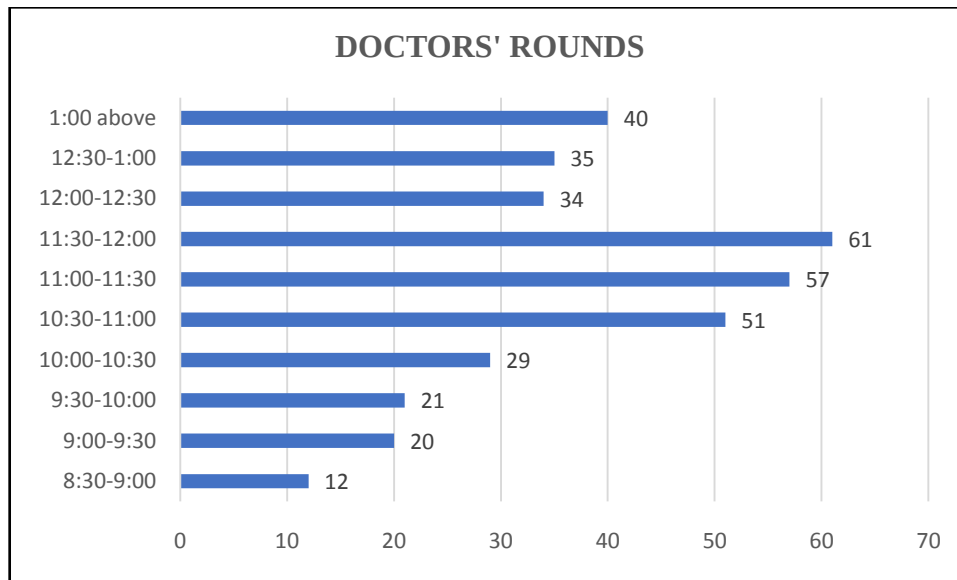
- Bed release – housekeeping clearance is the time taken by the housekeeping staff to prepare the room for the next patient.
- Bed release-housekeeping clearance time is comparable for Corporate and Cash patients and is lower for TPA patients.

GRAPH 12



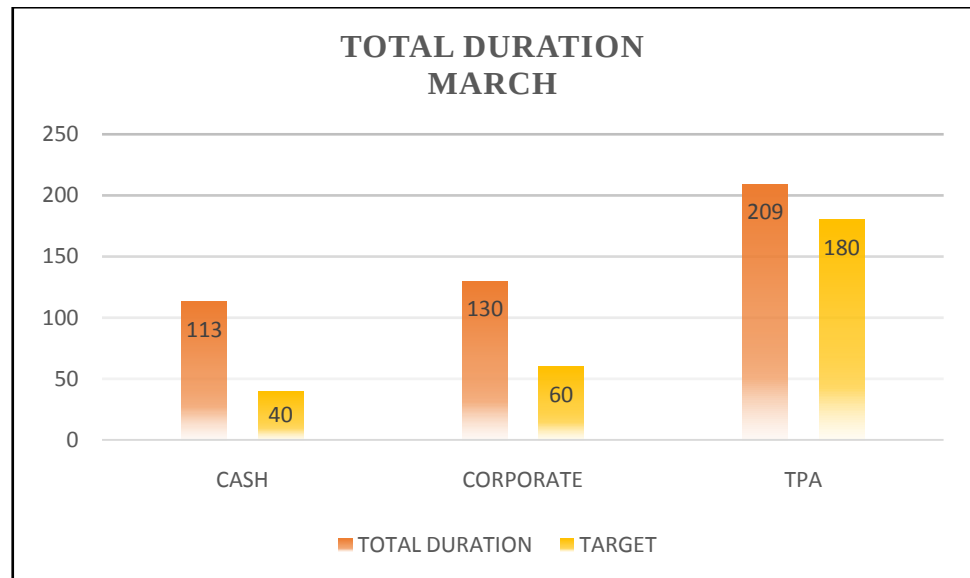
- Graph represents the total time taken from time bill is settled, discharge slip handover till bed is vacated by the patient.
- Large amount of time is spent in bill settlement in case of Corporate patients followed by Cash and TPA.
- Data shows reduction in time as compared to the month of March.

GRAPH 13

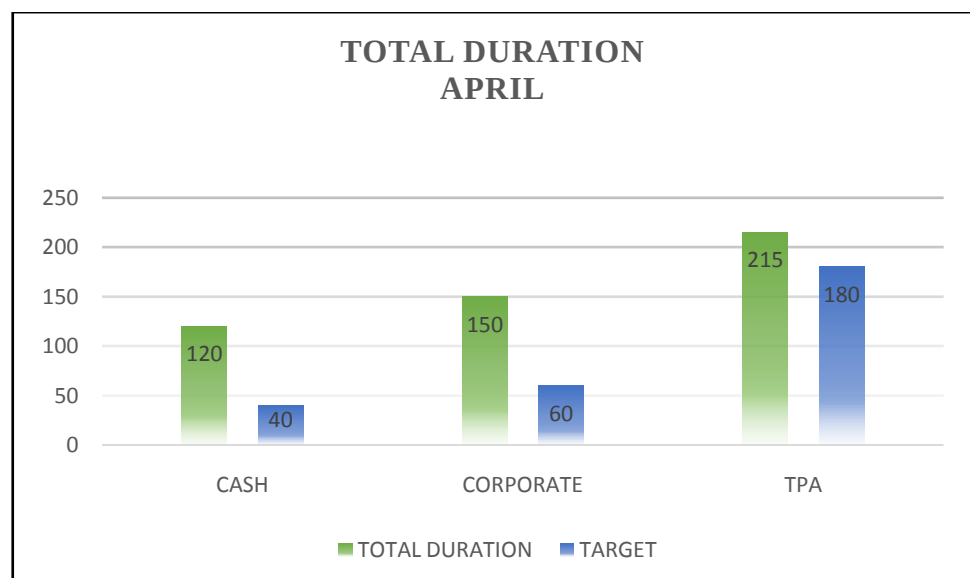


- Graph shows the timings of the doctors' rounds.
- Maximum number of doctors' rounds are happening between 11:30-12:00.

GRAPH 14



GRAPH 15



- Total Discharge duration for the month of April has increased further as compared to March.

RECOMMENDATIONS

- **Number of planned discharges should be increased.** Once the date of discharge is confirmed by the doctor (to be the next day), all the steps should take place 12 hours before the discharge. All stakeholders involved should be informed of the planned discharges. Unused medication should be returned the previous night and pending investigations should be completed. Patients attendants should be informed so that they can make the necessary financial and logistics arrangements.
- **Discharge summary should be typed from the day the patient is admitted and updated on daily basis.** On the day of the discharge, since most of the part is already completed in advance only the consultant final approval would be required minimizing any last minute chaos.
- Carrying out the above mentioned would certainly cut down the **nursing clearance duration.**
- **Medical transcriptionists** should be hired as it will ease the load of doctors and nursing staff, who can thereby concentrate on patient care.
- **Consultant rounds should take place on time,** as their final nod is the main driver of the discharge process. Proper time should be delimited for the visits to happen and records of the visits to be kept.
- Every nursing station should have a housekeeping staff and GDA positioned at them throughout the day, which will cut down the time to summon them for multitude of tasks.
- Equal attention should be paid to documentation and billing of all the three categories of discharges as concentrating more on one can cause discharge duration of other two to go haywire.
- **Synchronizing total run time (value added time)** of the discharge process w.r.t time, cost and effort, **optimizing wait and move time** and eliminating queue time for its non-value added nature.

REFERENCES

- Khurma, Nancy, “Analysis, Modeling and Improvement of Patient Discharge Process in a Regional Hospital” (2009)
- Rathlev, N. K., Obendorfer, D., White, L. F., Rebholz, C., Magauran, B., Baker, W. ... & Olshaker, J. (2012). Time series analysis of emergency department length of stay per 8-hour shift. *Western Journal of Emergency Medicine*, 13(2), 163.
- Wertheimer, B., Jacobs, R. E., Bailey, M., Holstein, S., Chatfield, S., Ohta, B. ... & Hochman, K. (2014). Discharge before noon: an achievable hospital goal. *Journal of hospital medicine*, 9(4), 210-214.
- Udayai, K., & Kumar, P. (2012). Implementing Six Sigma to improve hospital discharge process. *International Journal of Pharmaceutical Sciences and Research*, 3(11), 4528.
- Allen, T. T., Tseng, S. H., Swanson, K., & McClay, M. A. (2009). Improving the hospital discharge process with Six Sigma methods. *Quality Engineering*, 22(1), 13-20.
- Vijay, S. A. (2014). Reducing and optimizing the cycle time of patients discharge process in a hospital using six sigma DMAIC approach. *International Journal for Quality Research*, 8(2), 169-182.
- Patton Jr, M. W. (2011). Developing a Time and Motion Study for a Lean Healthcare Environment.

ANNEXURE I

S.NO	IPID	Company	Estimated Discharge

Discharge Intimation	Discharge Intimation Ack.	Nursing clearance	Pharmacy Clearance	Discharge Summary	Bill Preparation	Bill Settlement & Discharge Slip Handover	Bed Release Updation	Housekeeping Clearance

ANNEXURE II

S.NO	MONTH	PLANNED DISCHARGES	UNPLANNED DISCHARGES