Study on Discharge Process Turnaround Time in IPD Patients

By

Laxmi Koranga

Dissertation submitted in partial fulfillment of the requirements of the degree

MBA Hospital and Health Management

Academic year, 2017-2019

The IIHMR University, Jaipur

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IIHMR UNIVERSITY

TO WHOMSOEVER MAY CONCERN

This is to certify that Dr.Laxmi Koranga, student of MBA Hospital and Health Management from The IIHMR University, Jaipur has undergone internship training at Apollomedics Superspeciality Hospitals, Lucknow from 4th February2019 to 4th May 2019.

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

I wish her all success in all her future endeavors.

Dean, Academics and Student Affairs
The IIHMR University, Jaipur

Piyushi 14/5/19

Professor
The IIHMR University, Jaipur

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Apollomedics
SUPER SPECIALITY HOSPITALS

The certificate is awarded to

Dr. Laxmi Koranga

In recognition of having successfully completed her

internship in the department of Operations

and has successfully completed her project on

A Study on discharge process turnaround time in IPD patients

From February 04, 2019 to May 04, 2019 at Apollomedics Hospital, Lucknow.

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

We wish her all the best for future endeavors

Head- Human Resources

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Apollomedics
SUPER SPECIALITY HOSPITALS

4th May 2019

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Dr. Laxmi Koranga has done dissertation project in the Department of Operations from 4th February,2019 to 4th May,2019 at Apollomedics Super Speciality Hospitals, Lucknow and has successfully completed her project on "A Study on Discharge Process Turnaround Time in IPD Patients".

During this period, she exhibited a high level of professionalism and a tremendous zest for learning.

We wish her all the best in her future endeavours.

With Best Wishes,

Mr. Pramit Mishra

AGM – Operations

MEDICS INTERNATIONAL LIFESCIENCES LTD. LUCKNOW 226012

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **A study on Discharge Process Turnaround Time in IPD Patients** at Apollomedics Super Specialty Hospitals, Luknow and submitted by **Laxmi Koranga Enrollment No IIHMR-U/01/2017/-19/591** under the supervision of **Veena Nair Sarkar** for award of MBA in Hospital and Health of the University carried out during the period from 2nd February to 4th May 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

ACKNOWLEGMENTS

I convey my heartfelt gratitude to Dr. Mayank Somani, CEO and Managing Director for giving me the opportunity to do dissertation with Apollomedics Superspeciality Hospitals, Lucknow.

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Last but not the least, I would like to express my gratitude for my parents and for their constant encouragement and faith in me during my dissertation.

Above all, I would like to thank God for giving me the strength to manage the difficulties which I faced during this period.

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List of Abbreviations

TAT- Turnaround Time

GDA- General Duty Assistant

FOA- Front Office Assistant

DAMA- Discharge Against Medical Advice

NABH- National Accredited Board of Hospitals

HIS- Hospital Information System

IT- Information Technology

USG- Ultrasonography

IPD- Inpatient Department

OPD- Outpatient Department

ICU- Intensive care unit

MCH- Mother and Child healthcare ward

OT-Operation Theatre

ENT- Ear Nose Throat

About the Hospital,

Apollomedics Super Specialty Hospitals, Lucknow

Apollomedics Super Speciality Hospitals is located in the heart of Uttar Pradesh, in the city of Lucknow. Apollomedics Super Speciality Hospitals is a 330-bedded quaternary care hospital with state-of-the-art modern healthcare facilities. The hospital aims to provide comprehensive, seamless & integrated excellent healthcare services. Apollo Hospitals in collaboration with Medics Super Speciality Hospitals formed Apollomedics, which is a major boost to healthcare infrastructure in the State of Uttar Pradesh.

Apollomedics Super Speciality Hospitals is built over a sprawling 3,50,000 square feet area with the aim to provide specialised medical care across 10 Centres of Excellence & more than 30 specialties spearheaded by internationally trained doctors. The hospital features excellent infrastructure & the best in class equipment coupled with ethical practices to deliver holistic patient care to the people of Uttar Pradesh. In terms of hospital infrastructure, Apollomedics Super Speciality Hospital is a 330-bedded facility with 110 beds exclusively dedicated for critical care.

Facilities:

- 330 beds
- 110 beds exclusively for Critical Care
- Modular Operation Theatres including dedicated transplant OTs
- Biplane Cath Labs for complex cardiac & neuro cases
- Tru-Beam LINAC for advanced cancer treatment
- 24*7 - Dialysis, Blood Bank, Pharmacy & Trauma Unit
- Preventive Health Checks

Centres of Excellence

- 24*7 Emergency & Trauma
- Institute of Cardiac Sciences
- Institute of Critical Care Sciences

- Institute of Gastroenterology- Medical & Surgical
- Institute of Neuro Sciences
- Institute of Obstetrics & Gynecology
- Institute of Oncology
- Institute of Orthopedics & Joint Replacements
- Institute of Renal Sciences

Other Key Specialities

- Aesthetic & Reconstructive Surgery
- Anesthesiology
- Dental Care & Maxillofacial Surgery
- Dermatology
- Diabetes & Endocrinology
- ENT
- General Surgery
- Internal Medicine
- Minimal Access / Laparoscopy
- Ophthalmology
- Pediatrics & Neonatology
- Preventive Medicine & Rehabilitation
- Pulmonology
- Urology

Situational analysis of organization according to the report published by India InfoLine[10]

SWOT Analysis

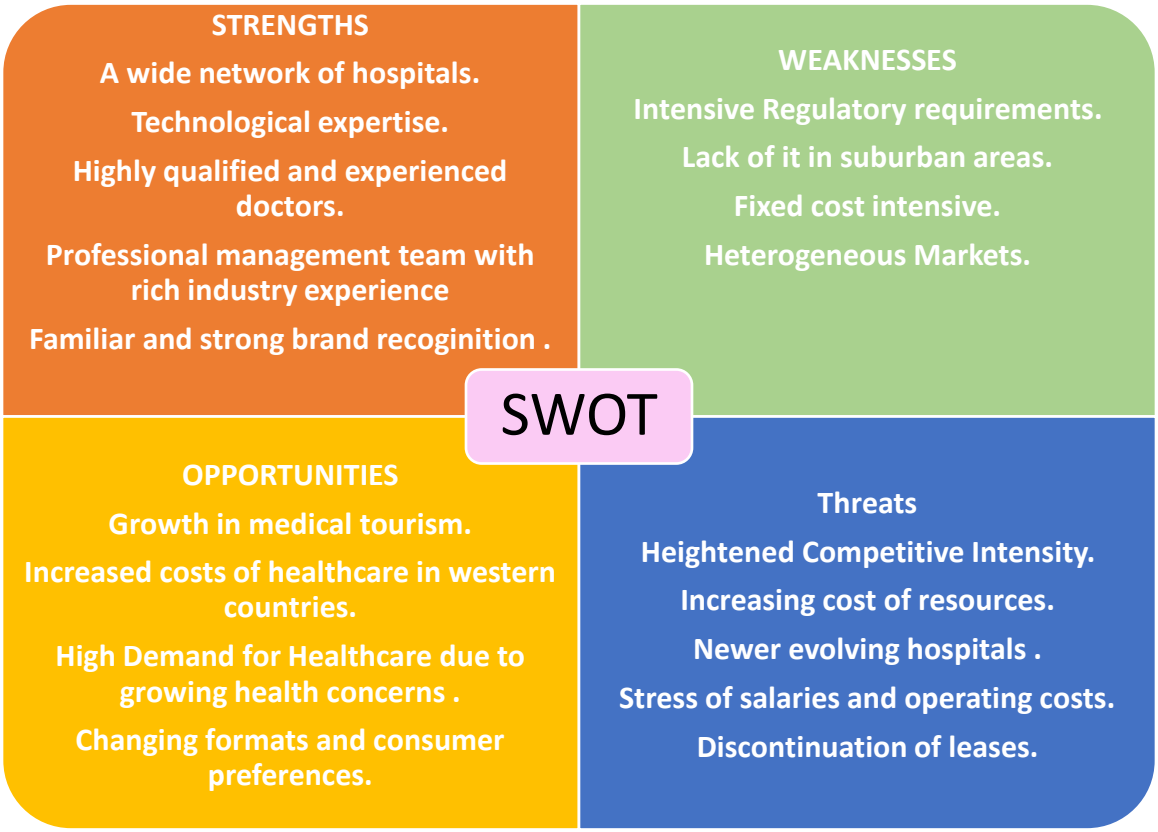


Figure 1: SWOT Analysis

ORGANISATION ORGANOGRAM

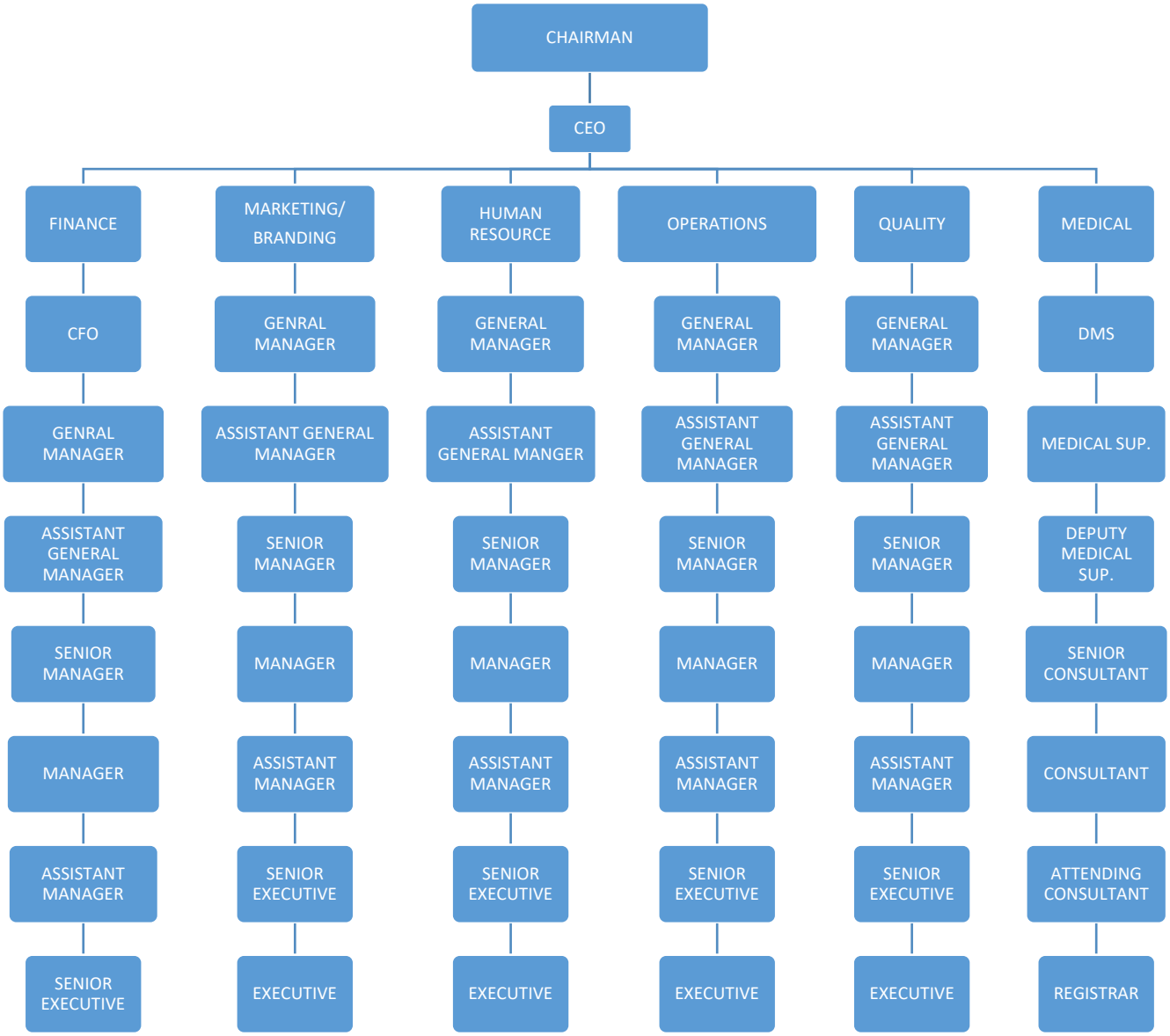


Figure 2: ORGANOGRAM OF APOLLOMEDICS SUPERSPECIALITY HOSPITALS

A STUDY ON DISCHARGE PROCESS TURNAROUND TIME IN IPD PATIENTS

ABSTRACT

The discharge process is complex and involves setting specific challenges that limit generalizability of solutions. Discharge planning is the development of an individualized discharge plan for the patient prior to leaving the hospital, to ensure that patients are being discharged at an appropriate time and with provision of adequate post discharge services.

The present study has been conducted on 226 patients admitted at Apollomedics Superspeciality Hospitals, Lucknow to understand the flow of discharge process.

Keywords-- Discharge planning, discharge process, discharge order, discharge intimation, turnaround time

INTRODUCTION

A hospital provides outpatient, inpatient services, day care service and emergency services. Out of which the outpatient is a person who receives ambulatory care in the hospital, which do not require an overnight hospital stay. An "inpatient" is a person who has been admitted to a hospital for purposes of receiving inpatient hospital services Health Law Professional Series (2004).

The inpatient in a hospital has to go through and experience three different stages. First, is admission next is intervention and the final stage is discharge. During the discharge of the patient, after the necessary interventions, a number of procedures have to take place by engaging various staff members and departments making the process complex.

As per Mogli, "Discharge is the release of a hospitalized patient from the hospital by the admitting physician after providing necessary medical care for a period deemed necessary"

As per Sakharkar, "Discharge is the release of an admitted patient from the hospital".

As per NABH, "Discharge is a process by which a patient is shifted out from the hospital with all concerned medical summaries ensuring stability. The discharge process is deemed to have

started when the consultant formally approves discharge and ends with the patient leaving the clinical unit.

The admission and discharge processes can act as bottlenecks in many of the hospitals and thus adversely affect the efficiency of the hospital (Davies & Macaulay). It is a very important indicator of quality of care and patient satisfaction.

Delay in Discharge of the patient also increases the pressure on beds of the hospital delay in discharge is bad for both hospitals and the patients. It increases cost to the hospitals and is depressing to the patients. Delayed discharge also increases the patient's exposure to hospital-acquired infections (P Hendy et.al, 2012). So, effective strategies must be in place to solve this issue. National Accreditation Board for Hospitals and Health Care Organizations has set a standard of 180 minutes for the completion of the discharge process.

A delayed discharge has an adverse impact on the physical, mental, emotional and psychological stems of the patient and has negative financial implication on the hospital. A patient staying longer than the stipulated time is responsible for unnecessary utilization of the hospital resource and is sheer waste. Delayed Discharge (sometimes referred to as delayed transfer or Bed Locking), refer to the situation where a patient is deemed to be medically well enough for discharge, but, where the patient is unable to leave the hospital due to slowing down of the entire process.

Various studies have been done earlier on discharge process, discharge process TAT, root causes of delayed discharges etc.

Review of Literature:

- Brele et al, 2011; in their study ―Mapping turnaround time to a generic timeline: A systematic review of TAT definitions in clinical domains, concluded that the following 15 terms are the factors contributing to turnaround time: admission, order, biopsy/examination, receipt of specimen, procedure completion, interpretation, dictation, transcription, verification, report available, delivery, physician views report, treatment, discharge and discharge letter sent.

- A study was done in Iran to analyze the waiting time for the discharge. The author SimaAjami, (2007) collected the data using questionnaires, observation and checklist. The collected data was analyzed using SPSS and OR methods. Queuing model was used to study the reasons for delay in the discharges. Average waiting time for all the wards was found to be 4.93 hours. As per hospital personnel opinion the main reasons identified for the delay were delay for the discharge summary completion, lack of proper guidelines for the staff involved in the discharge process and absence of Hospital Information networking systems. (Ajami and Ketabi (Feb 2007). [3]
- According to JanitaVinayaKumari, (2012), the final stages of hospitalization i.e. the discharge and the billing process is more likely to be remembered by the patient. A study was conducted in a tertiary care teaching hospital to calculate the average time taken for the discharge of the patient. For the purpose of collection of data for the study registers were designed and kept in wards and the billing office. 2205 patient records were analyzed. The average time taken for the discharge of the patient was 2 hours and 22 minutes. (Kumari J.V (2012). [4]
- A time motion study conducted in a hospital by SwapnilTak et al., (2013), observed that there is a delay for all the types of discharges i.e. insurance patients, cash patients, DAMA etc. in the hospital. The total time taken for the discharge was compared against the NABH standards. The total time taken for insurance, self- payment and DAMA patients was 278, 337 and 302 minutes respectively. As per the satisfaction survey conducted by the author, 69.80% of the patients felt that the discharge process was lengthy and 61.53% of the patients believed that process can be speeded up. (Tak.S et.al. (2013). [5]
- According to Silva et.al (2014), the main reasons for discharge delays are the processes and can be improved by appropriate interventions. The study was conducted in two Teaching hospitals by reviewing the medical records of the patient admitted to internal medicine ward. A pilot study was conducted to determine the sample size. The delays in discharges that occurred in two hospitals were 60% and 50.7% respectively. The main reasons identified for the delay were waiting for the test reports, delays in making clinical decisions and in providing specialized consultation. (Silva et.al (2014). [6]

- *Another study was done in a different private hospital to find out causes of increased turnaround time: "*Reductionofturnaroundtimeofin-patientsinaprivatehospital, Chennai a six sigmaapproach"[2]

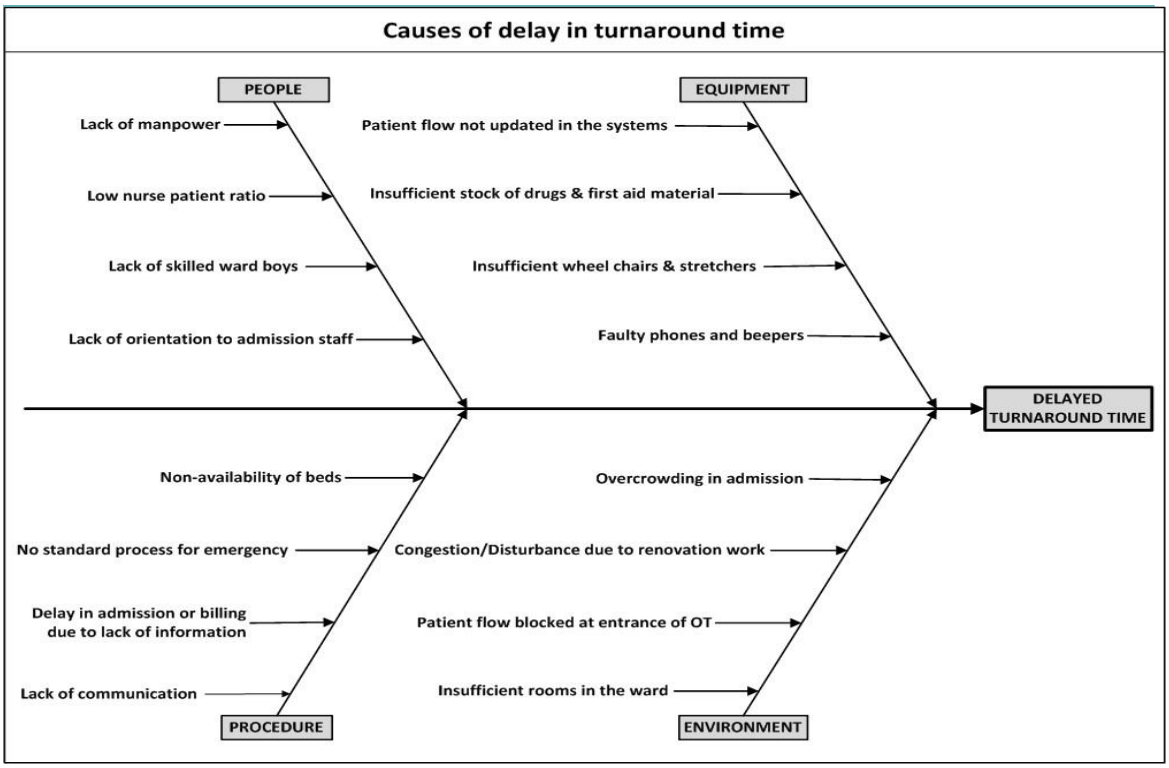


Figure 3: Fish Bone Analysis of delayed discharges in a private hospital in Chennai

- [9] Other study was a survey type research, carried out on randomly selected 200 patients who visited Fortis Escorts Hospital, Amritsar for their treatment.Out of total 38.5% patients said that they don't know why procedure was delayed followed by 24.5% who said other reasons were there, 19% said due to nursing staff and other 18% said due to delayed in billing.39.5% patients said the main reason due to which delay in discharge was that they had to wait for medicines, followed by 31.5% who said something else, 28% said they had to wait to see doctor and only 1% said they had to wait for an ambulance.

- [8] In a similar study "Improving Hospital Discharge Time: A successful Implementation of Six Sigma Methodology" through extensive discussions and root cause analysis for delayed discharge outlined barriers, waste, and proposed changes from the perspective of each stakeholder.

Barrier, Waste, and Change from the Perspective of Different Stakeholders

Obstacles, Wastes, and Changes	Patient	Billing Officer	Patient Access Staff	Floor Clerk	RN	Attending Physician
Obstacles	Care providers unavailable; inconsistent communications from care providers; patient-driven discharge planning	Billing staff unavailable; unclear about the discharge load for the day; multiple calls to service staff to post charges; multiple calls to admission staffs to obtain financial coverage	No advance communication on planned discharges; no ability to determine need for additional financial clearance in advance	No clear defined role of the unit floor clerk. Unable to follow-up on requests from all stakeholders because s/he is unavailable most of the time hand delivering urgent requests	No defined care pathway, No discharge plan, discharge order written pending attending physician approval	Lab results not available, RN not available, discharge pending diagnostics services
Waste (misuse and overuse)	Waiting for care providers, waiting for services to post charges, waiting for discharge order to be written, waiting for the physician to sign the medical report for billing, waiting for the cashier to call for bill settlement	Waiting for physicians and service staff to post charges; waiting for insurance carriers to financially clear patient	Delay in communication between the patient and the insurance carriers; delay in communication between the admitting officer and patients related to transfers	Waiting for RN to give instructions to discharge patients; waiting for service request orders to post patient charges; waiting for billing to generate bills; waiting for cashier to call patients; waiting for patient to leave to log the discharge	Process variation results in fragmented care; waiting for medical staffs to write patients requests, waiting for floor clerk to deliver medication requests, waiting for pharmacy to bring medications before patient discharge	Waiting for Diagnostic Services (Lab and Radiology); rework in documentation to collect charges, rounding on patients before the medical results available leading to fragmented care and rework
Modifications and interventions	E-form request created to manage timely needed medical report for financial clearance. Created electronic pending charges report to facilitate charging. Increase transport team rounds to attend to patients needs timely	Created electronic pending charges report to facilitate updating charging; introduced ''Possible Discharge'' flag to prioritize needed documents for discharge	Introduced E-form to manage timely needed financial clearance between the insurance carriers and the admitting staffs; introduce E-form to manage all transfers	Enhanced the billing system to streamline and facilitate the clerk duty; revised clerk job description; introduced alerts at each phase of the discharge process and established 30-minute thresholds for each step. Added email alerts at each 30-minute delay addressed to the corresponding managers	Introduce the scanning of medication requests to reduce hand delivery by clerk and improve availability at nursing station. Increase transport round to every hour until 20:00 for medication transport	Added an additional phlebotomy round at 9:00 am

Figure 4: Barrier, Waste, and Change from the Perspective of Different Stakeholders

As per the study done in a Multispecialty Hospital, Ludhiana ,the key principles for effective discharge[7] and transfer of care are:

1. The engagement and active participation of individuals and their caregivers as equal partners is central to the delivery of care and in the planning of a successful discharge.
2. Discharge is a process and not an isolated event. It has to be planned for at the earliest opportunity across the primary, hospital and social care services, ensuring that individuals and their care understand and are able to contribute to care planning decisions as appropriate.
3. The process of discharge planning should be coordinated by a named person who has responsibility for coordinating all stages of the 'patient journey'. This involves liaison with the pre-admission case coordinator in the community at the earliest opportunity and the transfer of those responsibilities on discharge.
4. Staff should work within a framework of integrated multidisciplinary and multi-agency team working to manage all aspects of the discharge process.

The benefits of effective discharge planning are for the patient

- Needs are met.
- Do not experience unnecessary gaps or duplication of effort.
- Experience care as a coherent pathway, not a series of unrelated activities.

For the caregivers

- Feel valued as partners in the discharge process.
- Consider their knowledge been used appropriately.

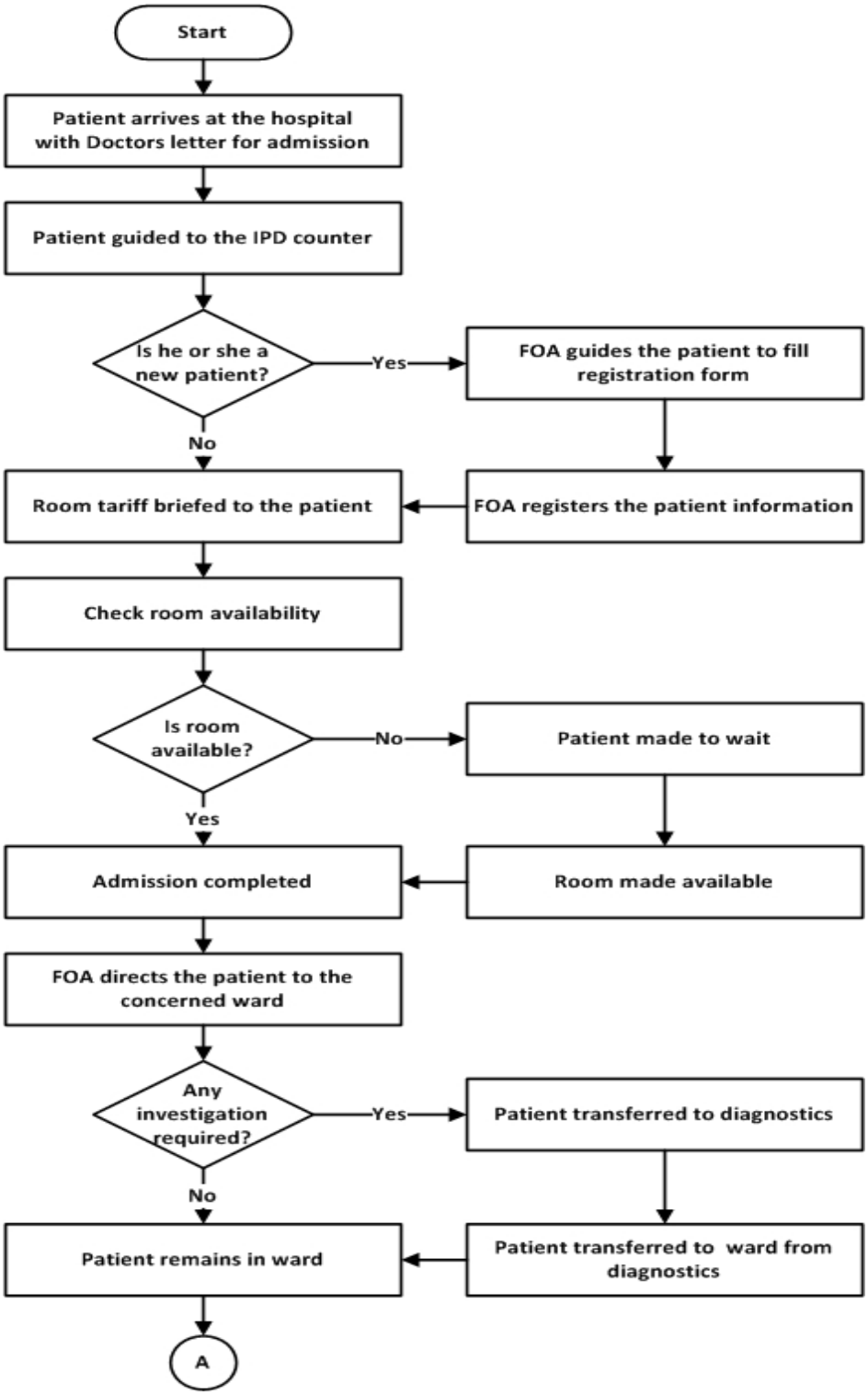
For the staff

- Feel their expertise is recognized and used appropriately.
- Understand their part in the system.
- Can develop new skills and roles.

For organizations.

- Resources used to best effect.
- Services valued by the local community.
- Staff feel valued which, in turn, leads to improved recruitment and retention.

A patient **In-patient journey** is explained below, from point of patient arrival at hospital till final discharge. The following flow chart describes the in-patient process flow in hospital:



**FOA- Front office assistant *IPD- Inpatient department*

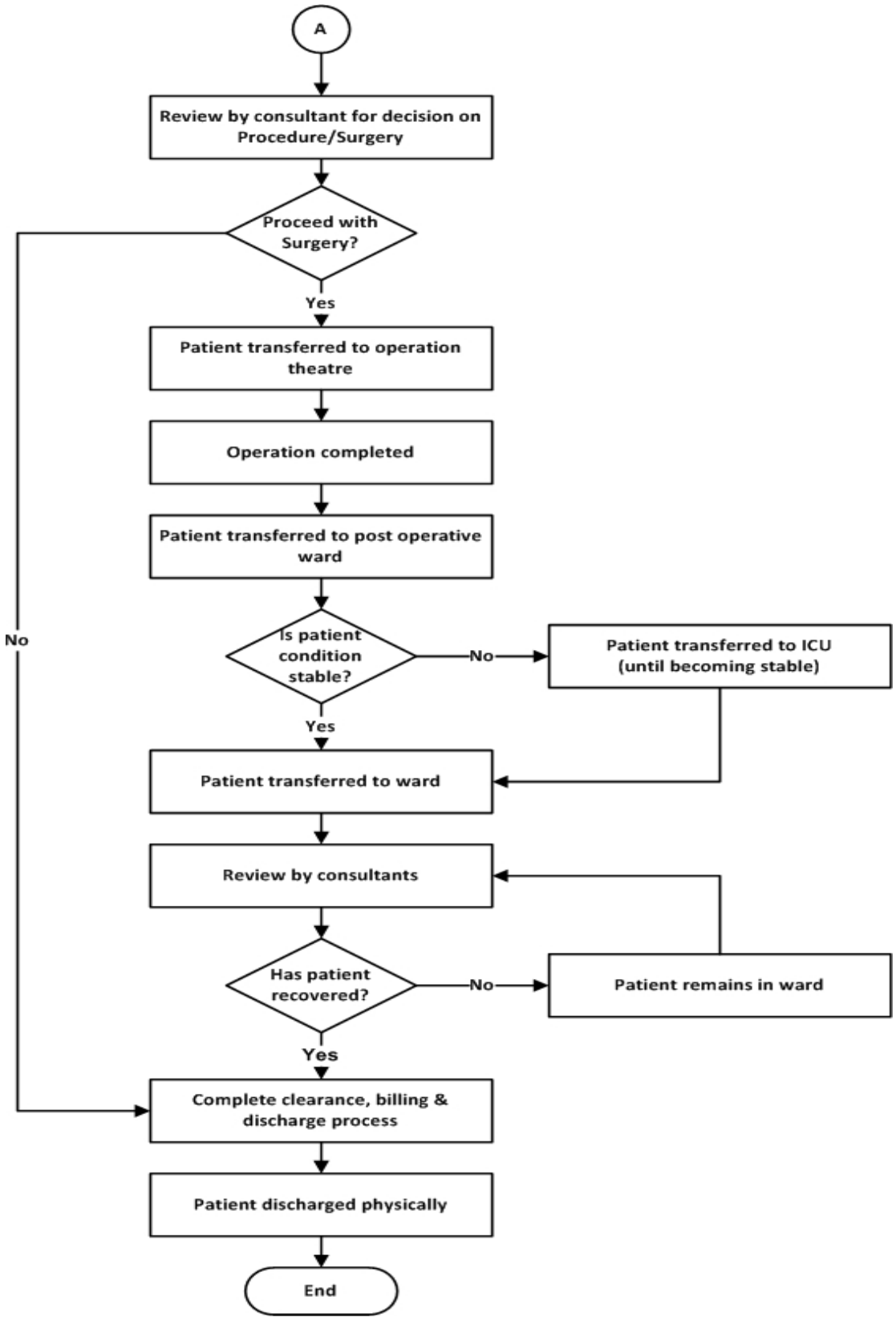


Figure 5: In Patient process flow in hospital

At beginning of study at Apollomedics Super Specialty Hospitals, Lucknow, the discharge process that was followed in hospital was mapped.

Doctor intimate about discharge to patient, attendant and nursing staff when deemed fit for discharge. Nurse will then assist patient in the discharge process which may take few hours to complete the process. Discharge is initiated in the HIS and final bill activity is sent to the billing desk. Once final bill is generated, patients/attendants are expected to clear dues by paying cash/credit/debit card or through TPA approval. The nurse will hand over discharge summary, medicines and belongings (like thermometer, urinal bedpan, etc. - used during the course of your stay). She also explains the medications you need to continue after your discharge and any other follow-up instructions. In case patient need a medical ambulance to drop at home, then information is given by nurse to make the necessary arrangement.

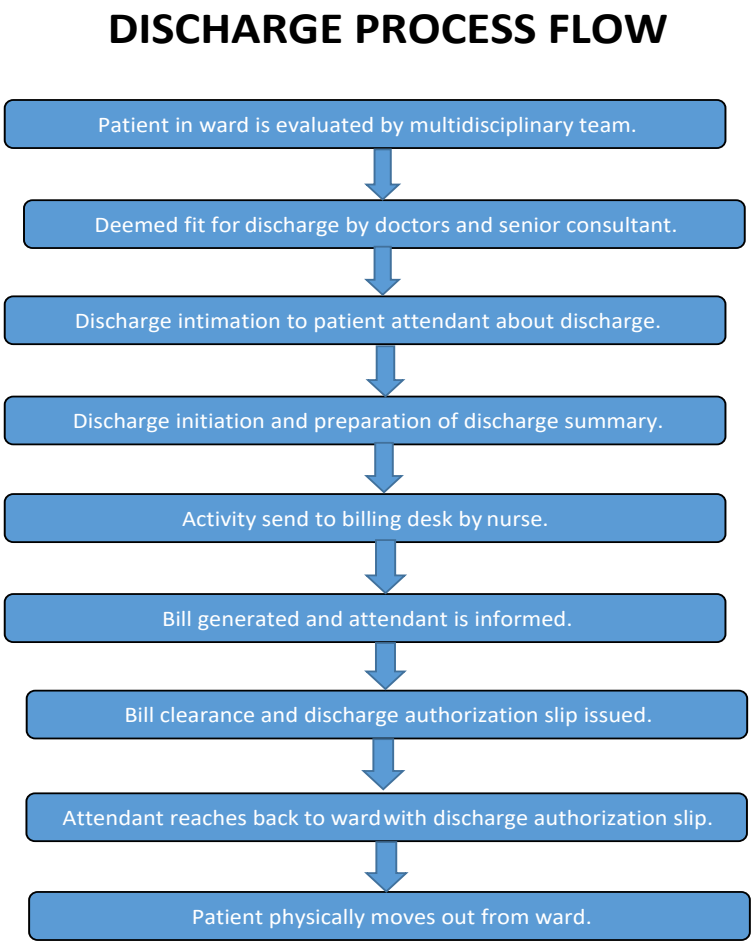


Figure 6: Flowchart of discharge process

Problem Statement:

The increased turnaround time in the discharge process of Apollomedics Superspeciality Hospitals, Lucknow.

Research Questions:

- What is the average turnaround time of the discharge process in IPD patients of hospital?
- What are the factors leading to an increased turnaround time in the discharge process of IPD patients in hospital?

Research Objectives:

- To find out the average discharge turnaround time in IPD patients.
- To find out root causes of the factors leading todelayed discharges.
- To provide implementable solutions to decrease the turnaround time in the discharge process of IPD patients.

Methodology:

Research Design: Interventional study

Period of study: 3 months

Setting: Apollomedics Superspeciality Hospitals, Lucknow

Study Location-

- Emergency Department and ICU
- Mother and Child Ward
- Economy Suites
- Private Suites

Study Population:

Inclusion Criteria: IPD Patients admitted in economy suites, MCH ward, ICU suites, private suites.

Exclusion Criteria: OPD Patients

Sample design: Convenience sampling technique

Sample size: Pre-implementation Phase-101 patients (including 6 TPA patients)

Post-implementation Phase-125 patients (including 15 TPA patients)

Mode of data collection: Primary data through observation

Data Analysis: Data analysis performed using Microsoft Excel.

Source of Data:

- Patients
- Nursing staff
- Doctors
- Hospital Information System
- Billing staff
- Security staff
- Activity receiving registers
- Patient movement registers

Ethical Consideration: Informed consent was obtained from all the study participants. Data security, privacy and confidentiality was maintained. Permission was taken from hospital authority as well for collecting data required from files and patients.

Indicators:

- Total number of patients admitted in the hospital
- Number of planned/unplanned discharges
- Time of discharge intimation to patient or attendant.
- Discharge initiation time in HIS
- Billing activity sheet receiving time at billing desk
- Time taken in bill generation
- Delay time on hospital side (pending indent approval, IT issues, pending discharge summary etc.)
- Delay time on patient side (attendant not available, cash unavailable etc.)

Time Gap is noted between: -

- Patient/attendant intimated for discharge and time activity is send to the billing desk by nurse.
- Time between bill activity send from ward and time bill activity received at billing desk.
- Time taken in rough summary corrections and getting it signed by senior consultant.
- Time between activity is received at billing desk and start of billing process.
- Total time taken in billing process.
- Delay time due to pending pharmacy indents, OT indents and lab confirmation.
- Time between attendant informed and time at which attendant reaches billing desk.
- Time consumed in bill explanation.
- Time consumed in bill payment and issue of discharge authorization slip.
- Time taken by attendant to reach back to ward after discharge authorization slip is issued.
- Time gap between attendant reaching back to ward and final physical moving out time of patient from ward.

Discussion:

The present study has been conducted on 226 patients admitted at Apollomedics Superspeciality Hospitals, Lucknow from 4thFeb,2019 to 12th April,2019. The study conducted in three phases, pre-intervention, intervention and post intervention phases.

During pre-intervention phase 101 patients' data was collected, findings and recommendations were given and then in intervention phase actions were taken to reduce discharge TAT, post intervention 125 patients' data was collected to see the effects of interventions taken.

GENDER	NO. OF PATIENTS
MALE	57
FEMALE	44

Figure 7:Pre intervention patients' segregation

GENDER	NO. OF PATIENTS
MALE	70
FEMALE	55

Figure 8: Post intervention patients' segregation

Pre-intervention Phase

During the pre-intervention phase data of around 101 patients was collected through observation. Data of patients was collected randomly from all the floors. Process of discharge and data collection was initiated as soon as the discharge was intimated to patient/attendant by the doctor. Out of data collected for 101 patients:

Floor	Number of patients	Percentage
ICU	5	5%
Emergency	17	17%
6th Floor	24	24%
5th Floor	38	38%
4th Floor	17	17%

Table 4: Floor Wise Patient Distribution

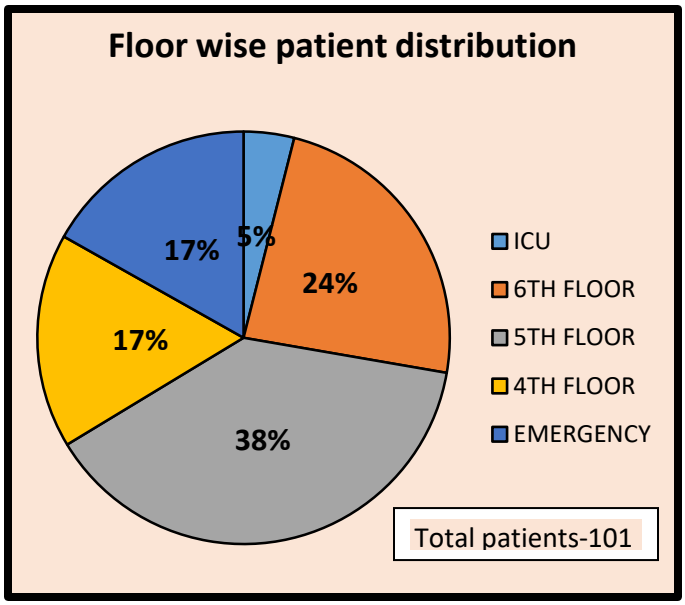


Figure 9: This pie-chart shows percentage of patient distribution according to their respective floors.

Above shown pie chart shows that maximum patients that were discharged during the study period were from 5th floor i.e. 38% and followed by 6th floor, 24%.

After the data was collected for 101 patients, the results were analysed to find out average discharge turnaround time and classify percentage of patients according to the number of hours taken. Out of 101 patients 6 patients were covered under TPA and 95 were cash patients.

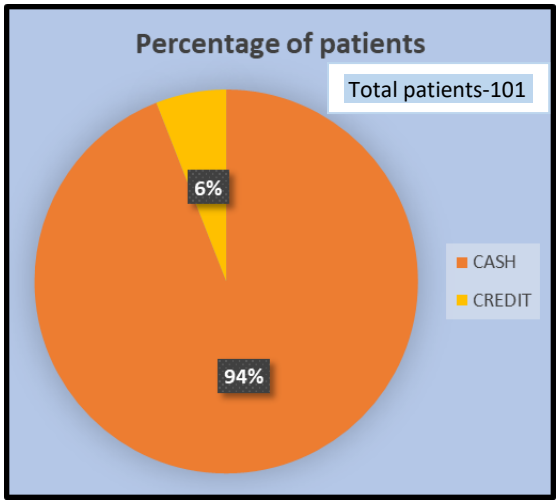


Figure 10:Distribution of patients according to billing type during pre-intervention phase

Out of 101 patients there were only 25% which got discharged within 1-3 hours, 39% of patients discharged between 3-5 hours and there were 36% of patients who took more than 5 hours in getting discharged.

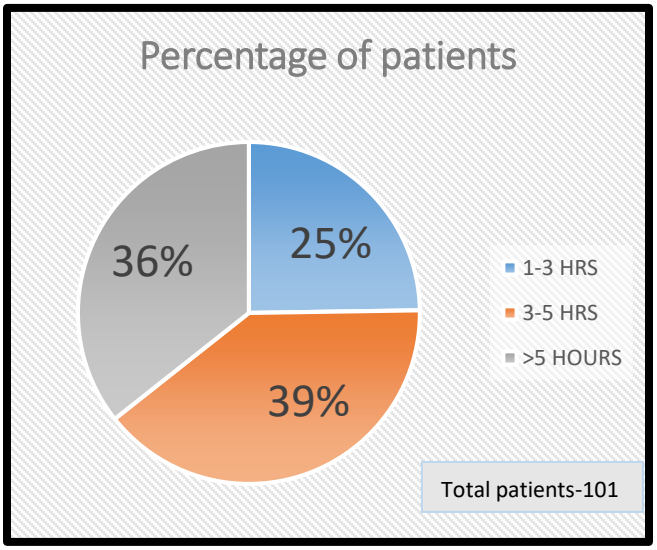


Figure 11:This figure shows Percentage of patient distribution according to number of hours taken in discharge process

Table below shows average turnaround time during pre-intervention phase of study, average TAT of 101 patients was 4 hour 23 minutes, average TAT of 95 patients was 4hour 14 minutes and 7 hour 7 mins of 6 TPA patients.

PRE INTERVENTION PHASE	AVERAGE TAT OF PATIENTS (HH:MM:SS)
AVERAGE TAT OF 101 PATIENTS	04:23:00
AVERAGE TAT OF 6 TPA PATIENTS	07:07:00
AVERAGE TAT OF 95 PATIENTS	04:14:00

Table 5: This table shows Pre-intervention Phase Average Discharge TAT

Average turnaround time of 95 cash patients was then subdivided to find out average time taken in various steps involved in discharge process.

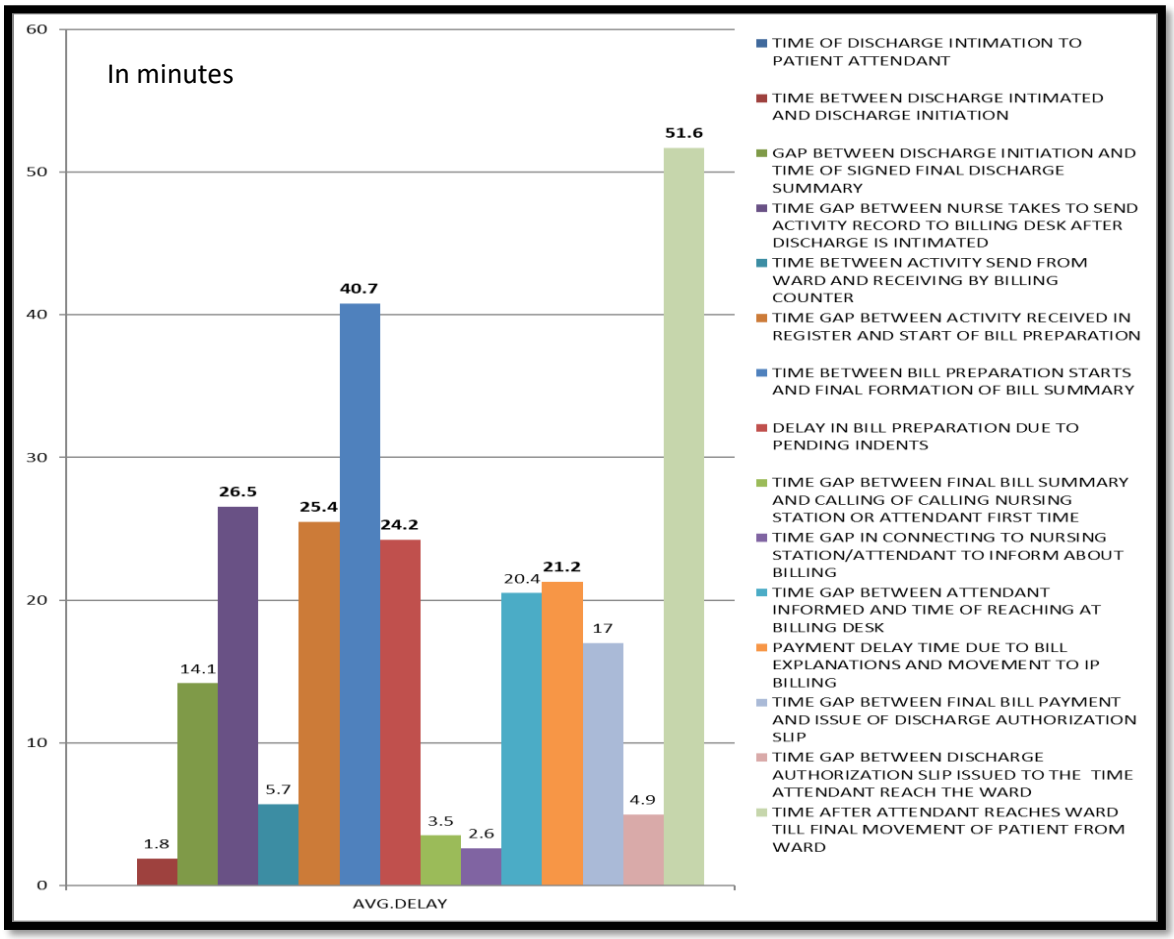


Figure 12: This graph shows Average time taken(in minutes) in various steps of discharge process in cash patient.

Above graphs shows that maximum time is consumed after the patient reaches ward with discharge authorization slip. Time consumed in final bill preparation is also a major cause of delayed discharges. Another major reason causing delayed discharges was because nursing was taking too much time in sending final discharge billing activity sheet to billing desk. Other reasons were, delay due to queuing of discharges due to limited staff or unavailability of staff or delay due to pending indents. During data collection of various patients' various reasons of delay were identified and noted.

Average turnaround time of 6 TPA patients (7 hours, 7 mins.) was also subdivided to find out average time taken in various steps involved in discharge process.

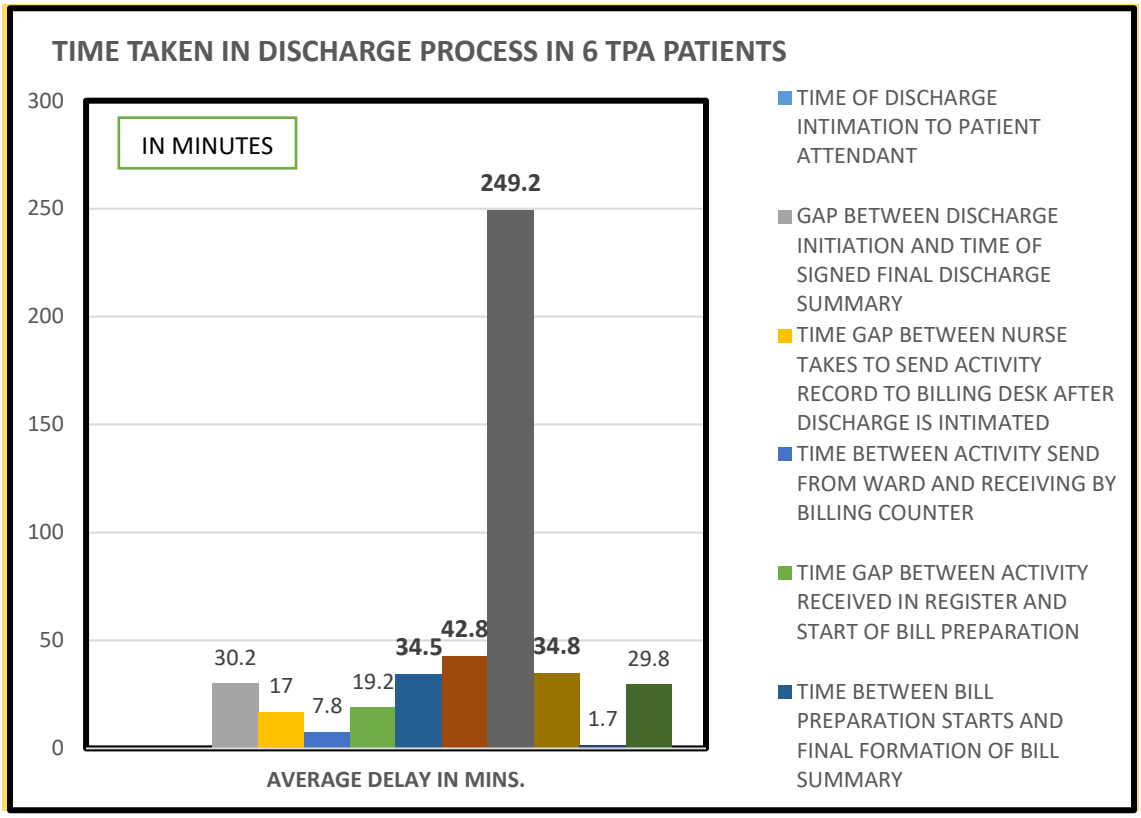


Figure 13: This graph shows Average time taken (in minutes) in various steps of discharge process in TPA patient.

This graph shows that in cases of insured patients maximum time was consumed in getting approval from TPA. Time consumed in clearing pending indents was also a major cause of delayed discharges. Another major reason causing delayed discharges was because of time consumed in billing which was done manually in excel. Process of patient handover after the discharge authorization slip is issued by bill clearance remained cause of delayed discharges.

Below is the graph showing average number of hours taken in 6 TPA patients and number of hours taken by individual TPA patients before intervention.

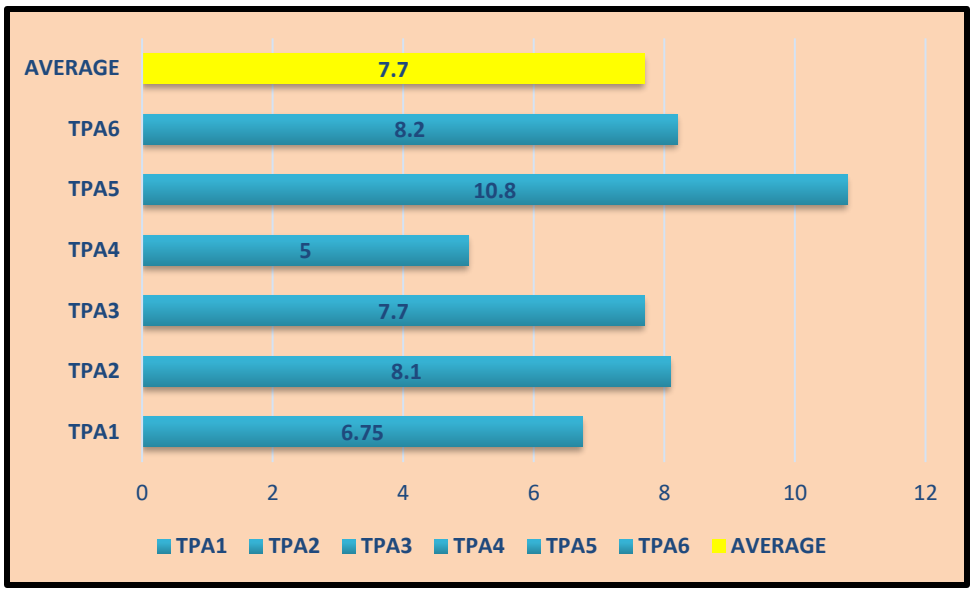


Figure 14: Graph showing number of hours taken in TPA patients during pre-implementation phase

Graph above shows that in TPA patients it took more than 5 hours in every patients, major reason for delay was due to delay in getting TPA approval. Below is the horizontal bar graph showing number of hours taken by individual MCH ward and LDR suite room patients. Out of 17 patients 10 patients took less than 5 hours.

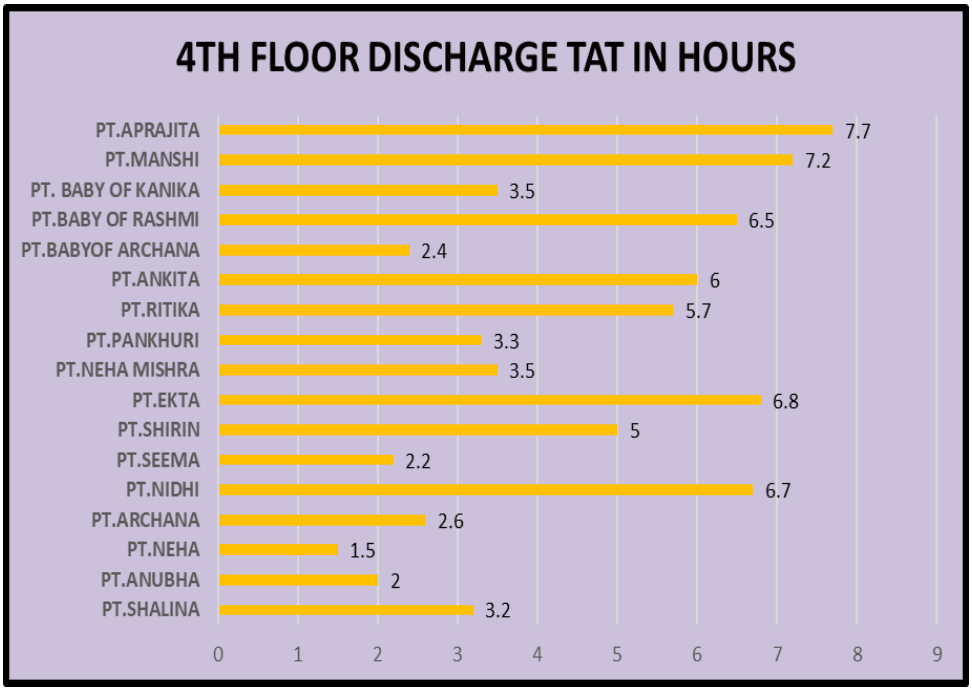


Figure 15: 4th Floor discharge TAT in hours (patient wise)

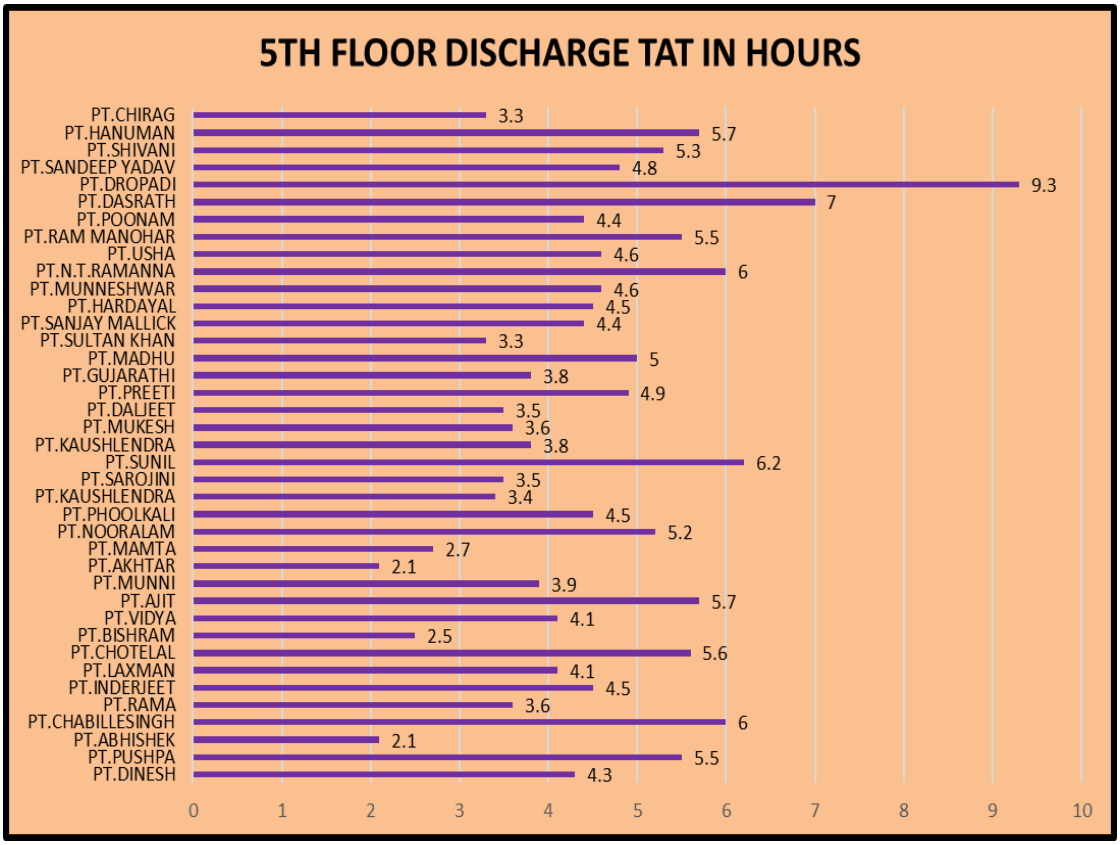


Figure 16: 5th Floor patient-wise discharge TAT in hours during pre-implementation phase

38 out of 101 patients were form 5th floor and below is the horizontal bar graph showing number of hours taken by individual patients in 5th floor (economy ward). From the graph, it is clear that, 26 patients were discharged within 5 hours, 11 patients discharged within 5-7 hours and two patients discharged taking more than 7 hours.

From the graph it is clear that minimum time taken in discharge was approx. 2 hours and maximum taken in discharge was 9 hours 3 minutes.

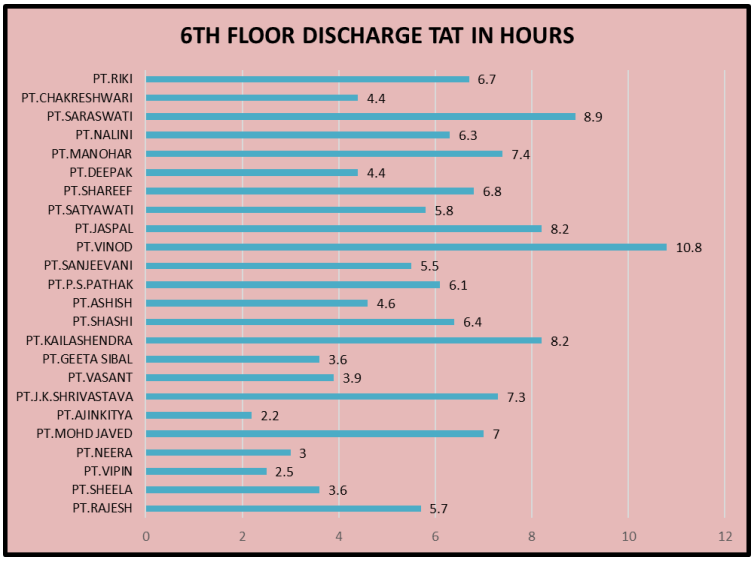


Figure 17:6th Floor patient wise discharge TAT in hours (pre-implementation phase)

Above graph shows 6th floor discharge TAT in hours, through graph it is clear that 9 patients discharged within 5 hours, 9 patients discharged between 5-7 hours and rest took more than 7 hours to get discharged.

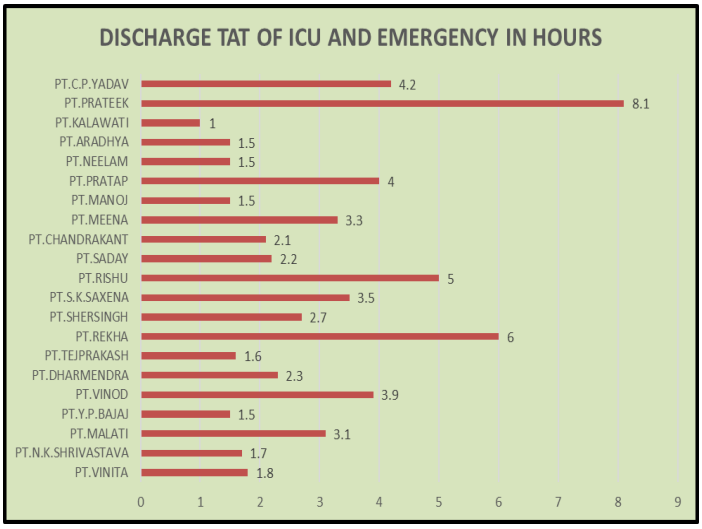


Figure 18: Patient wise discharge TAT in hours (Emergency and ICU) during pre-implementation phase

Discharge TAT of ICU and Emergency was comparatively lesser compared to other floors, maximum patients discharged within 3 hours. Minimum discharge TAT that was tracked was 1 hour and maximum discharge TAT was 8 hour 1 min, which was TPA patient.

Findings from pre-intervention phase:

Below are the reasons of delayed discharges that were found in Apollomedics Superspeciality Hospital, Lucknow.

Reasons for delay after discharge is intimated and final formation of discharge summary:

- Doctors form rough summary beforehand but wait for the consultant to approve the final discharge summary.
- Late round of senior consultants.
- Doctors attending other patient treatment so keep the discharge summary on hold.
- Delay due to repeated corrections made in summary.
- Doctors not available on wards due to meeting scheduled during working hours.

Reasons for delay in sending activity record form to billing: -

- Nurses attending other patients and forget to send activity to billing.
- Drugs not returned by nurse to pharmacy on time.
- Late acknowledgment of drugs by the pharmacy.
- In MCH ward delay due to baby pending bill activity.
- GDA's not available.

Reasons for delay in final bill preparation: -

- Billing staff busy in making other patients bill thus leading to queuing of discharges.
- Bill kept on hold because of pending confirmation (USG etc.)
- Approval pending from pharmacy for indent confirmation.
- Missing transactions.
- Overwriting in activity sheets by nurses.
- Billing staff busy in giving estimates of surgeries, implants etc.
- Billing staff giving detailed explanation to other patients in middle of preparation of patients.
- Limited number of billing clerks.

Reasons for delay in bill clearance and final payment: -

- Time consumed in bill explanation to attendants.
- HIS showing pending discharge summary.
- Card machine issues.
- Arrangement of cash for bill payment by attendant.
- Staff busy in making bills of other patients.
- Confusion between doctor advice to stay and patient wants to leave against medical advice.
- Single manual billing book.
- Change cash not available with billing cashier.

Reasons for delay after clearance of bill and final physical leaving of patient from the floor: -

- Corrections in rough summary and getting it signed by senior consultant.
- Waiting for ambulance or other transport means.
- Waiting for the investigation reports or other receipts collection.
- Time taken by nursing staff in arranging file properly.
- Medication explained by nursing.
- Counseling by doctors, baby counselor etc.
- Attendant wants to meet doctor to take any advice regarding patient.
- Time consumed in changing dress, washroom, feeding milk to baby etc.
- Time consumed in explaining and filling Feedback form.
- GDA's not available.

Root Cause Analysis (RCA) is a method of problem solving that aims at identifying the root causes of problems or incidents. RCAis based on the principle that problems can best be solved by correcting their root causes. Through corrective actions, the underlying causes are addressed so that recurrence of the problem can be minimized. Below is the diagram showing identified causes of delayed discharges.

ROOT CAUSE ANALYSIS:

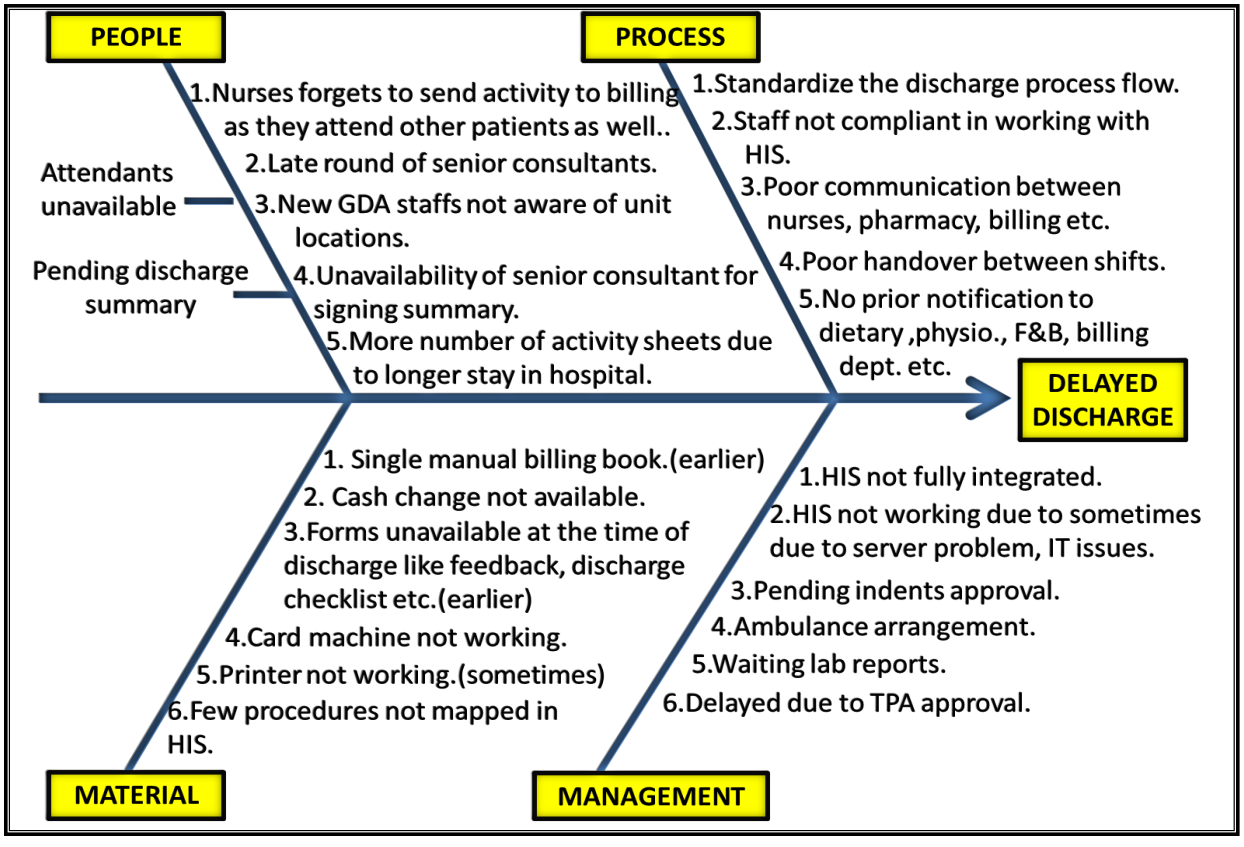


Figure 19: Root Cause Analysis Diagram of delayed discharges

After findings all the reasons of delayed discharges andcompletion of the pre-intervention phase of study, few recommendations were given keeping the root causes of delayed discharges in consideration.

Recommendations after pre-intervention phase:

1. Discharge process should be standardized.
2. Early discharge planning and prioritization for discharge patients.
3. Pending indents should be cleared before initiation of discharge.
4. Timely finalization of discharge summary.
5. Deployment of more billing clerks.
6. After intimation, inform and educate the patient about discharge process and tentative time.
7. Briefing about the roles and responsibilities of ward secretary and nursing coordinator.
8. Prior information about running bill so that attendant arrange cash for bill payment.
9. Timely Transport arrangement.
10. Fully Integrated HIS.
11. Training of staff about HIS. (how to raise medication, transfer etc.)
12. Pending OT indents should have cleared on the same day of surgery.
13. Treatment packages should be discussed with the billing staff as attendants are not willing pay any extra amount other than package amount.
14. Nurses' notes and handover form should be separate and proper handover between doctors, nurses and mangers.
15. Early rounds of senior consultant.
16. Better communication among stakeholders of discharge process through creation of WhatsApp group for fast discharge process.

InterventionPhase

During the interventionphase few of the recommendations were implemented in an attempt to reduce turnaround time of discharges.

Actions that were implemented: -

1. Hiring of more billing clerks for billing.
2. Pending indents were cleared every night before initiation of discharge process.
3. List of pending pharmacy/ OT / Lab. Request was made and notice was given to the concerned department.
4. After intimation, counseling of the patient and attendant about discharge process and tentative time for which in-patient information sheet was prepared containing all the details of discharge process
5. Explicit delineation of roles and responsibilities of ward secretary and nursing coordinators, for this job description was created for both.
6. Prior information about running bill so that attendant arrange cash for bill payment.
7. Fully Integrated HIS.
8. Discussion about treatment packages with the billing staff and doctors.
9. Better communication among nursing team leaders and billing staff regarding planned discharges through hospital extension.
10. Formation of planned discharges list by nursing staff of every floor at night.
11. Distribution or dissemination of planned discharges list to billing staff, dietician, physiotherapy department, pharmacy, ward secretary, floors managers etc.
12. Bill was updated by billing staff after receiving information about planned discharges from MOD or nursing.
13. Early discharge planning for discharge patients.
14. Training of staff regarding how to raise medications/ procedures / lab requests in HIS.
15. Separate nurses' notes form and handover form.
16. Handover between doctors, nurses and manager on duty was improved by maintaining proper registers.

Recommendations that could not be implemented during intervention phase were:

1. Discharge process could not be standardized because after discharge intimation to patients, final discharge bill activity was sent to billing desk without preparing discharge summary.
2. Early discharge planning and prioritization for discharge patients not followed regularly in every floor.
3. Timely finalization of discharge summary was still a problem faced because night doctors did not prepare discharge summary of planned discharges.
4. Time wasted in making corrections in discharge summary and getting it signed by senior consultants.
5. Senior consultant's rounds were still a problem due to which finalization of discharges was kept on hold.
6. Sometimes pending OT indents clearance / OT pending implant bill created an issue.
7. Training of new nurses regarding HIS.

Post intervention Phase

Post intervention data was collected for a period from 9th March,2019 till 12th April 20, 2019, 125 patients' data was collected on a random basis and the results were monitored after the same to see the difference in average turnaround time.

Out of 125 patients, 110 patients belonged to cash billing type category and rest were credit patients.

CASH/CREDIT	PATIENTS	PERCENTAGE
CASH	110	88
CREDIT	15	12

Table 6: Post intervention distribution of patients according to billing type

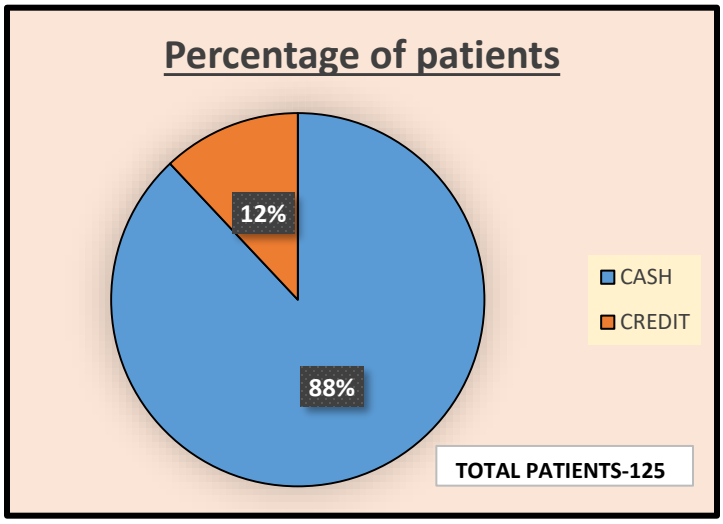


Figure 20: Pie-chart showing distribution of patients according to billing type

Data was collected from all floors and classified according to number of hours taken in discharge process.

FLOOR	PATIENTS	PERCENTAGE
6TH FLOOR	37	29.6
5TH FLOOR	46	36.8
4TH FLOOR	20	16
EMERGENCY & MICU	22	17.6

Table 7:Post-intervention floor wise percentage of patient distribution

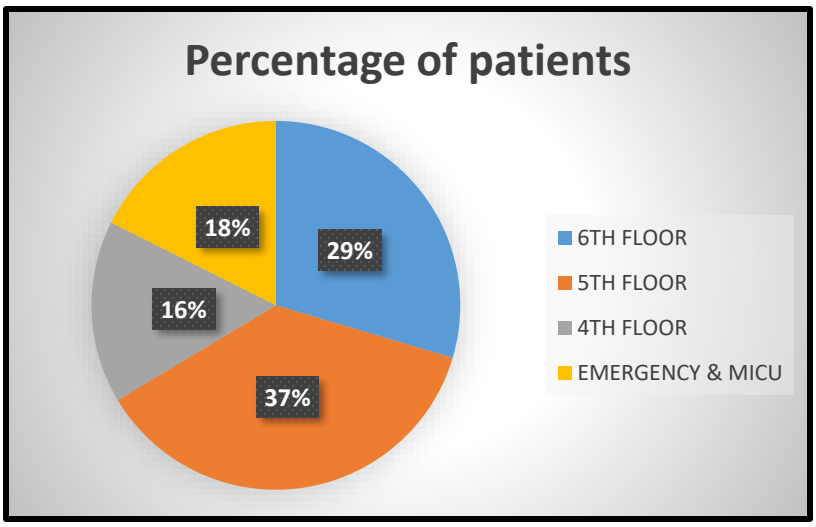


Figure 21: Floor wise percentage of patient distribution (Post-intervention)

Pie-chart shown above clearly depicts that post intervention study had 37% patients from 5th floor, 29% patients from 6th floor, 16% from 4th floor and rest from emergency and ICU.

AVG. TAT IN HOURS	PATIENTS	PERCENTAGE
< 2 HRS	18	14.4
2 HR-3HR	34	27.2
3HRS - 5HRS	46	36.8
> 5 HRS	27	21.6

Table 8: Table showing percentage distribution of patients according to average TAT in hours

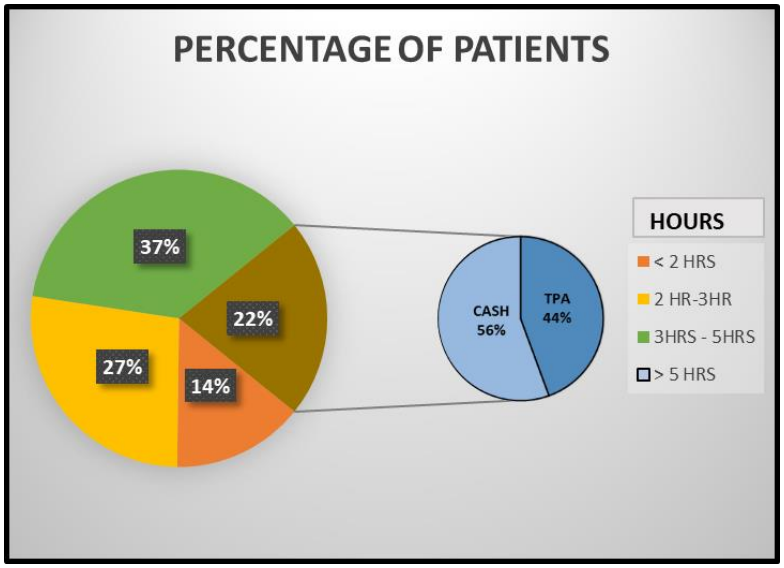


Figure 22: Distribution of patients according to average TAT in hours

From the figure it is clear that 14% of patients got discharged within 2 hours and 27% of patients got discharged between 2-3 hours but even after implementation phase there were 22% patients whose turnaround time exceeded 5 hours, out of these 22%, 44% were TPA patients and rest were cash patients.

Below is the horizontal bar graph showing the number of hours/minutes taken by individual patients in emergency and MICU.

Vertical axis contains individual patients name plot against horizontal axis, which shows number of hours/minutes taken. After the intervention phase, discharge TAT was reduced and maximum patients discharged within 3 hours, four patients discharged between 3-4 hours and there were only two patients with discharge TAT more than 6 hours.

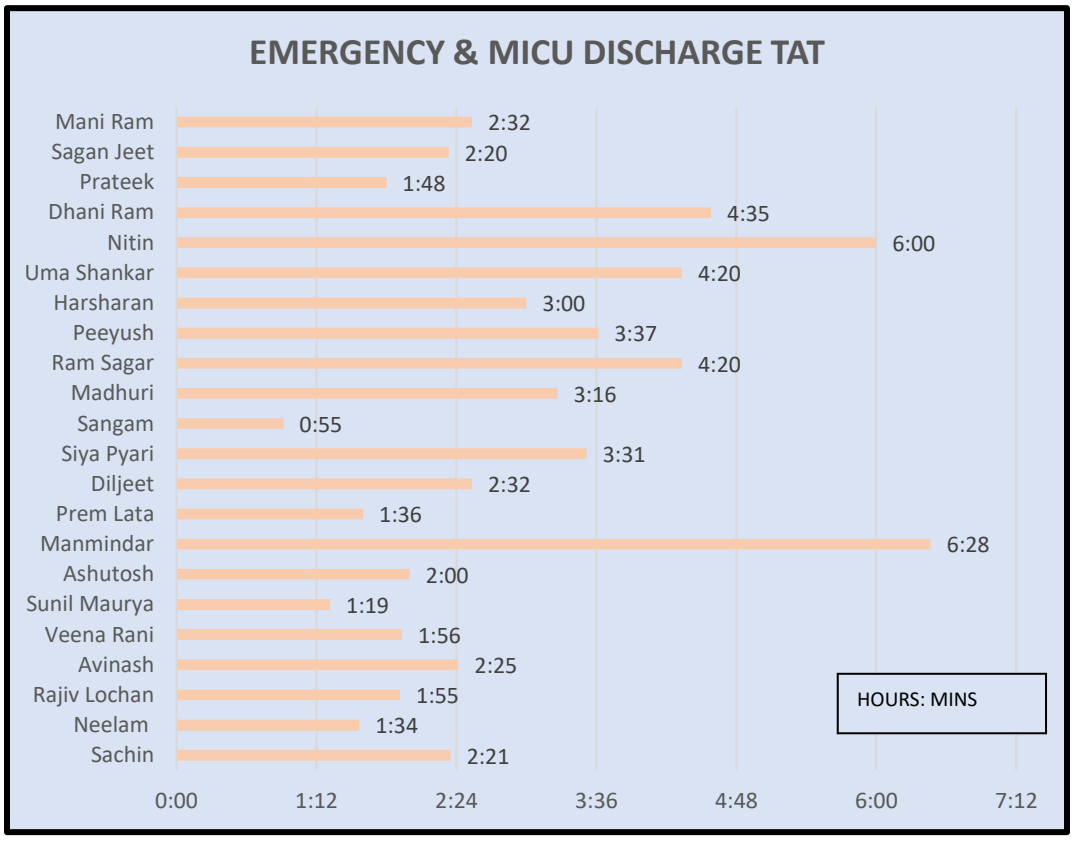


Figure 23: Post Intervention MICU & Emergency patient wise discharge TAT

Below is the horizontal bar graph showing the number of hours/minutes taken by individual patients in MCH ward.

Vertical axis contains individual patients name plot against horizontal axis, which shows number of hours/minutes taken. Out of 20 patients, minimum discharge TAT tracked was only of 31 minutes and maximum discharge TAT was 7 hours 43 mins.

Nine patients out of 20, discharged within 3 hours, 8 patients discharged between 3-4 hours and only 3 patients took more than 4 hours.

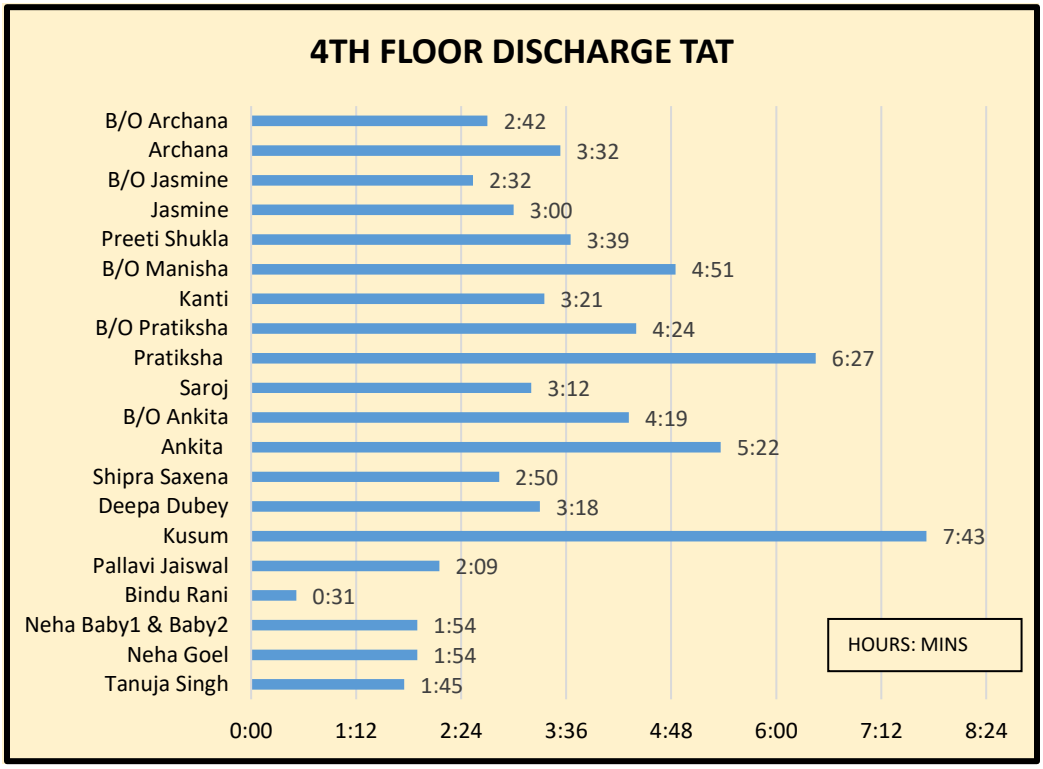


Figure 24: Post Intervention 4th floor patient wise discharge TAT

Below is the horizontal bar graph showing the number of hours/minutes taken by individual patients in 5th floor. Maximum patients discharged were from fifth floor.

Vertical axis contains individual patients name plot against horizontal axis, which shows number of hours/minutes taken. Out of 46 patients, minimum discharge TAT tracked was only of 1 hour 28 minutes and maximum discharge TAT was 7 hours 35 minutes.

Out of 46 patients, 20 patients discharged within 3 hours, 13 patients discharged between 3-4 hours and 13 patients took more than 4 hours.

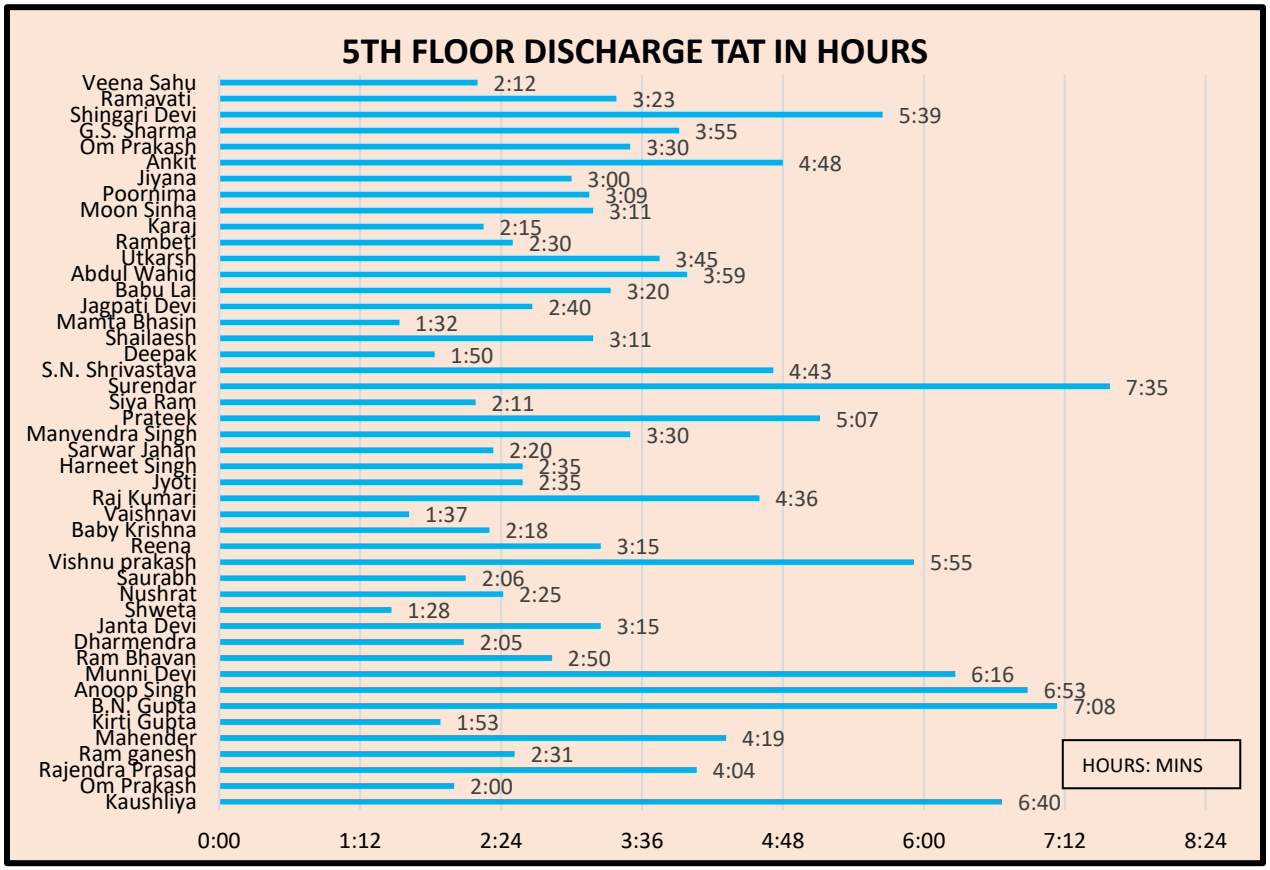


Figure 25: Post intervention 5th floor patient wise discharge TAT

Below is the horizontal bar graph showing the number of hours/minutes taken by individual patients in 6th floor.

Vertical axis contains individual patients name plot against horizontal axis, which shows number of hours/minutes taken. Out of 37 patients, minimum discharge TAT tracked was only of 45 minutes and maximum discharge TAT was 7 hours 6 minutes.

Out of 37 patients, 8discharged within 3 hours, 8 patients discharged between 3-4 hours and 21 patients took more than 4 hours.

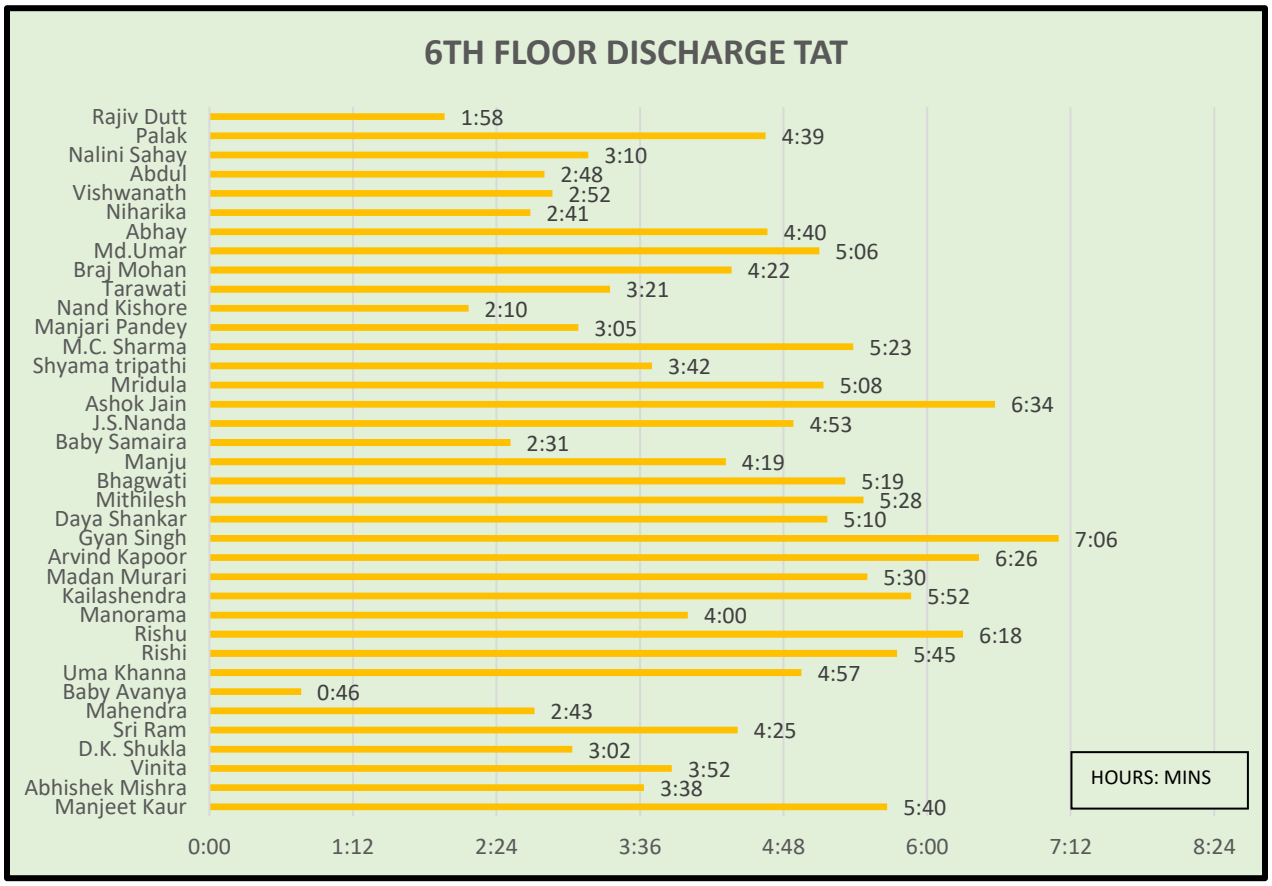


Figure 26: Post intervention 6th floor patient wise discharge TAT

Below is the horizontal bar graph showing number of hours taken in 15 TPA patients post-intervention.

Vertical axis contains individual patients name plot against horizontal axis, which shows number of hours/minutes taken. Out of 15 patients, minimum discharge TAT tracked was only of 3 hours 39 minutes and maximum discharge TAT was 7 hours 43 minutes.

Out of 15 TPA patients, 3discharged within 5 hours, 5 patients discharged between 5-6 hours and 7 patients took more than 6 hours

Average discharge turnaround time in TPA patients reduced to 5 hours 54 mins from 7 hours 7 minutes before intervention.

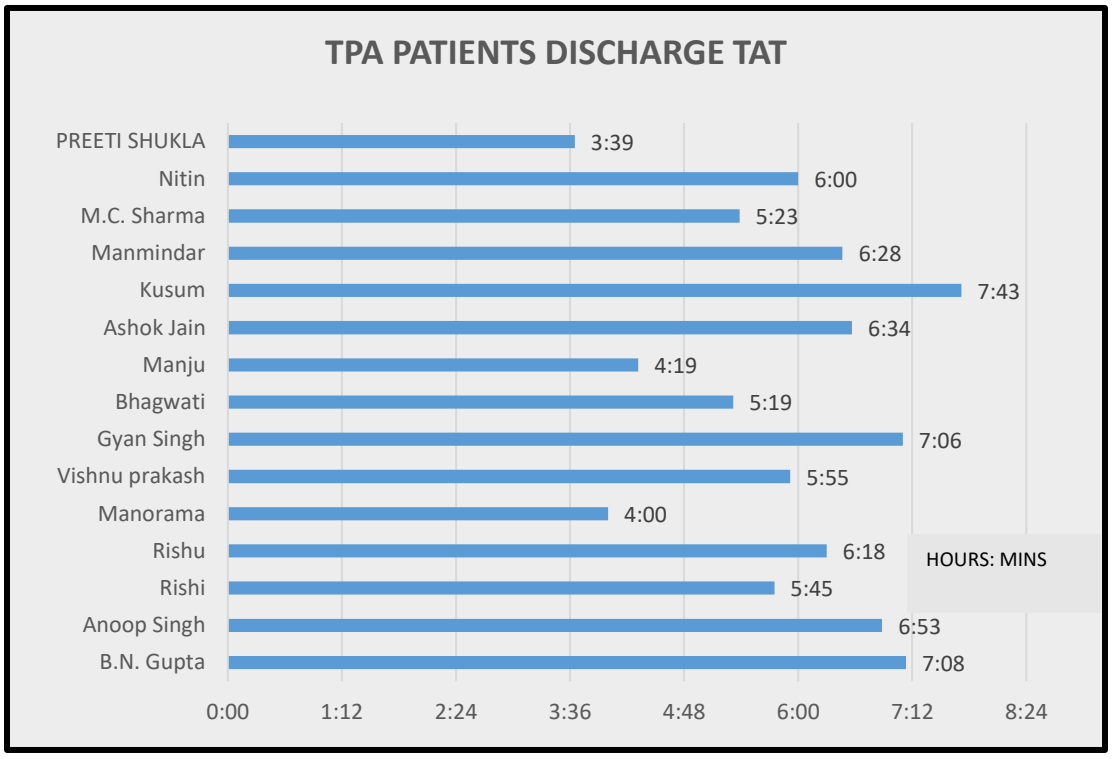


Figure 27: Post intervention TPA patient discharge TAT

CONCLUSION, FINDINGS& FINAL RECOMMENDATIONS FOR FUTURE PROGRESS

Patient discharge is a complex process involving cooperation and coordination of all departments and staff in the hospital. Getting patients discharged in a timely manner is a challenging task. Thus improving the time taken for discharge not only improves patient satisfaction but also helps in effective bed management for the hospital.

After analysis of data it was found that overall the average turnaround time was reduced to 3 hours 38 minutes 23 seconds after implementation from 4 hours 23 minutes that was before implementation. Overall decrease of 45 minutes 23 seconds was seen in average discharge turnaround time.

PHASE	AVERAGE TAT OF PATIENTS
PRE INTERVENTION PHASE	04:23:00
POST INTERVENTION PHASE	03:38:23
DIFFERENCE IN AVERAGE TURNAROUND TIME	45 MINS 23 SECS

Table 6: Pre & Post Intervention average TAT (HH/MM/SS)

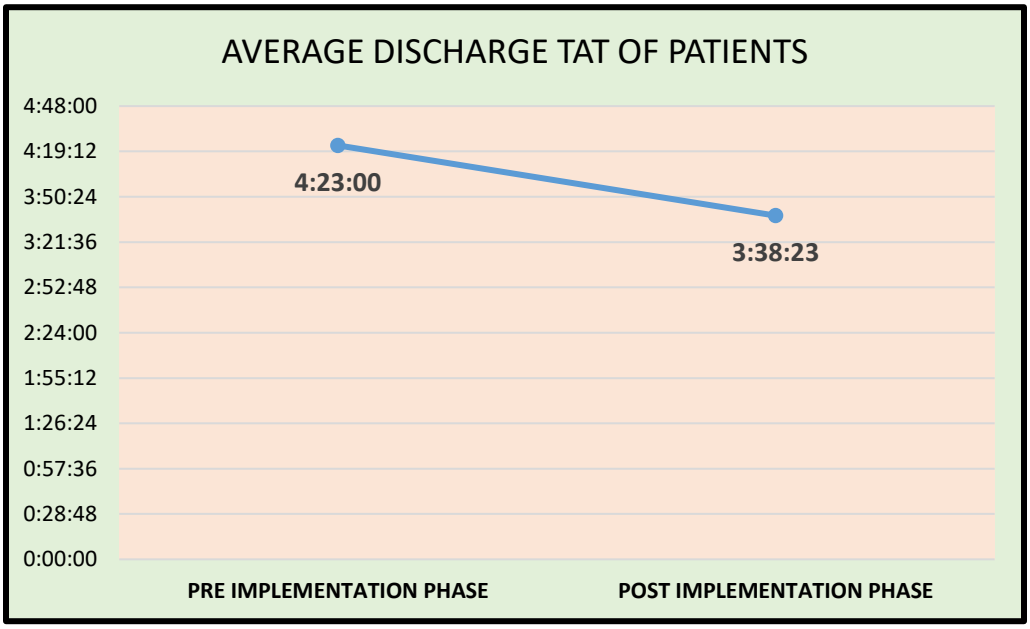


Figure 28: Comparison of Average TAT Pre and Post intervention

Below is the table showing average TAT of patients of pre-intervention and post-intervention phase.

Average discharge TAT of 101 patients during pre-intervention phase was 4 hours 23 mins and average discharge TAT of 125 patients during post-intervention phase was 3hours 38 mins.

Average discharge TAT of 6 TPA patients during pre-intervention phase was 7hours 07 mins and average discharge TAT of 15 TPA patients during post-intervention phase was 5hours 54 mins.

PRE INTERVENTION PHASE	AVERAGE TAT OF PATIENTS (HH:MM:SS)
AVERAGE TAT OF 101 PATIENTS	04:23:00
AVERAGE TAT OF 6 TPA PATIENTS	07:07:00
AVERAGE TAT OF 95 PATIENTS	04:14:00

POST INTERVENTION PHASE	AVERAGE TAT OF PATIENTS (HH:MM:SS)
AVERAGE TAT OF 125 PATIENTS	03:38:23
AVERAGE TAT OF 15 TPA PATIENTS	05:54:00
AVERAGE TAT OF 110 CASH PATIENTS	03:19:56

Table7: Table showing comparative TAT before and after intervention

FINAL FINDINGS AFTER POST INTERVENTION PHASE:

1. Less practice of Planning discharges by doctors.
2. Late rounds of senior consultants.
3. Pending finalization of discharge summaries by senior consultants due to repeated corrections in discharge summaries.
4. Mistakes and overwriting in discharge activity sheet by nurses like Oxygen, BiPap, Infusion, DVT, Nebulization, Nimbus – start time and stop time not mentioned and number of hours used not mentioned.
5. Physiotherapists' visits not mentioned in activity but raised in system by nurses.
6. Transfusion Charges not raised in system and not mentioned in activity sheets.
7. Number of Blood products used in patients not mentioned properly in billing activity.
8. Number of times Nebulization done not mentioned in activity and not properly raised in system as well.
9. Nurses not writing consultants' visits properly.
10. Delay in sending billing activity after discharge intimated to patient by doctor.
11. Billing staff time wasted in confirming these things from nursing staff. Everytime billing staff calls at nursing station they don't get proper answer because nursing staff are not clear themselves and billing kept on hold till they receive in written with sign from concerned.

FINAL RECOMMENDATIONS AFTER POST INTERVENTION PHASE

1. An effort, should be madeto plan as many discharges as possible to enhance the discharge flow process.
2. Briefing of doctors for early ward rounds and timely finalization of discharge summaries.
3. Checking each inpatient bill at night and encouraging duty doctors to promote discharge summary indentation preparation before morning shift will also contribute to improvements.
4. Frequent training of nursing staff for how to raise requests and procedures in HIS.
5. Proper and regular training of nursing staff about how to fill activity sheet.
6. Guide nursing staff to update and send final discharge activity to billing desk within 15 minutes after intimation of discharge.
7. The discharge turnaround time must be regularly monitored to keep a track of all delays and control these immediately.
8. To maintain these improvements, we must equip hospital staff with the knowledge to adequately track and analyze our discharge data in real time so that we can further reduce discharge turnaround time.

ANNEXURES:

Study Instruments:

1. A checklist was formed to note time for various steps involved in discharge process.

Activities	Time
Time of Discharge Intimation to patient by doctor	
Time at which nurse send final bill Activity to billing	
Time of final bill activity received at billing desk	
Time at which Bill Preparation starts	
Time at which Bill Preparation Ends	
Delay due to pending Discharge Summary	
Delay due to pending Indents	
Time consumed for TPA Approval	
Delay due to nursing side	
Delay due to IT issues	
Time of informing attendant	
Time at which attendant comes	
Time consumed in Bill explanations etc.	
Time at which Discharge Authorization Slip issued	
Final discharge from ward	

2. A small questionnaire was formed for patients.

Q1. Did your treating consultant come on round today?
Q2. Around what time did they come?
Q3. Was any information about discharge was given to you by doctor?
Q4. When did doctor intimate you about final discharge?
Q5.Did you receive any call from billing department for clearance of dues?
Q6.If yes, when did you got call from billing department?
Q7.When did you received your discharge authorization slip?
Q8. Are you satisfied the process of discharge?

3. A small questionnaire was formed for billing staff.

Q1. When did you receive final bill activity from ward?
Q2. When was billing started and how long did you take to complete billing process?
Q3. When did you informed attendant for bill payment?
Q4.When did attendant came to do bill payment?
Q5.How long did it take to explain bill to attendant?
Q6.When did you issued bill authorization slip to attendant?
Q7.Did you face any difficulty in preparation of bills?
Q8. How much time was wasted in confirmation regarding pending requests etc.?

4. Delineation of Job Responsibilities for ward secretary and nursing coordinator was done.

Ward Secretary Job Responsibilities:

- Coordinate with ward nursing coordinator about admission and bed availability for patients.
- Allotting the room/bed to the patient according to their room categories.
- To help the patient/attendant get acquainted with the room and attending staff, to make the patient feel comfortable.
- Daily interaction with the patients/attendants and handling their queries by coordinating with various departments like nursing, F&B, housekeeping, billing etc., and also report the same to the senior head.
- Maintain the sheet of complaints and circulate it on the same day to the department head.
- Ensure timely discharge of patients.
- To explain the discharge guidelines/insurance formalities to the patient and attendant.
- To meet the patients who are scheduled for discharge and take the feedback and record the same.
- Ensuring collection of maximum number of feedback forms by tracking maximum discharges and forward it for analysis.
- Oversee the redressal of grievances/complaints received from the patients in a timely and satisfactory manner.
- Follow up with the discharged patients within a specified period of time (usually 48 hrs) to ensure customer satisfaction.

- To arrange for transport while sending the patient for various investigations.
- Ensure timely collection of lab and radiological reports.
- To obtain billing clearance before patient is taken up for the surgery.
- Ensure timely and updated dispatch of billing sheet to billing through nursing.
- To check discharge intimation and checked out status in the system.
- To coordinate with ambulance department if patient needs ambulance for transportation.
- Ensure that death protocol for expired patients is followed from nursing side.

Nursing Coordinator Job Responsibilities:

- Responsible for the assessment, planning, implementation and evaluation of patient care needs as required.
- Raises various requisitions related to treatments and nursing procedures. (entering orders via HIS)
- Ensures accurate documentation of care given is done by nursing staff.
- Supervises and coordinates orientation of new nursing staff.
- Scheduling and making the daily assessment of priorities and emergencies.
- Assigning appropriate staff for patients according to patient condition and client requirement.
- Coordinates with ward secretary regarding admissions, discharges of patients and billing activities.
- Coordinates with other departments related to care.
- Work in a collaboration and cooperative manner with other health professionals.
- Ensures compliance by self and staff with the organizations policy on confidentiality.
- Interacting with patients and collecting patient details.
- Provides ongoing advice and consultation to the nursing staff about proper procedures, problem solving and patient safety as well as evaluating the quality and appropriateness of nursing care and documentation of care provided.
- Promotes patient care by overseeing that necessary equipment and supplies are available and records are maintained.
- Ensuring that return medicines are acknowledged by the pharmacy.
- Raising procedures/lab investigation requests in HIS.
- Maintaining and keeping updating investigation track sheet and billing activity sheets.
- To meet the patients who are scheduled for discharge and ensure that the feedback is taken by the nursing staff.
- Maintains all registers used in ward.
- To initiate and sustain the implementation of orders as prescribed by the physicians.
- To actively participate in programs for quality improvement in nursing practices.
- To coordinate with ward resident to timely finalize the discharge summary.

- Ensure to inform nurse to handle all reports and discharge summary to patient at the time of discharge.
- To dispatch discharged files to MRD within 24 hrs.

5. Discharge counseling sheet for patients at the time of discharge was prepared.

Patient Hospital Discharge Information Sheet

Dear Patient/Attendant,

We hope your stay was comfortable in Apollomedics Super Specialty Hospitals. In case of any information required by you, please contact your ward secretary/floor manager.

As you are going to get discharged, we would like to inform you the following:

1. Procedure for discharge starts when your attending consultant will make an entry for discharge on your progress sheet. After this, the resident doctors prepare the discharge summary. Then the final billing activity sheet is sent to the IPD billing desk for clearance, after which the final bill is prepared, taking into account all the deposits. When the final bill is ready, payment has to be made at the IPD Billing desk located at -3 basement. This procedure may take 2-3 hours (for cash patients). However, the TPA/Insurance patient's discharge will take around 4-5 hours.
2. In case you are yet to undergo a procedure, visit by a referral doctor or any medication, in such case discharge process will begin only after the required procedures is done irrespective of the time of doctor's discharge advice.
3. As per the hospital policy, the stay upto to 2-8 hours (from the time of admission) will be charged as half day, stay more than 8 hours will be charged as full day.
4. Discharge process consists of finalizing of discharge summary, pharmacy return and indent/purchase of discharge medicine and final billing.
5. You will be intimated by the ward executive/attending nurse about the time of finalizing billing, before that you need not visit the billing department. Once the billing is done you will be given a bill receipt and a discharge authorization slip by the billing department which you are supposed to show to sister in-charge at the respective nursing counter who will then start process of physical discharge.
6. All the concerned counselling if applicable (dietician, physiotherapy, diabetic educator, feeding etc.) will be provided to you shortly.
7. All the reports and discharge summary will be handed over and explained to you after bill clearance. In case of TPA patients, only reports (photocopy) will be provided and no films will be given to you. If it's required, you can contact your floor manager.

8. Discharge summary is finalized and signed by the treating doctor which contains summary of investigations, procedures and medication given to the patient. Please make sure that you understand the instructions for post discharge care of patient and follow-ups.
9. In case any of your investigation reports is pending you may collect that on the given time, from the reports dispatch counter located on the ground floor.
10. It is important that you arrange to leave by discharge time, so that we can prepare the bed and room for new admission. So while the hospital is arranging discharge for you, meanwhile you may take care of the following things:
    - Please make arrangement of your vehicle to avoid any delays.
    - Please make sure that you keep yourself updated about the bill amount and the estimate of the treatment and arrange the amount in advance so that there is no delay in payment of bill at the time of discharge.
    - Please inform your assigned nurse about the drugs and consumables that are lying in the drawer so that she can direct you about their re-usability or whether these need to be returned to the pharmacy.
    - Please pack your belongings and keep your luggage ready.
11. After the hospital discharge, you may contact your physician by telephone for clarifications, if any. Please do not forget to bring your treatment records (including all investigations reports) during follow-up visits to the hospital.
12. Your bill will be a comprehensive one, with all details of room rent, investigations, consumables, consultations ant other charges are shown in the bill. In case of any clarifications, please approach the IP billing department situated in basement 3.
13. All outstanding bills must be cleared promptly. You will receive information on the charges accrued to your account from the billing department at regular intervals, to help you to clear your dues in time and facilitate your discharge. Your admission/security deposit will be adjusted against your final bill at the time of discharge.
14. If you want the hospital ambulance service, kindly inform your assigned nurse for ambulance service or contact ambulance command center situated in ground floor near emergency help desk. (Please note we do not provide ambulance service for LAMA patients)
15. As per government policy cash deposition limit is upto Rs. 2 Lakh.
16. Payments are accepted by Cash/ NEFT/ Card /RTGS only.
17. IV cannula and patient ID band removal and uniform changing would be done after the discharge slip is received at the nursing station.

18. Please give your valuable feedback and suggestions before leaving. We would love to hear your thoughts, concerns or problems with anything so that we can improve!
19. Kindly check your room before leaving.
20. In case any other assistance is required, please let us know at the earliest.

Stay healthy!!

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