The factors, blocking the discharge process to be streamlined using DMAIC approach

Dissertation Submitted to

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Master Business Administration (MBA) in

Hospital and health care management by

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Under the supervision and Guidance of

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Declaration by Student

I hereby certify that this dissertation, under the title ‘Discharge Time Tracking of In-patients in Apollo Multispecialty Hospitals, Kolkata’, is the authentic documentation of my original research work. I also certify that it has not been applied for a degree or diploma from any other university or institution. Information that was taken from other people's published or unpublished work has been properly acknowledged in the text.

Signature

Name of student

Date

Acknowledgement

The Dissertation opportunity I had with Apollo Multispecialty Hospitals, Kolkata was a good opportunity to learn and for professional development. I consider myself grateful to have this opportunity and the chance to meet such wonderful and professional people who supported me throughout this time.

Before all, I thank to the almighty God and my parents for their blessings and sustenance without which it would have been difficult to complete the project in required time.

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I convey my gratitude to Mrs. Poulami Roy who gave me the opportunity to be a part of Medical Admin Department

I also express my thanks to my colleagues, for their support.

In the end, I am thankful from the core of my heart to Apollo Multispecialty Hospitals, Kolkata, for the entire support in providing the required information. I am grateful for their patience and kindness.

Abstract

A medical professional, healthcare organization, or individual may formally stop a patient's episode of care or treatment using the discharge process, resources, and strategy. It comprises developing and carrying out a strategy that will allow a patient to move from a hospital to another facility or their home as needed.

Discharge time has an impact on how well the hospital operates since it influences patient satisfaction, resource utilization, income production, timely access to the patient bed, and continuity of care assurance. Inadequate patient and family involvement, an over-reliance on formal care, poor communication between medical and administrative staff, a lack of assessment and planning for discharge, inadequate notice or unplanned discharge, and a failure to pay attention to the unique needs of vulnerable groups are typical contributing factors.

So, with the help of lean six sigma and using DMIAC procedure we can analyze the problem and eventually identify the bottle necks to reduce the problems and utilize the time for necessary steps in discharge for specialized services. Here the methodology used in observational, cross sectional, descriptive type. Data has been collected primarily for 3 months for identification of factors that are leading to delays in discharge processes and interconnected. TAT time is calculated for each and step for different types of discharges (planned, unplanned, cash, credit and DAMA and in every word). Then a comparison has been made an average time calculation done which gives an idea of time taking steps in discharge process. And to reduce the time we can study the factors and resolve the issues simultaneously to make the discharge fast by implementing the solutions.

Introduction

Research on the DMIAC technique used in the Apollo Multispecialty Hospital in Kolkata's discharge process.

A patient's discharge can be broadly characterized as the use of a number of techniques and strategies by a healthcare professional, provider, organization, or individual to conclude a patient's course of treatment and care.

It entails creating and carrying out a strategy to make it easier to move a patient from the hospital to a different location. The length of the hospital stay has a significant impact on how well patients are treated, how efficiently hospital resources are used, how much money is generated, how quickly patients can get into beds, and how well they are given ongoing care.

The quality, efficiency, and patient safety of the hospital are all impacted by discharge management standards.

Several elements, such as a breakdown in communication, a delay in communication, a hold-up in patient discharges, and low patient satisfaction. When the discharge process was not efficient, it was crucial to identify the bottlenecks and implement preventative and remedial measures in order to streamline the procedure.

For scheduled, unplanned, and DAMA or day care patients, each hospital has its own discharge policy in accordance with the treatment plan, as is the case here. The issue of a delayed, poorly planned, or unscheduled discharge serves as an example of the larger difficulty in integrating health and social care.

Analyzing the cause of delays are as follows: -

1. Ineffective communication between administrative and medical staff
2. In many instances, there is a lack of assessment and discharge planning Inadequate notice or unplanned discharge
3. Inadequate involvement of patients' family
4. Excessive reliance on unofficial care.
5. Ignorance of the unique requirements of disadvantaged groups

The basics of discharge plan are: -

1. Evaluation of patient by qualified personal
2. Decision and counselling with the patient or his representative
3. Referral or cross consultation if need to be done
4. Arranging for the follow ups or test

Discharge process: -

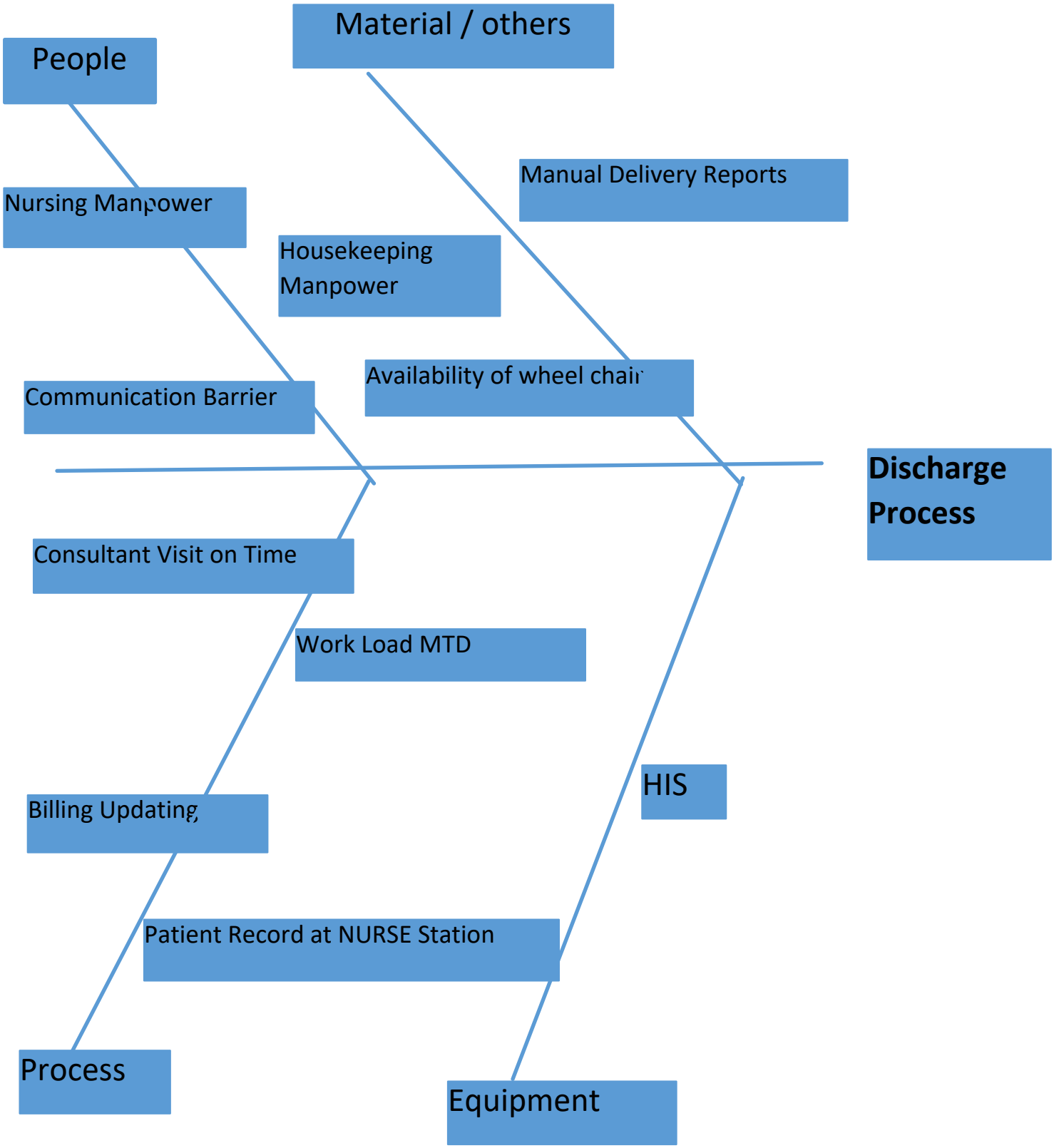
1. It is carried out only wit written order of consultant
2. Discharge summary is documented and signed by the treating doctor prior to discharge.
3. Discharge medication should be clearly understood by patient and patient relatives
4. Follow up instruction and instruction during urgent care are required

Key elements of six sigma: -

1. Based on client feedback, address their needs and maximize their happiness in the shortest amount of time
2. To determine the sources of flaws and possibilities for improvement, quantify both the defects and the opportunities.
3. Establishing measurements and processes Sigma level, defects per million opportunities, and yield are three key six sigma metrics. To assess the organization's success at the present, it is crucial to determine each of these values.
4. Team development and employee involvement since six sigma encourages the adoption of new techniques based on HR changes, new job descriptions, and classifications to enhance processes by lowering defects.

Measure the current process and data collection: -

1. A breakdown of the discharge process's work steps
2. The consultant notifies the nurse and confirms discharge
3. Creating a summary of the discharge
4. Information is sent to the multi task desk (MTD) for final invoicing (pharmacy, consumables list).
5. Nurse station received confirmation, and the patient attendant made the money to MTD.
6. Patient attendant pays the bills
7. The nurse explaining to the patient the discharge report and medication
8. Bills paid by patient's family members
9. The nurse explains the patient's medication and the discharge summary before the patient exits the room.


People
Material / others
Nursing Manpower
Manual Delivery Reports
Housekeeping Manpower
Availability of wheel chair
Communication Barrier
Discharge Process
Consultant Visit on Time
Work Load MTD
HIS
Billing Updating
Patient Record at NURSE Station
Process
Equipment

Serial no	Article	Year	Author	Objective	Findings
01.	king Hussein cancer center uses six sigma DMAIC Methodology and Discrete Event Simulation to speed up patient discharge.	2018	Mazen Arafeh, Mahmoud A , Barghash , Nirmin Haddad , nadem musharbash , dana nashawati , adnan AL Bashir , and fatina assaf.	Enhancing patient discharge processes with lean six sigma for quality in trauma care	.The length of time it took for patients to leave a cancer treatment facility was decreased using the six sigma process improvement technique. The application of the six sigma DMIAC methodology provided a structured framework for defining the project goals, comprehending the current situation, analyzing the data to identify the root causes, evaluating statistically significant improvements, and putting into place a control plan to maintain progress in the discharge process. The control phase is DMIAC.
02.	An in-depth examination of patient discharge delays from the perspective of a metropolitan teaching hospital.	2012	P Hendy, JH Patel , T Kord bacheh , n laskar, and m harbord	This longitudinal prospective study's objectives were to measure the length of unwarranted waiting time endured by patients in a general medical ward before discharge, to pinpoint common sources of waiting time, and to calculate the financial costs of discharge delays.	Because UK government targets have concentrated on admission rather than discharge, delays that prevent a safe discharge from medical wards have gotten comparatively little attention. the protocol for determining suitability. It was created and tested in the us as a method for assessing pointless hospital stays. Half of the patients' discharges were delayed, and third of those delays were preventable. One third of all delays were preventable. One quarter of patient stay cohorts were due to avoidable delays.

03.	Delays in discharge in a pediatric hospital providing tertiary care	2005	Rajendu Srivastav , Bryan L stone , Raza Patel , Mathew Swenson , Andrew davies, christophar G	Describe the quantity, length, and nature of hospital discharge delays. Describe how delays affect expenditures and total length of stay (LOS)	The following Scheduling Test Test results were used to categories delays. Surgery Consultation Patient (patients relative unavailable for decision making) Doctor accountability research, instruction, or both Planning or scheduling for discharge Resources and care available from outside sources Nearly 1 in 4 patients had an excessively long hospital stay that was medically unwarranted that lasted at least one day. The significant effects of delays on costs and LOS should serve as strong incentives to create remedies that are successful.
04.	Using the six sigma methodology to reduce hospital discharge times		Ghada r , Roland kaddoum , Hani tamim	This study's objective was to evaluate how well six sigma techniques worked for streamlining the patient discharge procedure.	To decrease discharge times, six sigma approach might be a useful change management tool. The underlying premise of six sigma should be adopted by institutions seeking to reduce discharge process delays rather than focusing on particular initiatives that can be institution-specific. Hospital operations can become clogged by delays in inpatient discharge, which also affects admissions from the emergency department, the operating room, and the general admissions unit. Factors include front-line engagement, leadership support, and repeated cycles of interventions.
05.	reasons for teaching hospital discharge delays	2014	Soraia Aparecida da silvial reginaldo Aparecido Valaciol flavia Carvalho Botelholl carlos Faria santos	to examine the reasons behind patients admitted to internal medicine wards' delayed hospital release	The two hospitals' major delays were caused, respectively, by waiting for complimentary tests. The delays were primarily caused by procedures that care teams and managers might intervene in to better. In light of the relative paucity of hospital beds and the lengthy hospital admittance waiting lists, the impact on average length of stay and hospital occupancy rates was significant and alarming.

06.	Process improvement for discharge	2007 - 2008	A case study by Barnes Jewish Hospital of st. Louis	These have included value stream assessments, in which multidisciplinary teams look at the process as it is, establish the ideal state, and pinpoint areas for performance improvement.	A few of the factors that can be impacted by the discharge process include patient satisfaction, bed availability, timely tests and procedures necessary for discharge, availability of home health equipment and services, coordination between social workers and therapists, transportation, and nursing home arrangements.
07.	utilizing the six sigma methodology to streamline and improve the hospital discharge procedure		Elvin E. Lopez, Villanueva Master in manufacturing competitiveness Carlos Gonzalez , industrial and systems engineering department polytechnic university of puerto rico	The goal of this study is to determine whether the six sigma DMIAC Methodology tool can improve operational excellence, customer satisfaction, and ultimately cost savings in the hospital discharge management process. The primary goal is to cut the patients' discharge time by 20%.	Instead of 9.00am, the billing hour begins at 8.00am. state-of-the-art technology and computers For improved communication and comprehension, the discharge procedure flow was placed in the patient's room. more skilled personnel from another department during peak times Patient education must take place not just before release but also while the patient is in the hospital. Improved communication between case managers, doctors, and nurses. Discharging summary preparation should begin at least 24 hours beforehand. Patient identification for potential discharge as soon as possible, preferably 24 hours beforehand

Research Methodology

Research Question: -

What are the factors blocking the discharge process to be streamline?

Objectives: -

To research how admissions and discharges are handled

To research the SOPs for the discharge process.

To determine the discharge process's variations.

To speed up the process, it is necessary to determine what is generating the delays.

Research Methodology: -

According to descriptive cross-sectional study, observational study design, and convenient sampling, the study is carried out at The Apollo Multispecialty Hospital in Kolkata. 300 discharges were used as the sample size, and the investigation took three months.

Inclusion Criteria: -

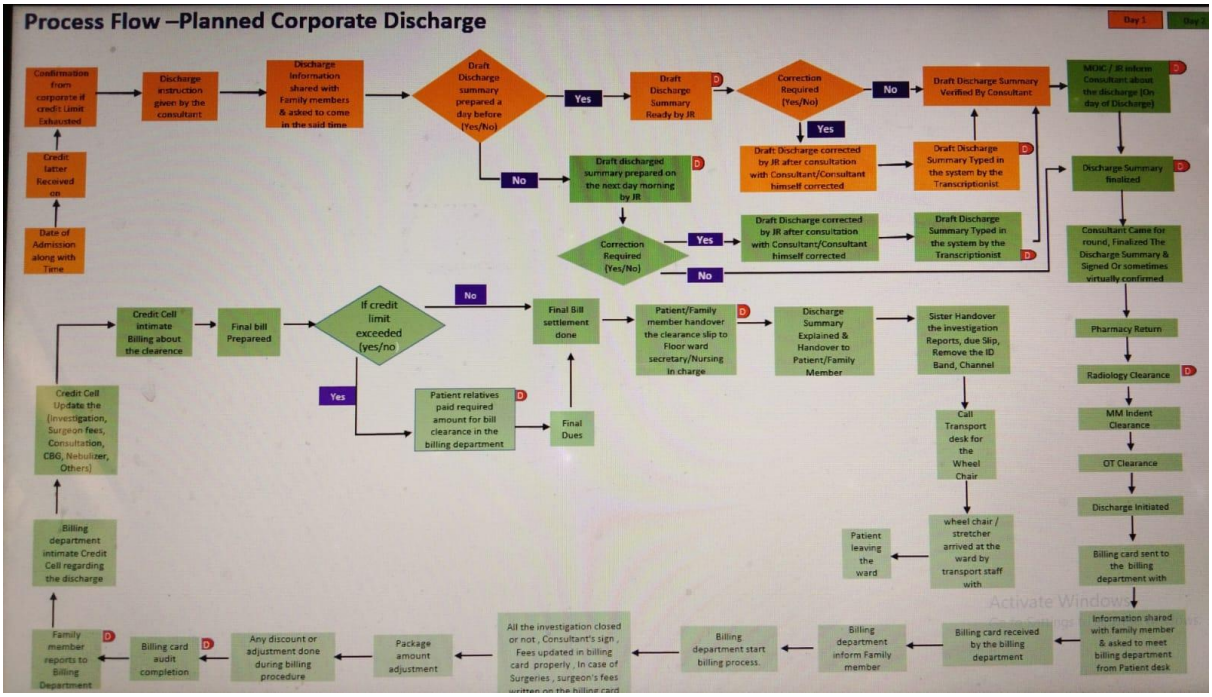
Patient who go through normal discharge, DAMA, CODE Z, Daycare, planned and unplanned.

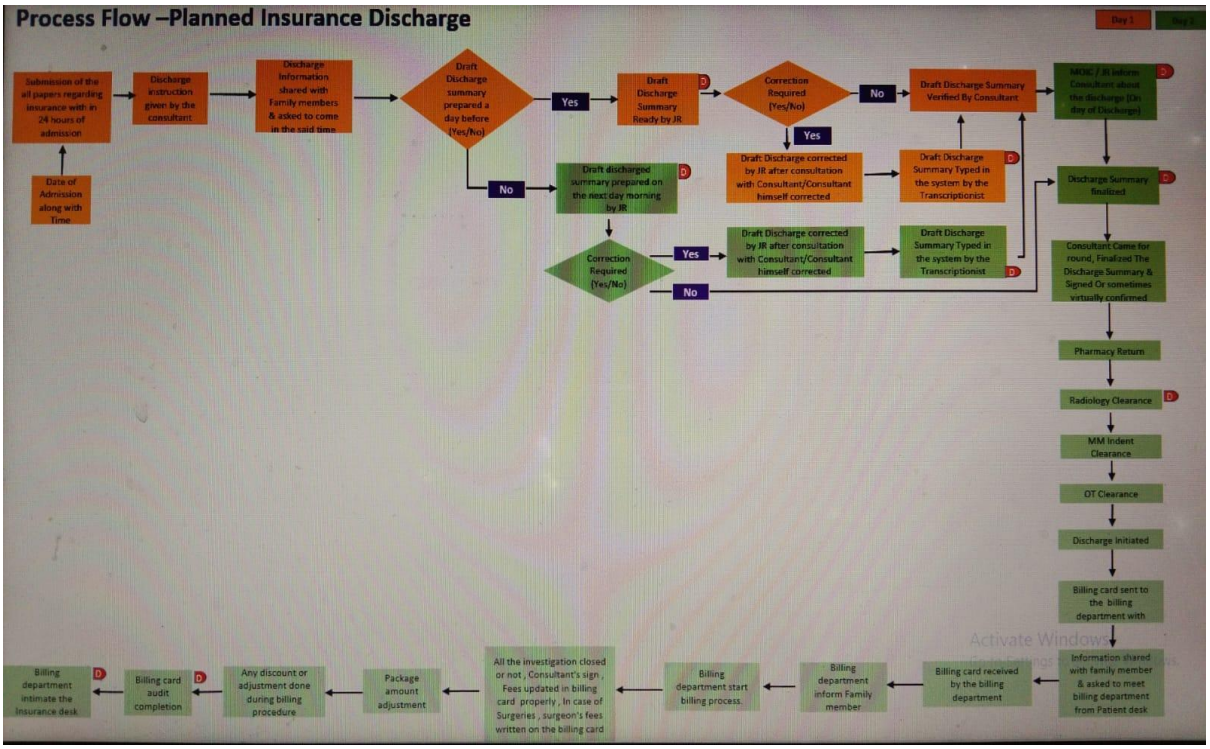
Exclusion criteria: -

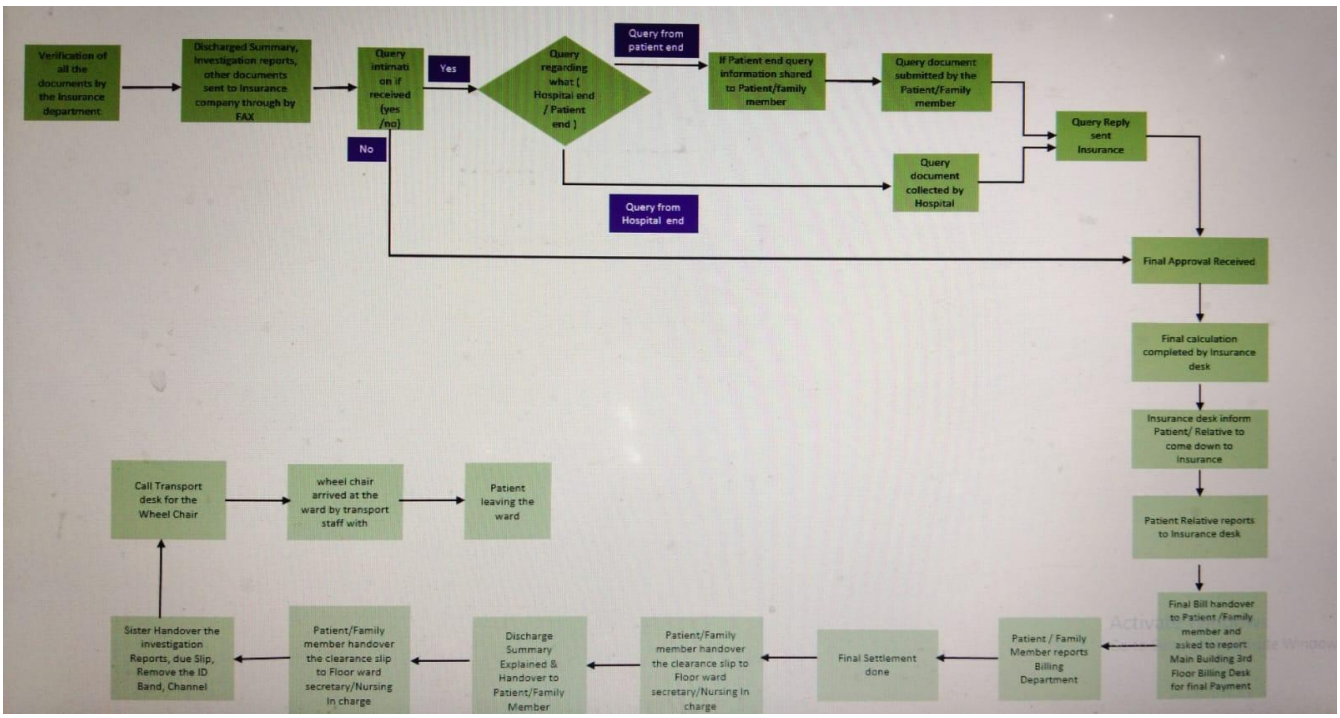
Patient who gets discharge from minor procedures and ED etc.

source of the information the information was gathered by looking at different wards on each level, monitoring discharge data using the ATHMA program, and interacting with other IP coordinators. MS Excel was used to assist in the analysis, which included root cause analysis.

Process Flow: -






Verification of all the documents by the Insurance department
Discharged Summary, Investigation reports, other documents sent to Insurance company through by FAX
Query intimation if received (yes /no)
Yes
No
Query regarding what (Hospital end / Patient end)
Query from patient end
If Patient end query information shared to Patient/Family member
Query document submitted by the Patient/Family member
Query from Hospital end
Query document collected by Hospital
Query Reply sent Insurance
Final Approval Received
Final calculation completed by Insurance desk
Insurance desk inform Patient/ Relative to come down to Insurance
Patient Relative reports to Insurance desk
Final Bill handover to Patient /Family member and asked to report Main Building 3rd Floor Billing Desk for final Payment
Patient / Family Member reports Billing Department
Final Settlement done
Patient/Family member handover the clearance slip to Floor ward secretary/Nursing In charge
Discharge Summary Explained & Handover to Patient/Family Member
Patient/Family member handover the clearance slip to Floor ward secretary/Nursing In charge
Sister Handover the investigation Reports, due Slip, Remove the ID Band, Channel
Call Transport desk for the Wheel Chair
wheel chair arrived at the ward by transport staff with
Patient leaving the ward

DATA Analysis

The data driven improvement cycle known as DMAIC (Define, Measure, Analyze, Improve and Control) is used to enhance, optimize, and stabilize business processes and design.

Phase 1 – Define the problem

- The complicated hospital discharge process contributes significantly to patient discontent by lengthening hospital stays, wasting money, and making beds unavailable. Delay in admitting new patients, etc.

Phase 2 – Gap identified in existing manpower

Nurse time calculation: Time spent by the nurse informing the patient's family of their impending discharge.

- IP Coordinator time was calculated by subtracting the time spent by the doctors from their total time.

- Signed the discharge summary that the wards had received.

Time taken by GDA to transfer a discharge report from the wards to the TPA desk is calculated as GDA time.

Calculating billing time: The time required by the billing department to clear patients for planned discharge

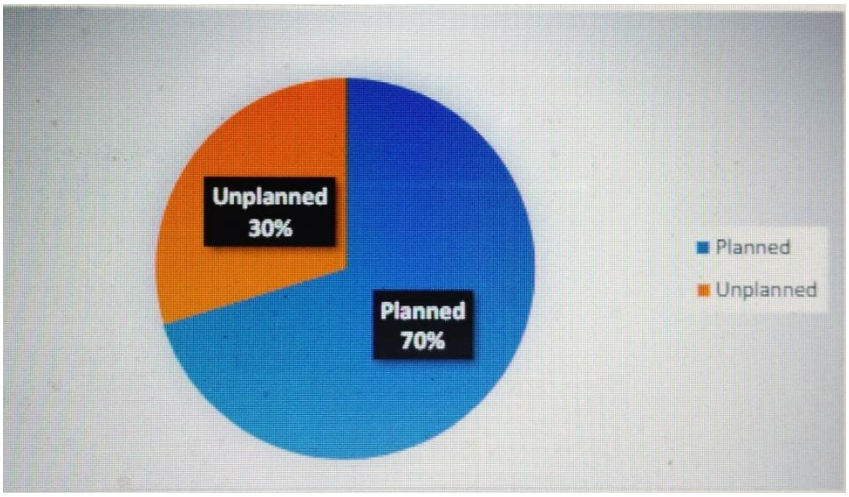
Calculated patient time includes the time it takes the patient to be moved out of the hospital when there isn't a proper clearance.

Calculation and evaluation of factors:-

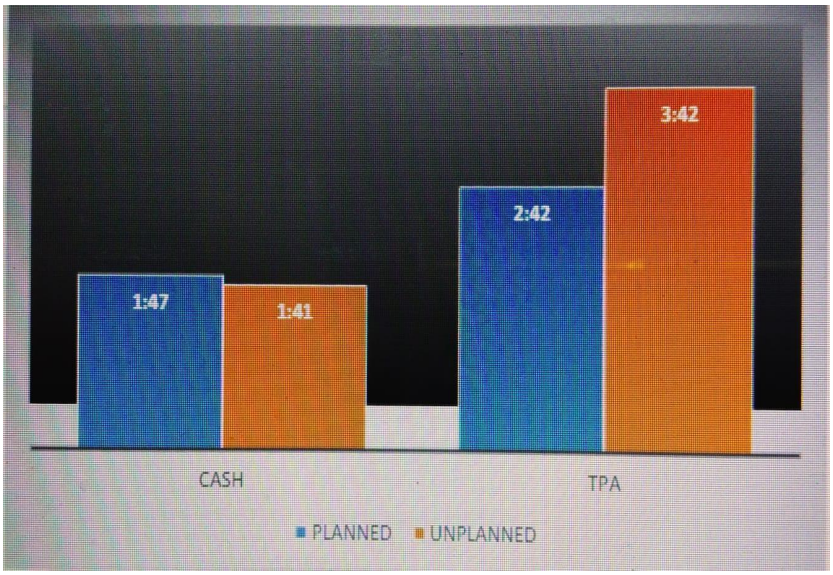
Category	Sample size
Cash	442
Tpa	440

Average time calculated for various steps in discharge process:-

01.	Average time taken to mark the patient after consultant order time	15 to 30 mins
02.	Average time taken to finalize discharge summary Corrected by doctor	45 mins
03.	Average time taken By patient clear all the bills in for cash patients	30mins to 2 hours
04.	Average time taken by the nursing staff to make the returns	20 to 30 mins
05.	Average time taken by the TPA for clearance	3 to 4 hours
06.	Average time taken by the billing department to send the bill to TPA for TPA patients	1 to 1.30 hours

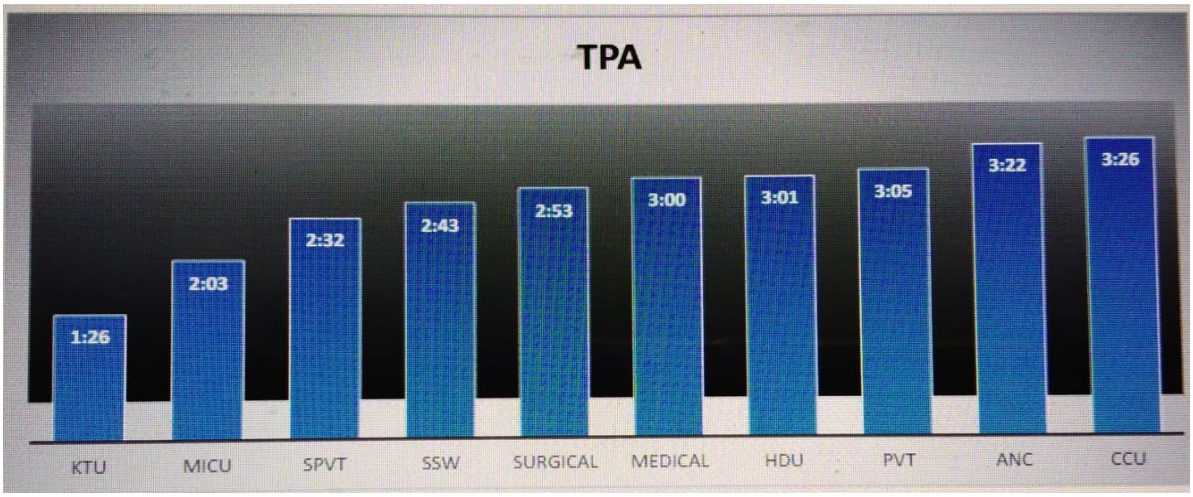


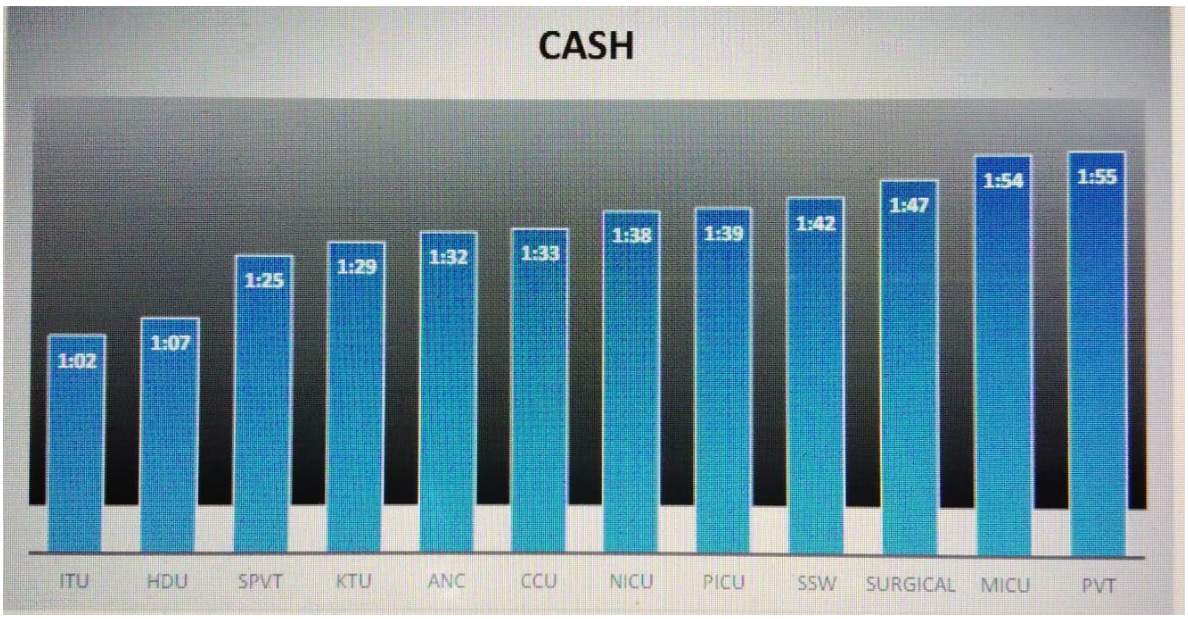
Number of Discharge – Planned or Unplanned

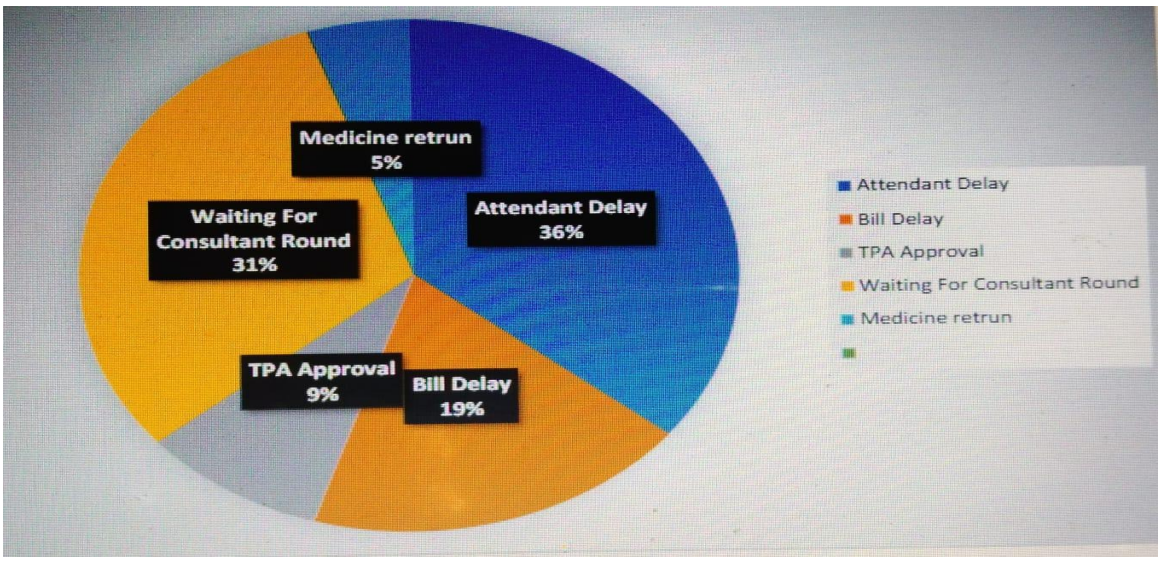


	Cash	TPA
Planned	1.47	2.42
Unplanned	1.41	3.42

Ward wise TAT for TPA and Cash Patients :-






Medicine retrun
5%
Attendant Delay
36%
Waiting For
Consultant Round
31%
TPA Approval
9%
Bill Delay
19%
Attendant Delay
Bill Delay
TPA Approval
Waiting For Consultant Round
Medicine retrun

Interpretations

- On an average the discharge time for a cash patient is 2 to 3 hours
- The maximum time taken to discharge a patient is of TPA
- The shortest time taken to discharge a patients is of Corporate patients
- Time taken for discharge patient is less in planned patients than unplanned patients

Phase IV Improve: - Implement Best solution: -

Serial number	Reasons	Solutions
01.	Discharge summary is prepared by surgery residents and it causes delay when they are busy in O.T	A different standard pattern can be made with the help of EMR
02.	Multiple correction of discharge summary at the time of discharge and it frequently occurs at the time of unplanned patients and TPA PATIENTS	Cross referrals can provide update with the help of an application and in the final discharge summary
03.	Unplanned discharge in case of TPA and cash patients	They can be converted into planned discharge
04.	Last minute cross referrals	It can be done digitally as patients don't have to wait for the doctor's visit physically
05.	Delay summary preparation by the resident doctor or rmo	Resident doctors should prepare the summary on previous day instead of next day, so that on next day consultant can verify the discharge summary during round

At the time of Payment of bills and some other reasons:-

Reasons for delay during billing: -

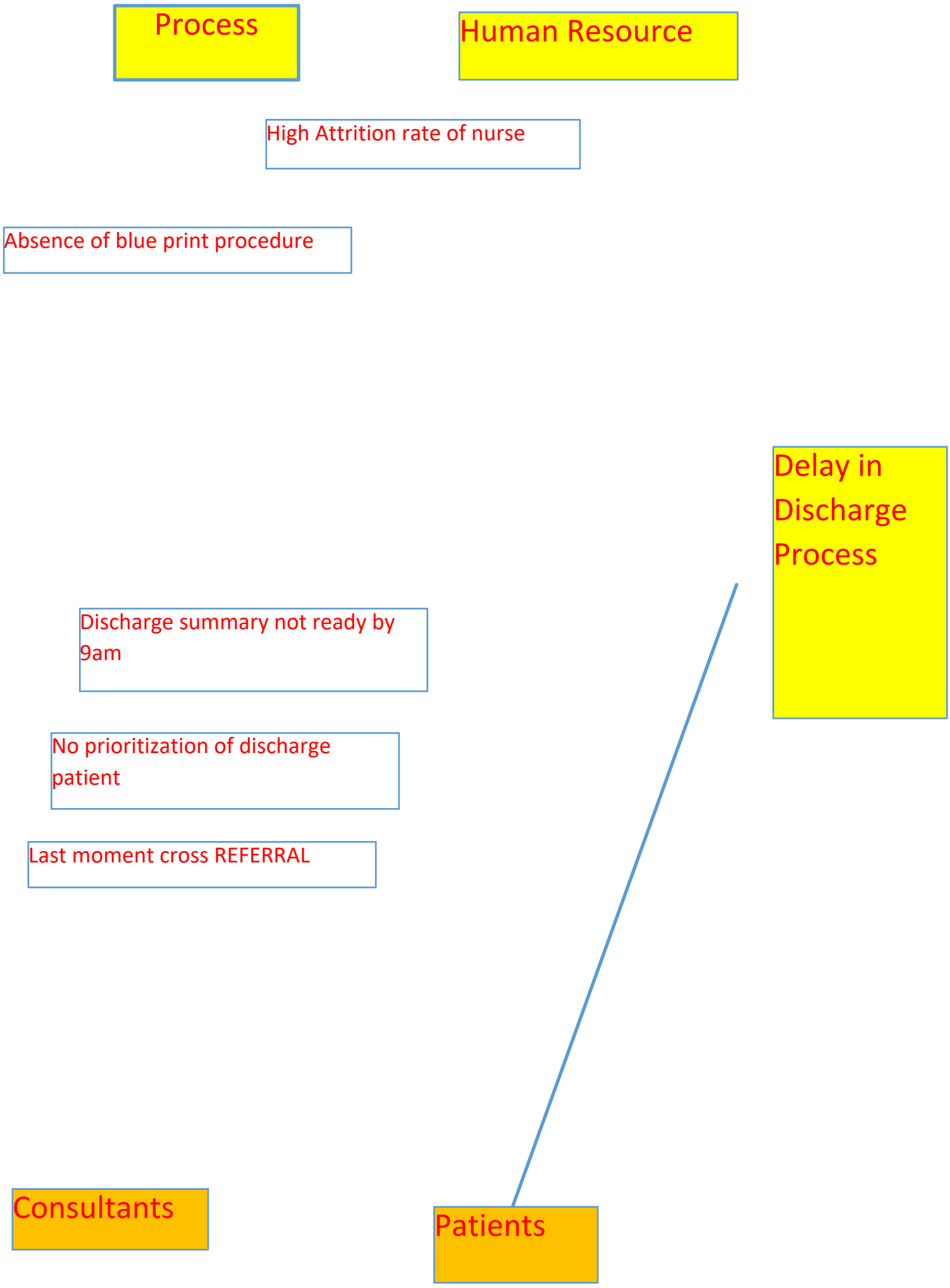
Serial number	Reasons	Solutions
01.	Patient unwillingness to take patient home if it is near 12 noon	Early completion of billing procedure before lunch time
02.	Cash Patient unavailability of funds	Counselling and a low treatment package design can be available. for example – Different brands of medicines can be used for them
03.	TPA patients : Denials of application , queries from insurance companies	Regular follow up and quick conversation TPA to cash should be done
04.	Corp[orate patient ; Denial of application indenting of medicines	HIS update, will timely update pharmacy
05.	Unavailability of housekeeping staff for transport	Recruitment and dedicated distribution of GDA staff
06.	Pilling of discharge summary at typing pool	More recruitment for making discharge summaries.

Phase V: - Control: ACHIEVED

As it has been observed, discharge summaries take time to complete and have an impact on other stages that are ongoing. Some of them communicate personally using Whatsapp.

Ethical Consideration:-

- There won't be any unethical behavior when conducting research.
- We will take the necessary steps to guarantee data confidentiality and privacy.
- We can pinpoint the causes and operational bottlenecks of hospitals thanks to my research.
- The study will examine patient satisfaction at the very end of treatment and also streamline the Apollo Multispecialty Hospital's current discharge procedure.


Process
Human Resource
High Attrition rate of nurse
Absence of blue print procedure
Delay in Discharge Process
Discharge summary not ready by 9am
No prioritization of discharge patient
Last moment cross REFERRAL
Consultants
Patients

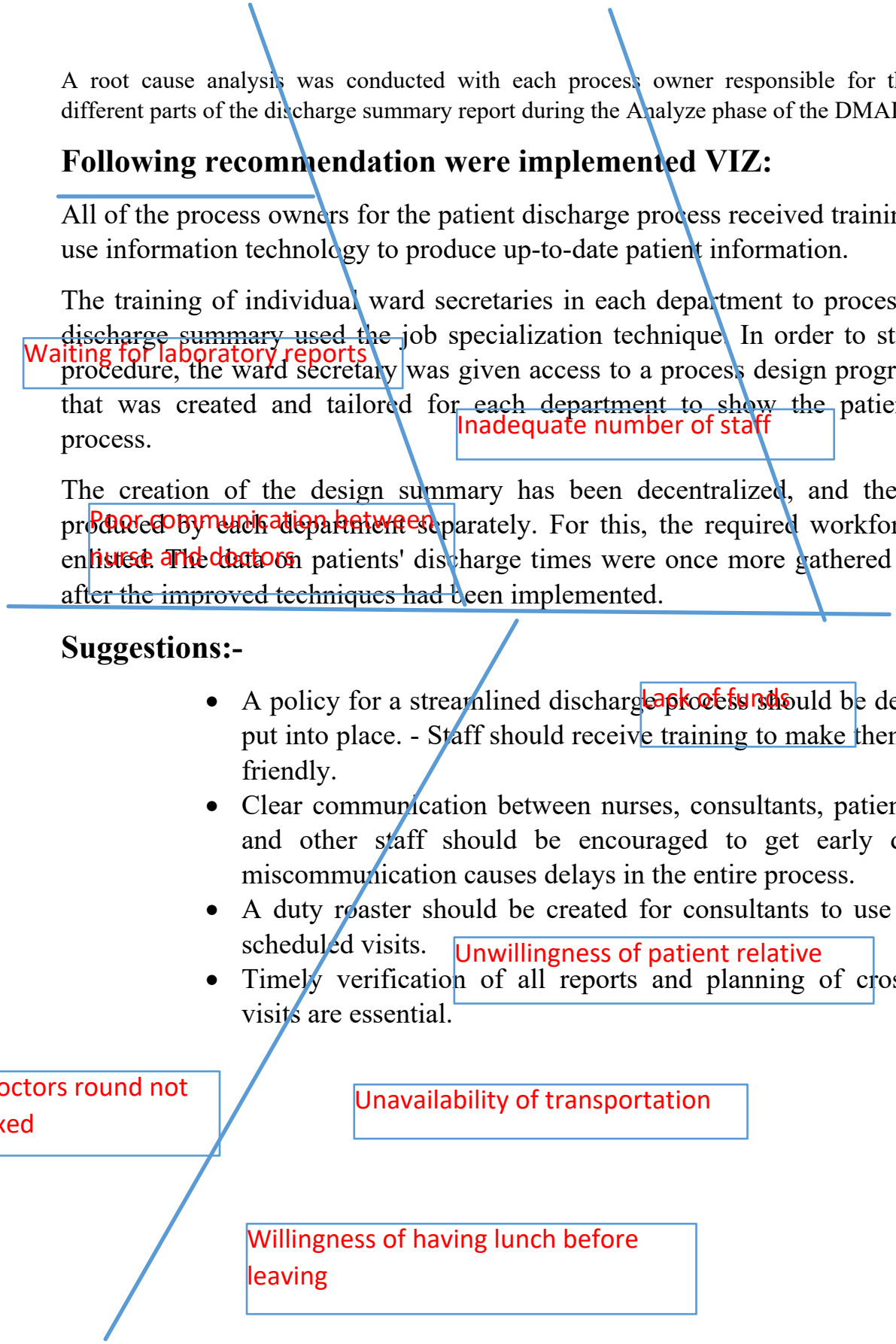
A root cause analysis was conducted with each process owner responsible for the creation of different parts of the discharge summary report during the Analyze phase of the DMAIC.

Following recommendation were implemented VIZ:

All of the process owners for the patient discharge process received training on how to use information technology to produce up-to-date patient information.

The training of individual ward secretaries in each department to process the patient discharge summary used the job specialization technique. In order to streamline the procedure, the ward secretary was given access to a process design programmer chart that was created and tailored for each department to show the patient discharge process.

The creation of the design summary has been decentralized, and the reports are produced by each department separately. For this, the required workforce has been enlisted. The data on patients' discharge times were once more gathered in 2 months after the improved techniques had been implemented.



Suggestions:-

- A policy for a streamlined discharge process should be developed and put into place. - Staff should receive training to make them more tech-friendly.
- Clear communication between nurses, consultants, patients' relatives, and other staff should be encouraged to get early discharge as miscommunication causes delays in the entire process.
- A duty roaster should be created for consultants to use during their scheduled visits.
- Timely verification of all reports and planning of cross-consultant visits are essential.

Conclusion

The discharge process in a hospital is as important as other process not only for the patient but for the hospital as well. As it holds commercial value as well. This process involves multi faces and many people at a single point of time and creates many bottle necks which further causes delays.

These bottle necks are identified and solutions can be implemented in pathway to reduce the wastage of time and improving the process. Other steps which are followed in the pathway is value stream mapping. Altogether, DMIAC also helps in taking the right decision and making the process smooth and effective.

In discharge process, many time events have been identified like at billing point, drug return, TPA processing and further taking the right decision and reducing time wastage to smooth the process.

Part 2

(Internship report)

Introduction

The internship is an integral platform for someone to learn and gain experience in an actual workplace. The internship at The Apollo multispecialty hospital Kolkata. I was posted in IPD operations as an operation executive. Here, I have to work in ward as in coordination with nursing staff and other managers like food and beverages, maintenance, housekeeping and deputy medical superintendent.

Here, in wards we have to do take care of quality care, patient safety goals, management of service in wards like timely consultations, nursing rounds and dietary service. Timely consultations include round of doctors, cross consultations, if pending. Other responsibilities are related to nursing care which includes timely medication administration, time to time counselling of patients regarding their treatment at bed side and many more related to the maintenance and dietary supply of patients.

One of the main responsibilities in IPD operations is patient discharge process which includes many people at the same time for many patients in the discharge process. Ensuring all the tasks get don related to patient discharge like pharmacy return, new medicine indentation for the credit patients here, the most important part is documentation and filing done by nursing staff which goes to the TPA for credit patients and corporate patients.

Other than this, we have to keep check on financial payment of the patients and updating about the negative balance of the patients to the management. Making a data sheet of long stay patients and then discussing about their medical conditions with the management. Other aspects also include giving the presentation of all MRDs done, discharge tracker and data of DAMA patients in front of higher management.

Objective of internship:-

- Mastering technical skills and gaining essential knowledge about hospital operations
- Polishing the skills of patient dealing and counselling
- Learning about implementation of patient safety goals in the hospital.
- Assessment of quality care of patient
- Doing quality audits

Organization Profile:-

Hospitals with specialties like Apollo The people we have had the pleasure of serving view Kolkata, a 700-bed multispecialty tertiary care hospital, as the ideal blend of technological supremacy, complete infrastructure, expert treatment, and warm hospitality.
For the 12th year running, Apollo Hospitals in Kolkata has been named the finest private hospital in all of eastern and north eastern India by the Week Hansa Research Best Hospital Survey. One of the most cutting-edge multi-specialty tertiary care institutions in the area is the hospital. In three buildings on the same grounds, Apollo Hospitals in Kolkata provide comprehensive and integrated super specialty services, including a specialised, cutting-edge oncology centre and a gastro sciences and liver transplant facility.
The medical facility takes pride in working with notable experts who have the skills required to utilise cutting-edge technology for precise diagnosis and treatment. The hospital is accredited by both Joint Commission International (JCI) and the National Accreditation Board for Hospitals and Healthcare Providers (NABH). The hospital's labs have received accreditation from the National Accreditation Board for Testing and Calibration Laboratories (NABL), a Constituent Board of the Quality Council of India. Additionally, it has developed individualised health check programmes that are tailored to each person's lifestyle needs and employ artificial intelligence to predict and prevent non-communicable diseases to which a person is predisposed. Rephrasing necessary. The hospital's lab is NABL recognised, while the blood bank has NABH certification. For food and beverage, information security management, and environment management systems, ISO accreditations are among the additional certifications. Additionally NABH accredited is the hospital's Ethics Committee. Clinical Excellence - Apollo Hospitals, Kolkata's powerful team of top medical professionals has earned the facility praise for its ground-breaking efforts.
A high-quality patient experience is also emphasised in all areas to guarantee that frequent checks are in place. The clinical results attained by Apollo Hospitals in Kolkata are on par with those at the best universities worldwide.

Infrastructure: According to the patients we've had the pleasure of serving, Apollo Hospitals, Kolkata, a 700-bed multispecialty tertiary care hospital, is a perfect blend of technological excellence, complete infrastructure, competent treatment, and caring hospitality.

It the hospital has 13 occupational therapists, a large laboratory, and diagnostics in addition to 180 ultra-modern ICU beds, including N.I.C.U. and P.I.C.U., manned

around-the-clock by critical care specialists. Twenty beds are available in the modern emergency room.

Key activities / project undertaken other than Dissertation:-

Responsibilities

- To maintain high satisfaction through the process driven services
- Reduce / eliminate patient refusals , management of beds to accommodate patients in every single available bed in hospital
- Prevent financial loss to the hospital by monitor under billing and pilferage
- To receive patients and meet them within half an hour of admission during working hours and next day morning immediately after joining duty.
- To ensure availability of bed in coordination with all stakeholders
- To take round and meet every patients in the wards daily
- To ensure preparation of room / bed before new admission , internal transfers
- To ensure immediate start of treatment once the patient admitted
- Monitor delivery of stat medications, pharmacy items etc.
- To ensure proper food facility for the patient like food served is hot and served at right time, keeping in record the dietary habits choice for tea and coffee.

Continuing in achieving of revenue growth of the hospital

- To ensure and minimize all delays in rendering or treatment towards improving ALOS all medical and surgical patients
- To carry out daily billing audit of all patients to avoid billing leakage
- To ensure proper entry of bedside procedure in system
- To ensure every bill is checked before it is handed over to patient
- To ensure re counselling done after change the procedures and surgery

Maximize planning: - to focus on streamline the planned discharge:-

- To ensure and maintain discharge TAT of 1 -2 hours for cash patient and 2 – 3 hours for sponsor patients
- Floor coordinators to inform billing and pharmacy for task clearance after patient gets marked for discharge
- To ensure and minimize relatives / attendant's movement in the hospital to fulfill formalities like discharge , TPA formalities and billing unless the settlement is required
- To share update billing / approximate billing to every patient every day especially in private / twin sharing rooms
- To ensure unplanned discharges are ordered before 12 noon
- To ensure discharge summary , pharmacy clearance is carried out for every planned discharge

Key Learning:-

- Learning the proceedings in ward about the discharge process and patient safety goals
- Learning about the quality audits like DAMS, MRD
- Learning about the operations process in hospital
- Focusing on revenue collection by making data of LONG stay patients and negative balance
- Identifications of various codes used in hospital like, CODE BLACK, CODE PURPLE, and CODE PINK etc.
- Improving the discharge processes and other pharmacy identification
- Doing medicine audits and daily issues in wards
- Observing about the infection control
- Ensuring quality care for all the patients
- Improving ALOS for medical and surgical patients
- Keeping a proper check on quality of other services like diet, nursing care and timings.

Thank you