

# **Dissertation Training**

**RAJIV GANDHI CANCER INSTITUTE AND RESEARCH  
CENTRE**

(March 11<sup>th</sup> to June 14<sup>th</sup>, 2022)

A Report on

**STUDY ON DISCHARGE PROCESS IN RAJIV GANDHI CANCER  
INSTITUTE AND RESEARCH CENTRE, NEW DELHI:**

By

Dr. Monika

Enroll No. - PG/20/033

Under the guidance of  
Dr. Sumant Swain

Post -graduate Diploma in Hospital and Health

Management2020-2022



**International Institute of Health Management Research,  
New Delhi**

## Completion of Dissertation from Rajiv Gandhi Cancer Institute and Research Centre

The certificate is awarded to

Dr. Monika

in recognition of having successfully completed his/her  
Internship in the department of

Quality Department

and has successfully completed her Project on

**STUDY ON DISCHARGE PROCESS IN RAJIV GANDHI CANCER INSTITUTE AND RESEARCH  
CENTRE, NEW DELHI**

From: 11<sup>th</sup> March to 14<sup>th</sup> June 2022

at

**Rajiv Gandhi Cancer Institute and Research Centre , Rohini , New Delhi**

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

We wish her all the best for future endeavors.

Training & Development

Zonal Head-Human Resources

Dissertation Writing

## TO WHOMSOEVER IT MAY CONCERN

This is to certify that Dr. Monika of PGDM (Hospital and Health Management) from International Institute of Health Management Research, New Delhi has undergone internship training at Rajiv Gandhi Cancer Institute and Research Centre, New Delhi from 11<sup>th</sup> March 2022 to 14<sup>th</sup> June 2022.

The Candidate has successfully carried out the study designated to him 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 him all success in all her future endeavors.



*Associate Dean, Academic and Student Affairs*

IIHMR, New Delhi



**Dr. Sumant Swain**

*Assistant Professor*

IIHMR, New Delhi

## Certificate of Approval

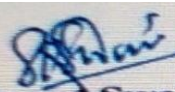
The following dissertation titled “**Study on discharge process in Rajiv Gandhi Cancer Institute and Research Centre**” is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of **PGDM (Hospital & Health Management)** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed, or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

Dissertation Examination Committee for evaluation of dissertation.

**Name**

**Dr. Sumant swain**

**signature**



**Dr. Sumant Swain**  
*Assistant Professor*  
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**INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT AND  
RESEARCH, NEW DELHI**

**CERTIFICATE BY SCHOLAR**

This is to certify that the dissertation titled **"Study on discharge process in Rajiv Gandhi Cancer Institute and Research Centre "New Delhi"** and submitted by **Dr Monika**, Enrollment No. **PG/20-22/033** under the supervision of **Dr. Sumant Swain** for the award of PGDM (Hospital & Health Management) of the Institute carried out during the period from **11<sup>st</sup> March to 14 June 2022.** 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

### Certificate of Approval

The following dissertation titled "Study on Discharge Process In Rajiv Gandhi Cancer Institute And Research Centre, New Delhi" at "Rajiv Gandhi Cancer Institute and Research Centre" is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of **PGDM (Hospital & Health Management)** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

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CERTIFICATE ON PLAGIARISM CHECK

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Title of the Dissertation/Summer Assignment	<u>Study on discharge process in Rajiv Gandhi Cancer Institute</u>		
Plagiarism detect software used	<u>"TURNITIN"</u>		
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## FEEDBACK FORM

Name of the Student: Dr Monika

Name of the Organisation in Which Dissertation Has Been Completed:  
Rajiv Gandhi Cancer Institute and Research Centre

Area of Dissertation: Quality

Attendance: Satisfactory 100%.

Objectives achieved: Satisfactory

Deliverables: Satisfactory

Strengths: Keen Observer, Great Presentation Skills, Hard-Working, Good Communication Skills

Suggestions for Improvement: NA

Suggestions for Institute (course curriculum, industry interaction, placement, alumni): Satisfactory

*Renu*  
Signature of the Officer-in-Charge/ Organisation Mentor (Dissertation)

Date: 17.06.2022

Place: Delhi

Dissertation Writing



## Acknowledgments

I am extremely thankful to everyone at **Rajiv Gandhi Cancer Institute and Research Institute** for sharing generously their valuable insight and precious time which motivated me to do my best during dissertation.

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**Dr. Monika**

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## **ABBREVIATIONS**

- CR. No.: Central Registration Number
- HIS : Hospital Information System
- RIS : Radiology Information System
- PET –SCAN : Positron Emission Tomography
- MRI : Magnetic Resonance Imaging
- CT-SCAN : Computed Tomography Scan
- OPD : Outpatient Department
- IPD : Inpatient Department
- IAU : Internal Assessment Unit
- PAC : Pre-Anesthetic Checkup
- FDE – Front Desk Executive
- TAT: Turnaround Time
- OT: Operation theatre
- Min: Minutes
- PT: Patient
- DMAIC : Define , Measure , Analyze , Improvement and Control
- TPA: Third Party Administrator MRD: Medical Record Department

## **ABSTRACT**

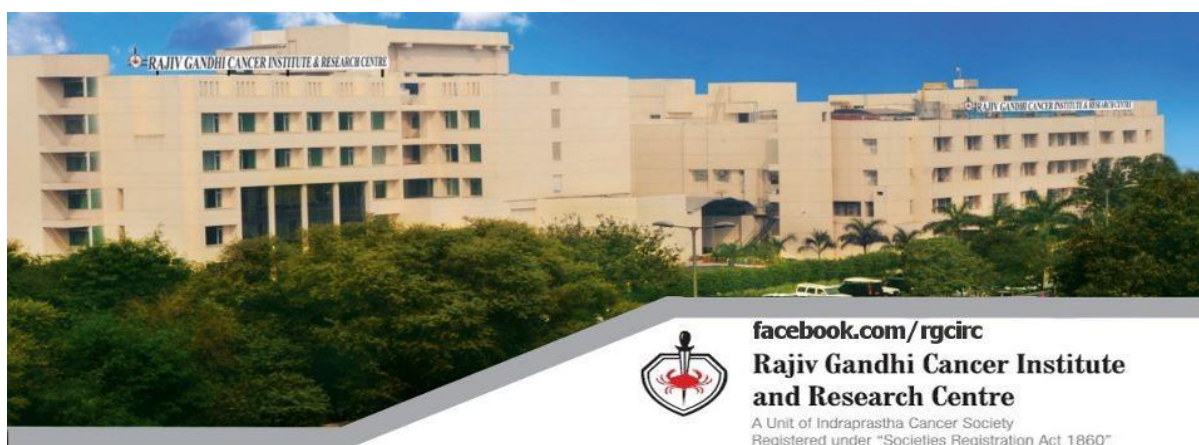
Short discharge time from hospitals increases both bed availability and patients' and families' satisfaction. In this study, the DMAIC improvement methodology was applied to reduce patients' discharge time in a cancer treatment hospital. Data on the duration of all activities, from the physician signing the discharge form to the patient leaving the treatment room, were collected through patient shadowing. These data were analyzed using detailed process maps and cause-and-effect diagrams. Fragmented and unstandardized processes and procedures and a lack of communication among the stakeholders were among the leading causes of long discharge times. Categorizing patients by their needs enabled better design of the discharge processes. Discrete event simulation was utilized as a decision support tool to test the effect of the improvements under different scenarios. Simplified and standardized processes, improved communications, and system-wide management are among the proposed improvements, which reduced patient discharge time to 178 minutes from 200 minutes. .

## **Dissertation Report**

### **CHAPTER-1**

#### **OVERVIEW OF HOSPITAL**

#### **RAJIV GANDHI CANCER INSTITUTE AND RESEARCH CENTRE**



#### **INTRODUCTION**

- As one of Asia's leading cancer centres, the "Rajiv Gandhi Cancer Institute & Research Centre" (RGC& RC) has access to cutting-edge technologies.
- Because of the services it provides, the Institute has been accredited by "NABH" (National Accreditation Board for Hospitals and Healthcare) and "NABL" (National Accreditation Board for Testing and Calibration Laboratories). It is a project which is visionary of "Indraprastha Cancer Society and Research Centre" which is to provide the patient with the care he or she requires. This society was established in 1994 under the "society registration act."



- In spite patient's care which is considered to be the main objective of the society, it also works on the investigation of the disease incidence, distribution, symptoms and the cause.
- The institute began operations on July 1, 1996, with "Hon'ble Smt. Sonia Gandhi" performing the opening ceremony.
- On the "20th August 1996," President of India "Dr Shankar Dayal Sharma" performed the formal inauguration, which was also attended by other dignitaries. RGCIR & RC offers a wide range of medical, surgical, and radiation-related treatments.
- Super experts also use an organ-specific multi-disciplinary approach to diagnose and treat cancer, with the Tumor Board serving as a second opinion that is more critical than the others. RGCIRC is the largest cancer treatment Centre in the
- The outpatient services are spread across three floors and include 57 consultation rooms as well as well-designed "Radiation Therapy Rooms." RGCIRC features eight modular operating rooms with three-stage air filtration and gas scavenging systems, as well as two minor operating rooms for day-care surgeries.
- The hospital has a Surgical ICU with 27 beds and a Medical ICU with 11 beds. There are certain supportive services available, such as "Renal Replacement Therapy
- RGCIRC is one of India's top ten "Oncology Hospitals," as well as the winner of the "Best Oncology Hospital in India" title at the 2014 Healthcare Achievers Awards.
- The Institute has a 51-bed surgical intensive care unit, a 21-bed medical intensive care unit, a dedicated Leukemia ward, a separate Thyroid ward, and an independent 22-bed bone marrow transplant unit that is credited with pioneering unrelated donor

transplants, MUD transplants, and stem cell transplants. Renal Replacement Therapy, different endoscopies (including EBUS and Endoscopic Ultrasound), and other supportive services are available

- RGCIRC has continuously been recognized among India's Best Oncology Hospitals and has won numerous accolades, including the National Business Leadership & Service Excellence Award 2017 for Best Oncology Hospital in India, the Indymed Medical Excellence Award 2017, and others.
- India Today (Reader's Digest) named us the Most Trusted Hospital in Oncology in 2017, India's Most Trusted Hospital for Oncology (Reader's Digest Most Trusted Brands 2016), and runner-up in the Fire & Security Association of India's Finest India Skills & Talent Award 2020.
- RGCIRC is an excellent example of a "not for profit" organization augmenting government efforts in the healthcare field.

## **VISION, MISSION AND VALUES**

### **1. VISION: -**

- To Provide Affordable Oncological Care of International Standard And Help To Eliminate Cancer From India Through Research, Education, Prevention & Patient care.

### **2. MISSION**

- To be India's leading cancer care provider, with patients, caregivers, faculty, - and students choosing us above others.
- By Offering comprehensive services at an affordable price
- And excellence of our personnel leveraging best technology

### **ACCREDITATION: -**

- NABH Accreditation for Hospital
- NABH Accreditation for Blood Bank
- NABH Accreditation for Ethics Committee
- NABL Accreditation for Laboratory Services
- NABH Certification for Nursing Excellence
- Green OT Certification from Bureau Veritas

## **SERVICES PROVIDED BY HOSPITAL: -**

### **SERVICES**

A) Standards: International







B) Emergency Department: Yes

C) Bed Availability (Rohini): 498 (Currently)

### **OTHER SERVICES**

- Physiotherapy
- Palliative
- Day Care
- Emergency
- Counseling
- Telemedicine
- Pharmacy
- Prevention
- Preventive
- Physiotherapy
- Palliative

### **EMERGENCY CODES**

<b><u>CODES</u></b>	<b><u>SITUATION</u></b>
BLUE 	INDIVIDUAL DISASTER
RED 	FIRE EMERGENCY
PINK 	MISSING PERSON
YELLOW 	EXTERNAL DISASTER
PURPLE 	DANGEROUS PERSON
BLACK 	BOMB THREAT

## **Treatment of Cancer**

- “Blood Cancer Treatment”
- “Bone Cancer Treatment”
- “Bone Marrow Transplant”
- “Breast Cancer Treatment”
- “Cervical Cancer Treatment”
- “Head & Neck Cancer Treatment”
- “Liver Cancer Treatment”
- “Lung Cancer Treatment”
- “Pancreatic Cancer Treatment”
- “Pediatrics Cancer Treatment”
- “Prostate Cancer Treatment”
- “Mouth Cancer Treatment”
- “Throat Cancer Treatment”
- “Urinary Bladder Cancer Treatment”

## **Strategies**

“RGCI&RC has executed strategic alliances with internationally renowned institutes such as Thomas Jefferson University; this has catapulted RGCI & RC into global league of select hospitals that are pioneers in a new approach to treating cancer”.

## **Conclusion**

RGCI & RC is a one-of-a-kind cancer care institution in Northern India, capable of diagnosing and treating all types of cancers. The hospital's distinguishing feature is its highly qualified doctors and employees, as well as an experienced management team. Its research program contributes to the continuous enhancement of therapy and care for patients of all types.

Their management / administration team eases out every situation / issue faced by the patient effectively. Ambience of the hospital, services provided to the patient is excellent.



## **DEPARTMENTS OBSERVED /VISITED/ WORKED**

- 1. Initial Assessment Unit**
- 2. Pre-anesthetic Check-up**
- 3. Out-patient Department**
- 4. In-Patient Department**
- 5. Radiology Department**

## **OBSERVATIONS AND LEARNINGS: -**

### **a) Initial Assessment Unit: -**

- **Initial Assessment Units** are located in all OPD areas. Here a detailed patient history, past medical history, and history of present illness are taken to ensure nothing is missed while making a diagnosis.
- It is a first point of contact for OPD patients where vitals (Height, weight, Pulse , BP ) was checked by the Nurse and their medical history was studied and the patient was further counseled by the Junior Doctor and then the patient's file was further sent by GDA to respective Consultant or Physician for further process .

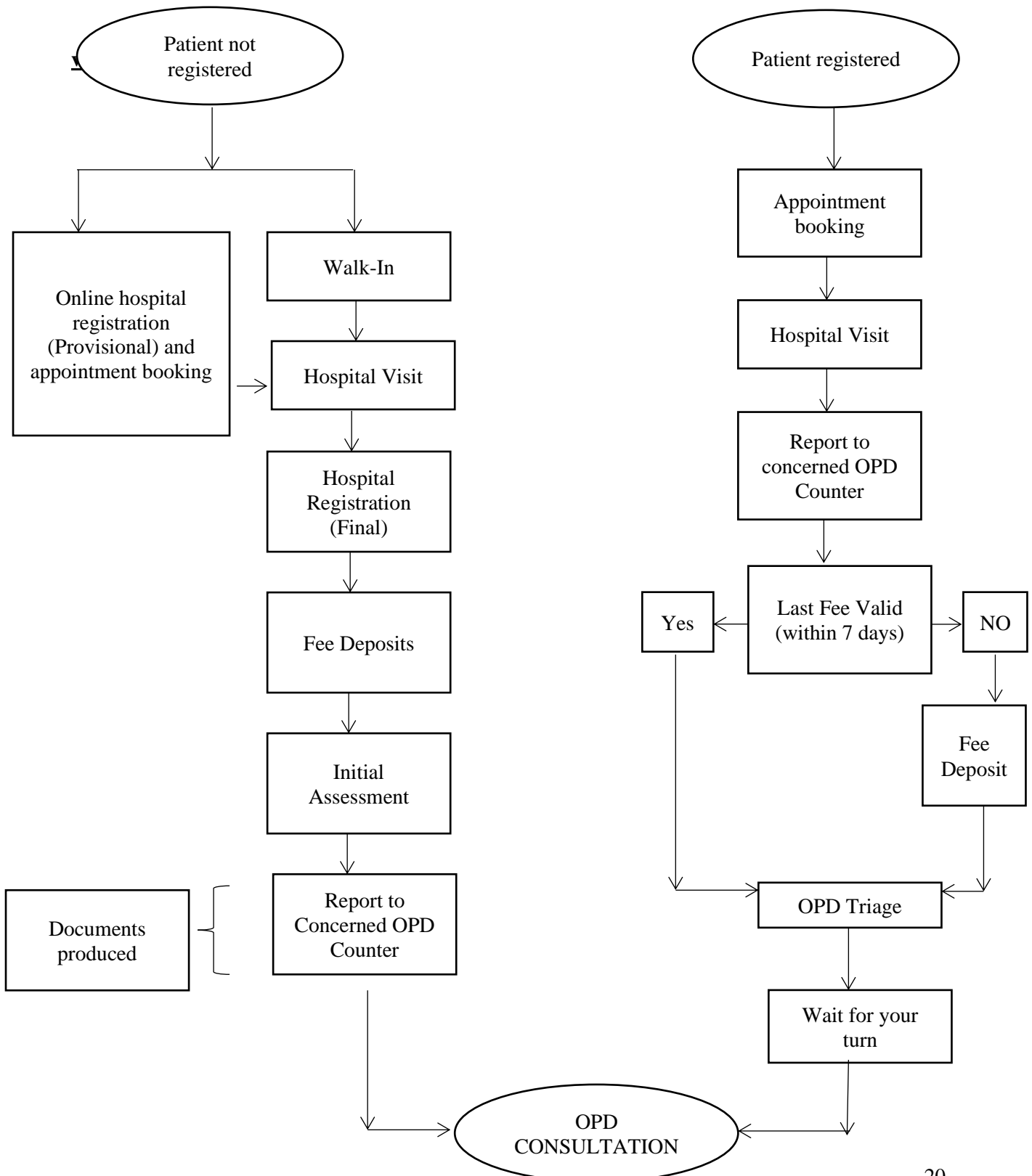
### **b) Pre Anesthetic Check-up:-**

- It has been defined as the process of clinical assessment that precedes the delivery of anesthesia for surgical and non-surgical procedures.
- A history and physical examination, focusing on risk factors for cardiac and

pulmonary complications and a determination of the patient's functional capacity are essential to any preoperative evaluation.

**c) OUT- PATIENT DEPARTMENT: -**

- Flow of patients: -



### **OPD :-**

- It is present on 3 floors of D-Block of the hospital –

a) Ground Floor

b) First Floor

c) Second Floor

### **OPD Timings:**

- General OPD: 02:00 pm to 05:00 pm (Tuesday & Friday) (last card is made till 04:45 pm)
- Regular OPD: 09:00 am to 05:00 pm (All weekdays)
- **Appointments Counter** is located at main reception, where you can book next OPD visit appointment. However, you can also take appointment telephonically or online through website.

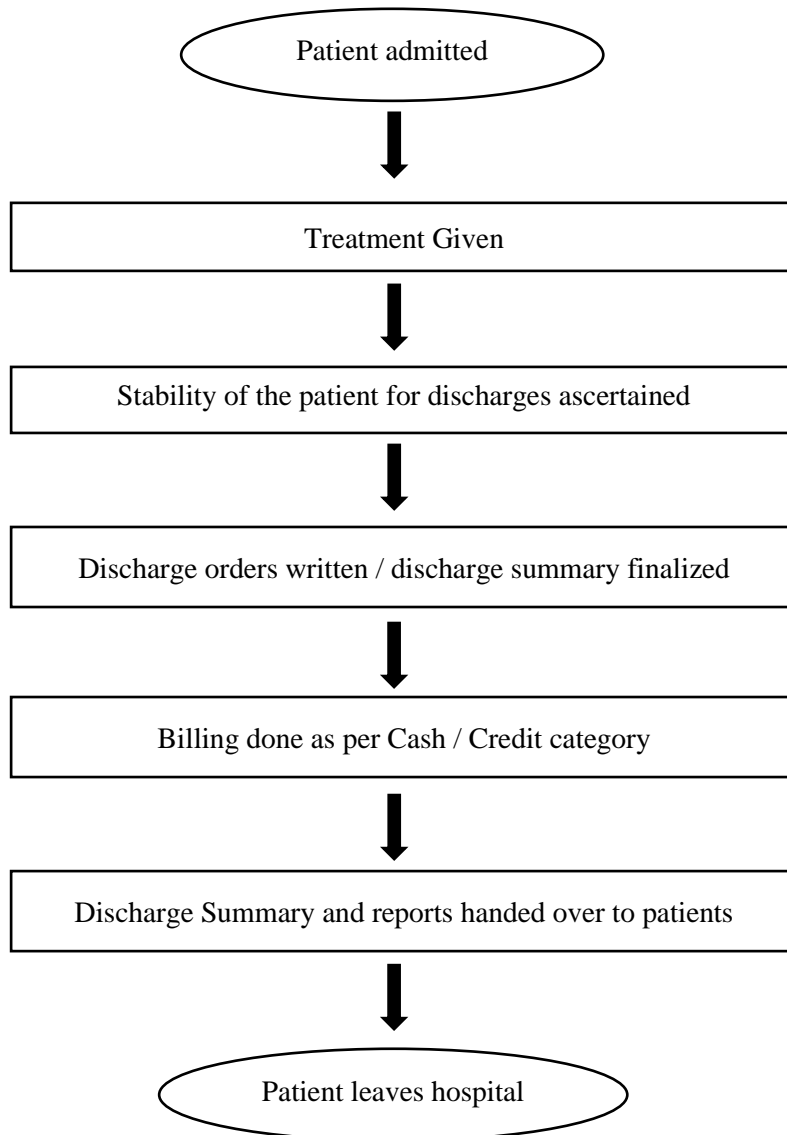
**Triage service** is available in OPDs for checking of patient vitals and to identify cases which require urgent attention.

**Mothers' Feeding Pod** has been specially designed for mothers of pediatric patients where they can feed their baby in privacy and is placed in the Ground floor OPD.

- All OPDs are well planned with adequate space and waiting area. Waiting areas are furnished with televisions and token display screens. Drinking water facility, male /female wash rooms and wash rooms for differently able patients/ attendants are present in all OPD floors.

**d) In-patient Department: -**

- **FLOW OF PATIENTS: -**



**Admissions may be in two ways**

- I. Through the “Emergency Department”
- II. Through OPD

- If the doctor decides that the patient requires an Inpatient treatment, he/she will then be issued Admission slip-I with the details of the kind of treatment required and expected duration of stay of the patient.
- The doctor will also inform about the estimated expenditure on the given admission. He/She is then required to proceed to the admission counter situated on the ground floor of 'the new building'.
- Admission staff will allot the room/bed according to your requirement, if available. In case of non-availability, the staff will put patient's name in the waiting list and will inform him/her on availability.
- After checking the availability, the room will be allotted on payment of a minimum of 80% of the initial estimate given by patient's doctor.

### **BED ALLOTMENT PREFERENCE**

In case of heavy waiting for admission in a particular bed category, bed allotment is done as per the following preference:

- Sick patients in casualty
- Patients from MICU, SICU and HDU who have been advised shifting to ward
- Regular admission patients

### **PAYING CATEGORY**

There are 3 payment categories in the hospital viz. Cash, Credit and Advance Category.



### 1. Cash

Patients who pay for their treatment and investigation out of their pocket are considered as Cash Paying category. These patients are charged as per the schedule of charge for the cash category.

### 2. Credit

Patients who have been referred by the empanel PSUs and form Health Insurance companies (TPAs) come under this category.

- Patients from PSU

The patients are requested to produce an authorization letter from the company, which must be handed over to the billing at the time of admission.

- Health Insurance Beneficiary
- Cashless services for all planned medical treatment are subject to pre-admission authorization.
- In all the credit cases it is the responsibility of the beneficiary to inform & procure credit authorization from concern PSU/TPA

### 3. Advance

Patients of this category are required to deposit an advance cheque with the billing department. Services can be availed till the balance in the account.

## **DISCHARGE PLANNING**

- Prior to discharge, physician / the treating team will advise regarding the activity, diet,

medications, precautions, if any, and subsequent follow-up visits to the Hospital. A discharge summary/advice will be handed over/ explained at the time of discharge.

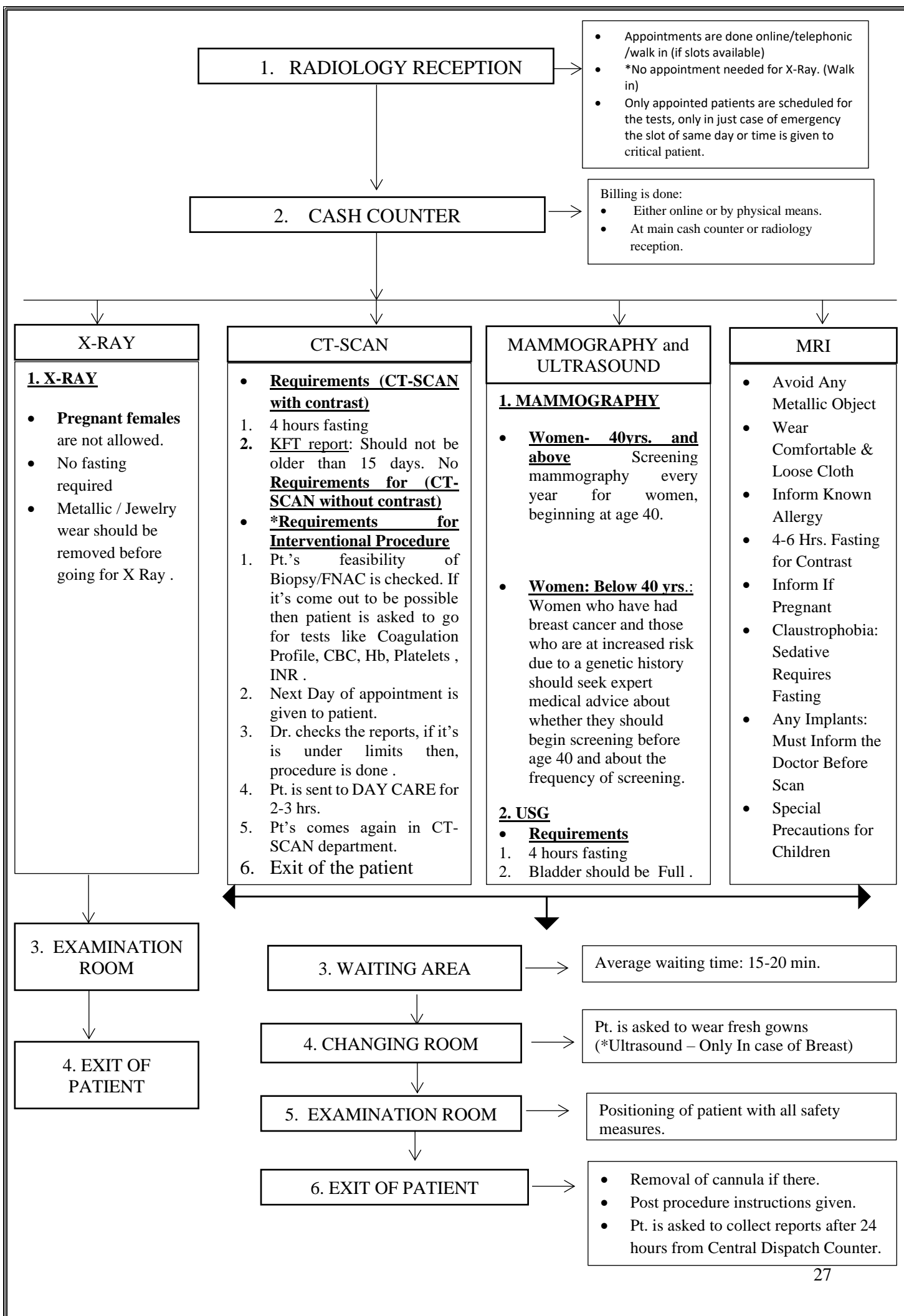
- The discharge process takes a minimum of 3 hours from the time of discharge advice given by the treating consultant. In case the patient is yet to undergo a procedure, visit by a referral doctor or any medication, in such case discharge process will begin only after the required procedure is done irrespective of the time of doctor's discharge advice.
- Discharge process consists of finalizing of the discharge summary, pharmacy return and indent/ purchase of discharge medicine and final billing. The patient will be intimated by the Ward In charge about the time of finalizing billing, before that he/she need not visit the billing department.
- Once the billing is done the patient will be given a bill receipt by the billing department which he/she is supposed to show to sister-in-charge at the respective nursing counter who will then give you your discharge summary which will be explained to you by your assigned sister.
- Discharge time is 12 noon. For patient convenience, 2 hours of grace time is given. If the patient, who is getting discharged, leaves the hospital by 2 pm, he/she will not be charged for that day. Beyond 4.00pm patient will be charged half day extra.

**E) Radiology Department: -**

- Radiology Department is a well-equipped department with state-of-the-art technology which compares with the best in the world. A fully functional PACS with secure private cloud storage in a complete digital environment for all our diagnostic imaging services makes it a unique facility.

- **The departments that were observed: -**

- a) X-RAY
- b) CT-SCAN
- c) PET-SCAN
- d) MAMMOGRAPHY
- e) ULTRASOUND
- f) MRI



## **PROBLEMS and ISSUES IN EACH DEPARTMENT: -**

### **1) Initial Assessment Unit: -**

- On busy OPD days, the patient load increases which directly increases the load on IAU unit, which includes a Nurse, a Junior Doctor and GDA and also increases patients waiting time in patient waiting area and causes inconvenience during Rush hours.

### **2) Pre-Anesthetic Check –Up: -**

- There were no proper signage's for PAC which caused inconvenience to patients.
- For vitals check patients had to go to other end of the floor for which no signages were there, as a result patients were confused and took longer time in the pre – anesthetic checkup.
- Mismanagement of patient's file was observed.
- Increased waiting time for patients who were further referred to cardiology.
- During observation it was found that there was only one Dr. in PAC and work load was there during rush hours and busy OPD days which impacted the patients waiting time and doctor's efficiency too.

## **OTHER OBSERVATIONS**

<b><u>PAC DEPARTMENT</u></b>	
------------------------------	--

<b>GOOD AREAS</b>	<b>AREAS TO BE CONCERNED</b>
<ul style="list-style-type: none"> <li>• Good soft skills of the FDE</li> <li>• Queue management is immaculate</li> <li>• GDA escorts the patients (When requested or the patients who are not able to locate any place/are on wheelchair)</li> <li>• Waiting areas /sitting area available for the patients</li> </ul>	<ul style="list-style-type: none"> <li>• Availability of one doctor Sometimes there was only one doctor available at PAC which led to increased waiting time for the patients of up to 1 hour and 40 minutes</li> <li>• Nursing counter Patient has to go to the Nursing counter for the vitals/weight and height which is away from PAC</li> <li>• Make shift nursing counter No proper room for the vital check-up, it is a make shift place. No signage for the same. Difficult for patients to locate it.</li> <li>• Mismanagement of the files is seen in some cases Due to mismanagement of files, some patients have to wait for their PAC unnecessarily</li> <li>• Overcrowding on the Mondays</li> <li>• Billing Patient has to go to the billing counter on the ground floor for the investigations billing</li> </ul>
<b>REFERRED DEPARTMENT-CARDIOLOGY</b>	
<ul style="list-style-type: none"> <li>• Good soft skills of the doctor and the staff</li> <li>• Satisfaction level of patients Good in spite of the long waiting time</li> </ul>	<ul style="list-style-type: none"> <li>• Availability of one doctor On 22march and 23 march there is only one doctor available, Dr. C R Jain. No provision of alternate consultant was present in the morning sessions which increased the waiting time for the patients to almost 3 hours</li> <li>• NO FDE/BILLING COUNTER No FDE in the cardiology department and billing counter at cardiology</li> <li>• Overcrowding Overcrowding post 12:30 – 1.00 pm is seen</li> <li>• Staff: patient ratio Low</li> <li>• No automated system</li> </ul>

	No system in place for the in and out time for the patients.
<b>REFERRED DEPARTMENT-SAMPLE COLLECTION</b>	
<ul style="list-style-type: none"> <li>Automated system at place</li> <li>Hassle free process</li> <li>Minimal waiting time for patients who come for the investigations</li> </ul>	

- 

### 3) Out-Patient Department: -

- During observations it was found that consultants whose OPD was there, came late which increased waiting time of patients.
- During Rush hours, there was a chaos in patients waiting area.
- Patient who was there on 1<sup>st</sup> floor OPD had to go to ground floor for Cash counter service which caused inconvenience to patients but later on the cash counter service was started on 1<sup>st</sup> floor also.

### 4) In-patient Department

- During observations, it was found that nurses had to maintain the discharge tracker manually and it was not maintained electronically. So, errors were found in records which was entered by the on –duty nurses.

- **WARD PROBLEMS:**

- As every doctor round time is different so the discharges can be delayed due to it
- At the day of discharge, it was seen that nurses sometimes takes time to send file to medicine indent/summary room due to which delays for discharges happened
- Along with this after the file has come from the summary/medicine indent when nurses became busy sometimes the further procedure was delayed.
- Sometimes due to non-availability of ward boy the file reaches late to the medicine indent/summary room.
- During observations, patients' complaint of: -

a) Longer waiting time between the discharge announcement and physical discharge of patients.

- In around 2/3 patients there was complain that nurses did not come after the bell was pressed
- Patients were not satisfied with the soft skills showed by TPA staff (Third Party Administrator).
- Mismanagement of patient's file.

**RADIOLOGY DEPARTMENT: -**

- No Proper signages for PET Scan department.
- Less area for waiting. = Too congested, less no. Of chairs.



- No Guard in patient waiting area.
- Less awareness of reports available online also through RGCicare app
- Machine's working gets disrupted
- Delay in dispatch process of hard copy of reports which causes inconvenience to patients.
- Billing / payment made by the patient doesn't show in scheduler (sometimes)
- No Rate Charts: - There is no rate chart, every single time the patient comes inside to know the rates from FDE

**EXTRAORDINARY GOOD EVENTS: -**

- Organized an International Women's Month Campaign in the month of March.
- Commendable soft skills of doctors / physicians /consultants / staff /nurses / GDE etc.
- No patient is unattended.
- Queue management is immaculate

**STUDY ON DISCHARGE PROCESS IN RAJIV GANDHI CANCER INSTITUTE  
AND RESEARCH CENTRE, NEW DELHI  
PART- II**

**PROJECT OUTLINE: -** Study on Discharge Process in Rajiv Gandhi Cancer Institute And Research Centre, New Delhi.

**INTRODUCTION: -**

- Discharge is the “process of activities that involves the patient and the team of individuals from various disciplines working together to facilitate the transfer of patient from one environment to another”.
- Discharge process starts when the consultant will declare discharge to the nurse.
- After that nurse will tell the ward in charge and the ward in charge starts the billing process. The delay in the discharge process affects the patient satisfaction and on the other side it affects the financial aspect of the hospital.
- The main focus is to streamline the current procedures of hospital and modify them in such a way that we get maximum output from minimum input of manpower and resources for best results.

**RATIONALE: -**

This study is conducted with the intent to study the discharge process in the hospital and to find the various reasons for delay. The reasons and factors will be analyzed, and recommendations will be given to further decrease the delay and increase the patient satisfaction.

### **LITERATURE REVIEW: -**

- Shobitha Sunil<sup>1</sup>, Sarala K.S<sup>2</sup>, R G Shilpa<sup>3</sup> October (2016)., Time taken for the completion of discharge process is an important indicator of quality of care. As per NABH, the time taken for completion of the discharge process should not exceed 180 minutes. Discharge process is the last stage of the patient journey in the hospital and is more likely to be remembered by the patient. So, delay in the discharge process can be depressing to the patients and also increases the pressure on hospital beds. The present study was conducted in M.S Ramaiah hospital to analyse the break up time taken for discharge and evaluate the level of patient satisfaction for the discharge process. The total time taken for the discharge process was broken up into time taken for discharge summary writing, discharge summary completion, billing completion and patient to leave the ward.
- Dr. Niloy Sarkar<sup>1</sup>, Ms. Tatini Nath<sup>2</sup> August (2016)., The main objective of the study is to identify the gaps, highlight those areas where delay can be eliminated and recommend accordingly, so that the hospital discharge process can be managed smoothly. This paper has explained the hospital discharge process in a simple way and has tried to find out the root causes for the delay in discharge process. The set-up of the study was Apollo Hospitals, Greaves Lane, Chennai (15th June – 14th August, 2012).
- A Abiramalakshmi<sup>1</sup>, Dr. Sn Soundara Raja<sup>2</sup> October (2017)., The aim of the study is to find the cause of delay in inpatient discharge and to increase the patient satisfaction. Objective of the study is to identify the cause of delay in inpatient

discharge and to suggest some valuable information related to it to rectify the problem. Due to Discharge summary, Pharmacy, Nurses delay and Allied services the discharge of inpatients is getting delayed, and this may lead to dissatisfaction in inpatients. The study is being done to find out the cause and to provide suggestion related to the finding

STUDY	AUTHOR	OBJECTIVES	METHODOLOGY	RESULT
Using Six Sigma DMAIC methodology and discrete event simulation to reduce patient discharge time in King Hussein Cancer Centre	Mazen Arafah et al	To reduce patients, discharge time in a cancer treatment hospital	Six Sigma DMAIC methodology used. Study Area – King Hussein Cancer Center. Sample Size – 38 patients	6σ, combined with the power of DES, has been effectively applied to the improvement of patient discharge processes, an intricate healthcare operational process involving multiple stakeholders. The total reduction in

				discharge time was approximately 54%.
Application of DMAIC Cycle and Modelling as Tools for Health Technology Assessment in a University Hospital	Alphonso Maria Ponsiglione et al	To carry out an HTA study that compares two pharmacologic al therapies and provides the clinicians with two models to predict the length of hospital stay (LOS) of patients undergoing oral cavity cancer surgery on the bone tissue.	The six Sigma method was used as a tool of HTA. Multiple linear regression has been used. Sample Size: 100	A reduction of the overall mean LOS of patients undergoing oral cavity cancer surgery on bone was observed of 40.9% in the group treated with ceftriaxone

IMPLEMENTING SIX SIGMA TO IMPROVE HOSPITAL DISCHARGE PROCESS	Kirti Udayai, P Kumar	The implementation of a measurement-based strategy that focuses on process improvement and variation reduction	Six Sigma	<p>The project resulted in more patients being managed every month resulting in a direct revenue impact and also affected the satisfaction level of patients positively.</p> <p>Overall, time for discharge process was reduced from 247 to 195 minutes, a 21% decrease!</p>
A STUDY ON CAUSES OF DELAY IN DISCHARGE PROCESS IN	Dr. Niloy Sarkar <sup>1</sup> , Ms. Tatini Nath <sup>2</sup>	The objective of the study was to identify the gaps, highlight those	<p>Study design: Cross-sectional</p> <p>Sample Size: 32,361 adults.</p>	Through this study the time taken for both cash and insurance

ONE OF THE PROMINENT HOSPITALS IN TAMILNADU	August (2016).,	areas where delay can be eliminated and recommend accordingly, so that the hospital discharge process can be managed	Sampling Technique: Random sampling Study area- Apollo hospitals, Greams Lane, Chennai, India, Study Period - 15th June – 14th August 2012).	patients were analysed and compared with NABH standards. The factors for delay were identified and suggestions were given which will decrease the time taken for bed allotment for next patient which eventually increase the reputation of the hospital and reduce the patients waiting time. 5 main Parameters were identified that greatly
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				influences the discharge process
ANALYSIS OF TIME TAKEN FOR THE DISCHARGE PROCESS IN A SELECTED TERTIARY CARE HOSPITAL	SHOBHITA SUNIL, SARALA K.S et al.	The objective of the study was to study the discharge process of patients, and to search for the reasons for the delay in discharge process	Study design: Cross-sectional survey. Study Period: 3 months Study area: India. Data analysis: IBM Statistical Package for the Social Sciences (SPSS) Version 22.	The study found the various stakeholders responsible for the delay in the discharge process and recommendations were given.

### **RESEARCH QUESTION: -**

Q. What are the bottlenecks or gaps in existing process flow of Inpatient Department of 500 bedded hospital that are hindering the quality of services and overall patients' satisfaction and roadmap for improving the quality of services?

### **OBJECTIVES:**

- **General Objective:** To assess the discharge process causes of delay in discharges and reflect on ways to improve the efficiency of discharge process in Rajiv Gandhi Cancer Institute & Research Centre



- **Specific Objectives:**

- To study the current discharge process
- To determine the TAT in IPD
- To diagnose the reasons of delay
- To implement interventions to reduce the TAT

## **RESEARCH METHODOLOGY: -**

**STUDY DESIGN** – Descriptive cross-sectional study

**STUDY PERIOD** – The study would be conducted from 11<sup>th</sup> March to 14<sup>th</sup> June 2022

**STUDY AREA** – IPD at RGCIRC

**SAMPLE SIZE** – For the study, a total of 300 participants would be included.

**INCLUSION CRITERIA** – All IPD cases except day-care, ICU cases

**EXCLUSION CRITERIA:** Sundays and gazette holidays were excluded from the observations

**RESEARCH INSTRUMENT:** Data will be collected through observation and interactions with the hospital personnel. Questionnaire feedback will also be conducted.

**STUDY TOOLS:** - SIPOC, Process Mapping, Voice of Customers, CTQ, Process Analysis

Define Phase	Measure Phase	Analysis Phase	Improvement Phase	Control Phase
1. SIPOC 2. Process Mapping 3. Voice of Customers	1. Critical to quality 2. Prioritization Matrix 3. Data Collection Plan	1. Fishbone Analysis 2. Data Analysis 3. Process Analysis 4. Summary Of Problems	1. Recommendations 2. Improvement Plan	1. Continuous Monitoring and training of staff

**ETHICAL CONSIDERATIONS:** This study will be submitted for ethical review to the IIHMR student research review board. The tools and study protocol will be cleared through this committee. All the participants would be explained the objectives of the study if they are being surveyed. As a researcher, I would make the participant understand and explain them in the language they understand. After explaining them, a verbal consent would be taken.

**Expected Outcomes:** The results obtained from the questionnaire survey would be divided into sub themes such as communication with nurses, communication with doctors, support services. The results obtained from the data will explain the gap between the expected turnaround time for discharge in hospital and the actual average turnaround discharge time. This study will help to reduce the discharge process in the hospitals.

#### **A) DEFINE PHASE :-**

The Inpatient department project began by establishing a project charter to identify why the project needed to be done, why the project needed to be done now, and what were the costs of doing nothing. diagram was generated, factors Critical to Quality (CTQ) were established by examining the Voice of the Customer (VOC). Results of this phase are summarized below.

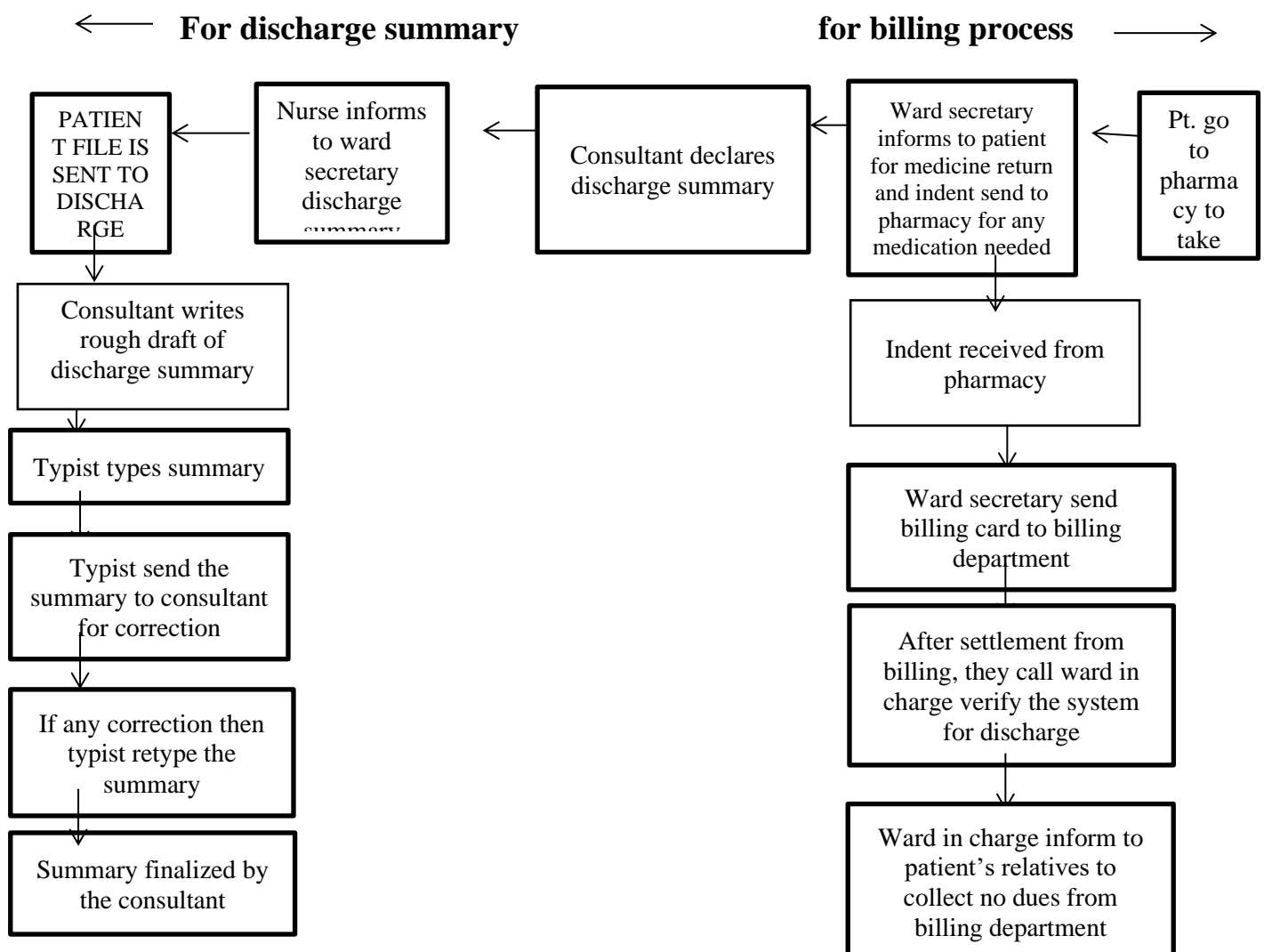
**Problem Statement:** Lack of standardized process flow and untimely reporting of results (increased TAT) negatively impacting the hospital referral base, resulting in decreased customer satisfaction, limiting revenue opportunities, and generating patient loss.

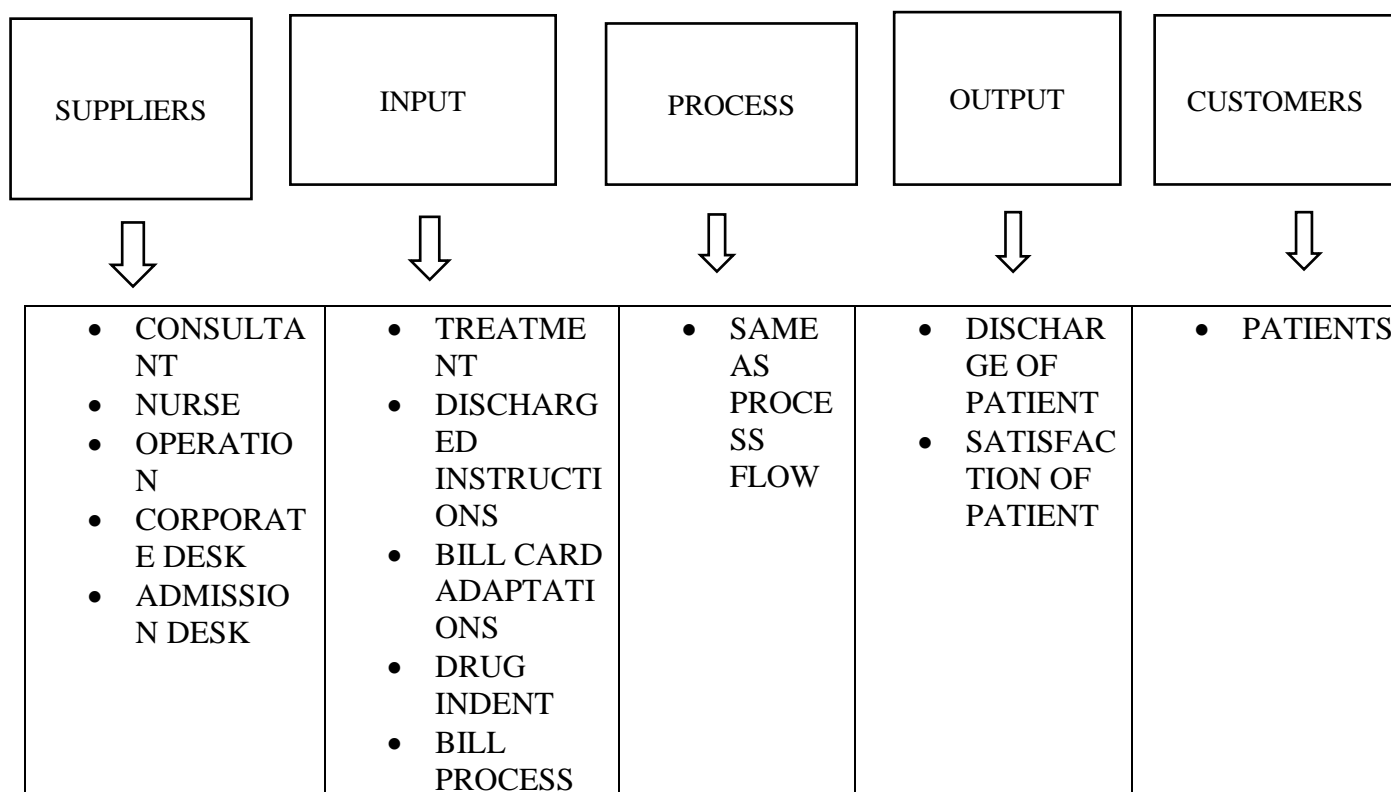
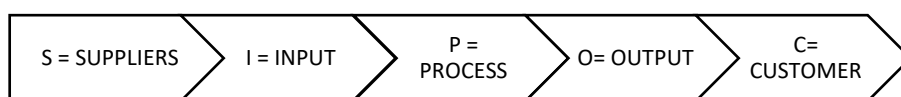
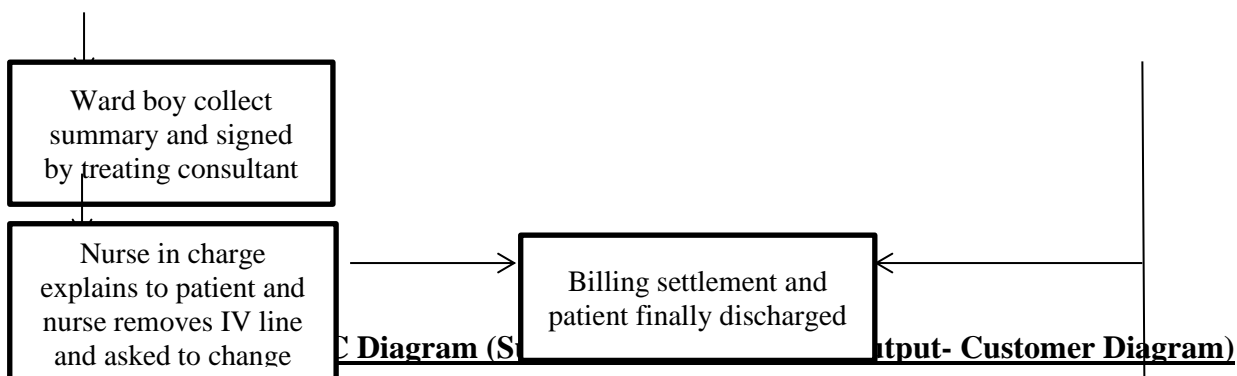
**Goal Statement:** - The goal of the project is: -

- To develop a standardized methodology to decrease the report turnaround time.
- To improve patient satisfaction
- **PROJECT OBJECTIVES:** -
- To study the current discharge process
- To determine the TAT in IPD
- To diagnose the reasons of delay
- To implement interventions to reduce the TAT

**PROCESS MAPPING:** -

**Fig. 1: The actual discharge process is shown here: -**





### C. CRITICAL TO QUALITY: -

- What is CTQ (Critical to Quality)
  - In a simple term, it defines the customers and their requirements.

- **BASIC STEPS TO IDENTIFY THE CTQ: -**

Who is customer? —————> Voice of Customers —————> Quality Characteristics —————> CTQ

- So, first we have to identify the customer, the segment of customer (internal, external customer). So, according to my project the customer segment is internal, the patients who are admitted in to the ward.
- The second step is to identify the voice of customers. The voice of customer means to gathering the comments from the patients and translate them in to issue or measurable specification. **For e.g.** Patient's complaints or dissatisfaction.
- The next step is to identify the quality characteristics. The quality characteristics re derived from an understanding of the voice of customer.
- Critical to Quality characteristics of service are those factors which have major impact on the satisfaction of the customers. (Patients)
- I have done my project in Discharge process in standard ward, so as per my project I have observed many complaints during whole discharge process.

- **The characteristics or complaints that I have observed are as follows: -**

- **DISCHARGE SUMMARY**

- **Surgical summary**
- The maximum time was taken for the summary to be received by the surgical summary room.
- Sometimes the surgical patients were told to stay till the treating doctor do the last checkup
- Treating consultants many times remain in surgery and can only write the summary after the completion of the case which causes delay in discharge as surgical cases takes long for completion.
- Correction and re correction of the summary happens on the same day which further increase in the delay.

- There was only one ward boy to take care of summaries collection and redistribution for 12 surgeons.
- Surgeons writes the summary by themselves which is also an issue. Online summary can be written and can be accessed anywhere by the doctors if made available.
- O. T notes pending.
- **Medical cases/Radiation cases**
- Radiation therapy happens on the same day as discharge which further increases the time.
- In spite of the advanced summary made by some doctors, corrections and re corrections takes time.

➤ **INSURANCE/TPA**

- The second main reason for the delays was insurance and TPA.

➤ **PHARMACY**

- Sometimes many indents happen for the same patient on the same day. One person takes the medicine to different floors which further delays the discharge process as well.
- When patient is having TPA, then indent first goes to billing clearance and then afterwards indent comes to pharmacy which further delays the process.
- From 14-18 April pharmacy at basement was semi operational to nonoperational so indents were going to ground floor pharmacy.

➤ **Admission Desk:-** At the time of admission according to Bed category the estimated cost will be told to the patient's relative but at the time of discharge due to some additional treatment or any complication the cost will be increased , so at that time some patients will dissatisfy and delay due to arrangement of money .

➤ **Corporate Desk:-** Sometimes when patients come in emergency, they don't have any authorization letter from the corporate company. Most of the times, the patients

relative is asked to collect and submit the authorization letter. The authorization letter may take time to come depending on the situation which eventually leads to a delay in discharge.

➤ **At Ward Level:** - Nurse mistakes (they do not put the investigation reports in file on time and thus, discharge is delayed). Nurse mistakes (they do not staple the strips / boxes of used medicines (above 1000) of empaneled patient in files on time or might get lost / displaced in shifting from one ward to another. Consultants' rounds don't happen on time.

➤ **SUMMARY:** - Summary is not finalized by consultants for discharge patient. The O.T. note is not written in the Operation Theatre at the time of operations. So, O.T note remains pending which leads to delay in discharge.

➤ **BILLING DEPARTMENT:** -

1. **Incomplete files** - Failure of ward nurse to check all entries like sign, investigation report, seal stamps etc.
2. There is a queue of attendants in billing departments. Although there are specified counters, there is lack of manpower which leads to delay in discharge.
3. Missing of medicines during discharge it leads to delay.
4. TPA: - Sometimes approval from the companies take time which directly causes delay.

➤ **FROM PATIENT'S SIDE:** -

1. Patients have some economic problems.
2. Patient attendant takes signed discharged paper from ward in charge before discharge for photocopy because patient needs that discharge paper for medicine and for next time permission.

3. When ward in charge goes to patient for informing the billing details, at that time patients' relative is not available with the patient.
- And the last step critical to quality, means the most dissatisfying area in the whole discharge process is: -
    - Discharge summary
    - Insurance/TPA
    - Pharmacy

#### **B. MEASURE PHASE: -**

After viewing the process map, voice of customers and CTQ prioritization matrix exercises, the factor that became primary performance indicator needed to evaluate patient satisfaction was timely reporting of results. A total of 30 days was collected for the three different investigations. Analysis of the current process showed that average turnaround time for various investigations calculated was as follows.

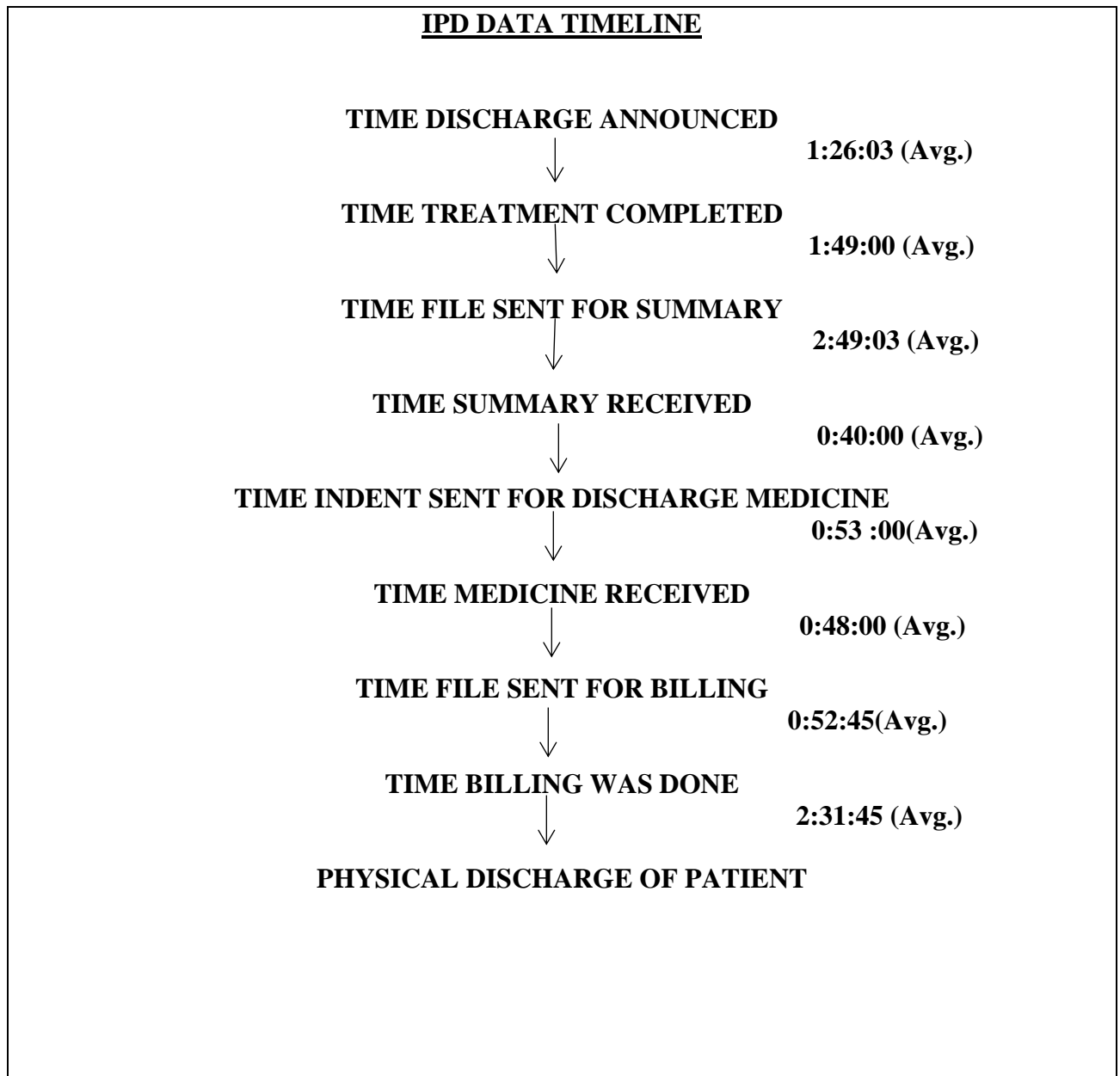
**Average Turnaround time for IPD**  
**Table No. 1: Showing Average TAT for IPD**

<b><u>AVERAGE TAT (for IPD)</u></b>	<b><u>HH: MM: SS</u></b>
	<b><u>3:20:30</u></b>



A data timeline (in HH:MM) =

Table no. 2: Showing IPD DATA TIMELINE

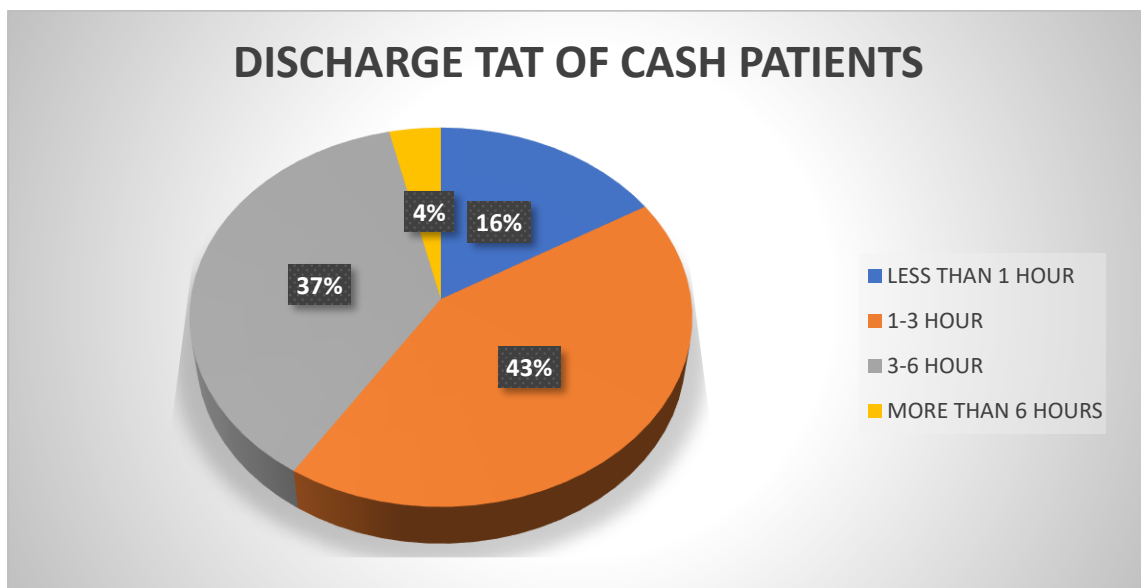


### **DATA MEASUREMENT :-**

**Table No. 3 : Showing Discharge TAT of CASH patients :-**

DISCHARGE TAT OF CASH PATIENTS	
TAT	NUMBER OF PATIENTS
LESS THAN 1 HOUR	18
1-3 HOUR	47
3-6 HOUR	41
MORE THAN 6 HOURS	4

**Pie Chart No. 1 : Showing Discharge TAT of Cash patients**



**Table No. 4 : Showing Discharge TAT for Cash And TPA patients :-**

DISCHARGE TAT for Cash and TPA patients	
AVERAGE TAT OF CASH PATIENTS	2:48:01

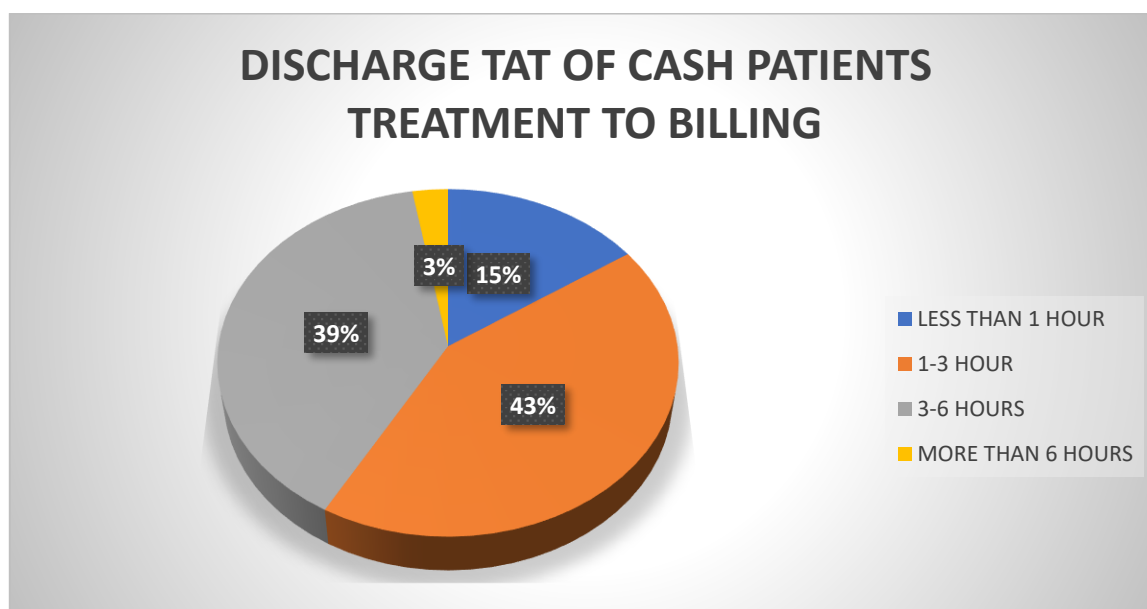
**AVERAGE TAT OF TPA PATIENTS**

**3:53:57**

**Table No. 5 : Showing TAT ( Treatment to billing ) of cash patients**

TAT(Treatment to Billing)= CASH Patients	NUMBER OF PATIENTS
LESS THAN 1 HOUR	17
1-3 HOUR	47
3-6 HOURS	43
MORE THAN 6 HOURS	3

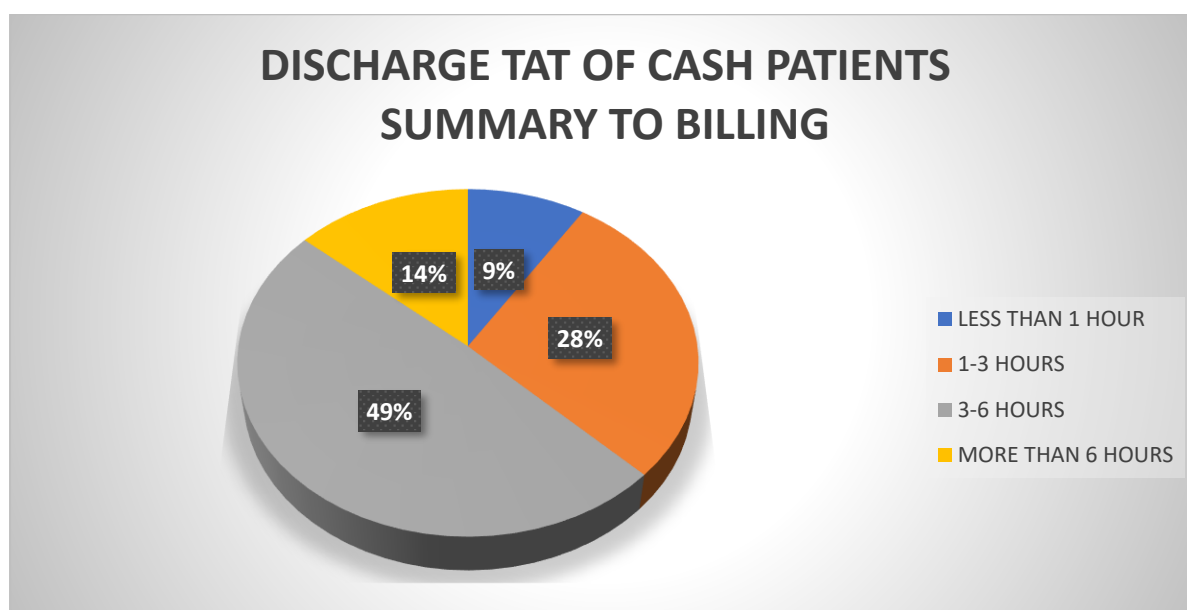
**Pie Chart No. 2 : Showing Discharge TAT of cash patients ( Treatment to billing )**



**Table No. 6 : Showing Discharge TAT of Cash patients ( Summary to Billing )**

TAT (summary to Billing) = CASH	NUMBER OF PATIENTS
LESS THAN 1 HOUR	10
1-3 HOURS	31
3-6 HOURS	54
MORE THAN 6 HOURS	15

**Pie Chart No. 3: Showing Discharge TAT of Cash patients (Summary to Billing)**



**Table No. 7: Showing Discharge Summary TAT for CASH patients and TPA patients**

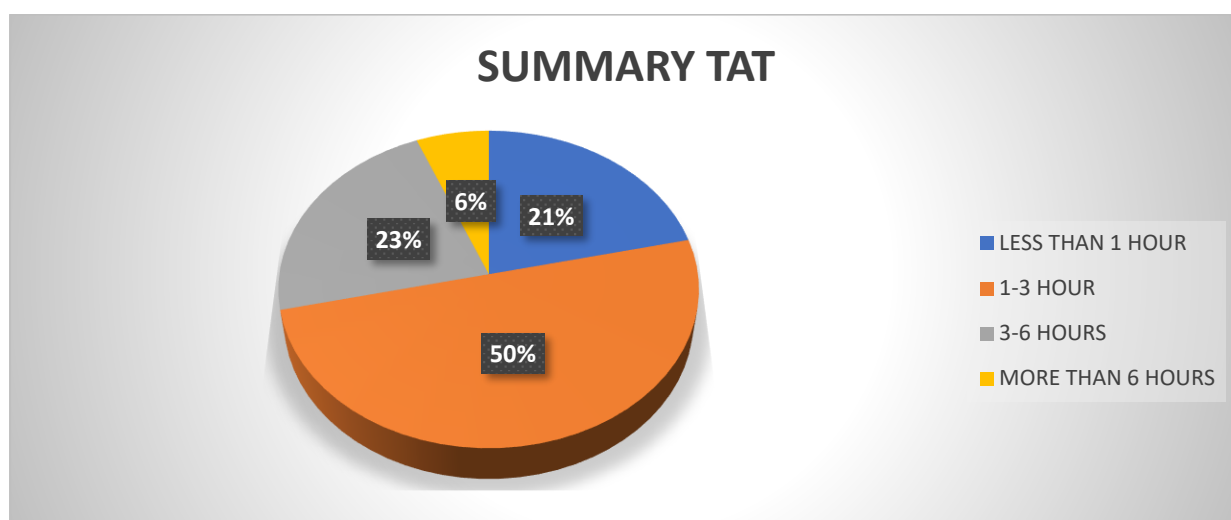
DISCHARGE SUMMARY TAT	
AVERAGE TOTAL TAT	2:38:36
AVERAGE TAT OF CASH PATIENTS	2:36:40

<b>AVERAGE TAT OF TPA/CREDIT PATIENTS</b>	<b>2:44:15</b>
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**Table No. 8: Showing TAT (Summary)**

TAT (SUMMARY	NUMBER OF PATIENTS
LESS THAN 1 HOUR	21
1-3 HOUR	49
3-6 HOURS	22
MORE THAN 6 HOURS	6

**Pie Chart No. 4 : Showing Summary TAT**



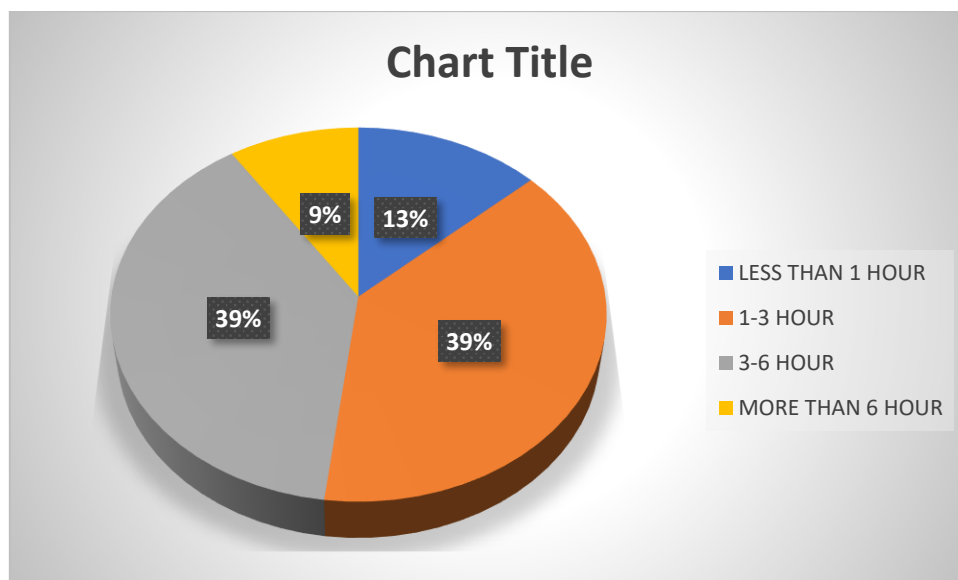
**Table No. 9 : Showing Average TAT of Medicine Indent of CASH patients**

<b>AVERAGE TAT OF MEDICINE INDENT</b>	<b>0:52:31</b>
AVERAGE TAT OF MEDICINE INDENT OF CASH PATIENTS	2:25:58

**Table No. 10: Showing Total Discharge TAT**

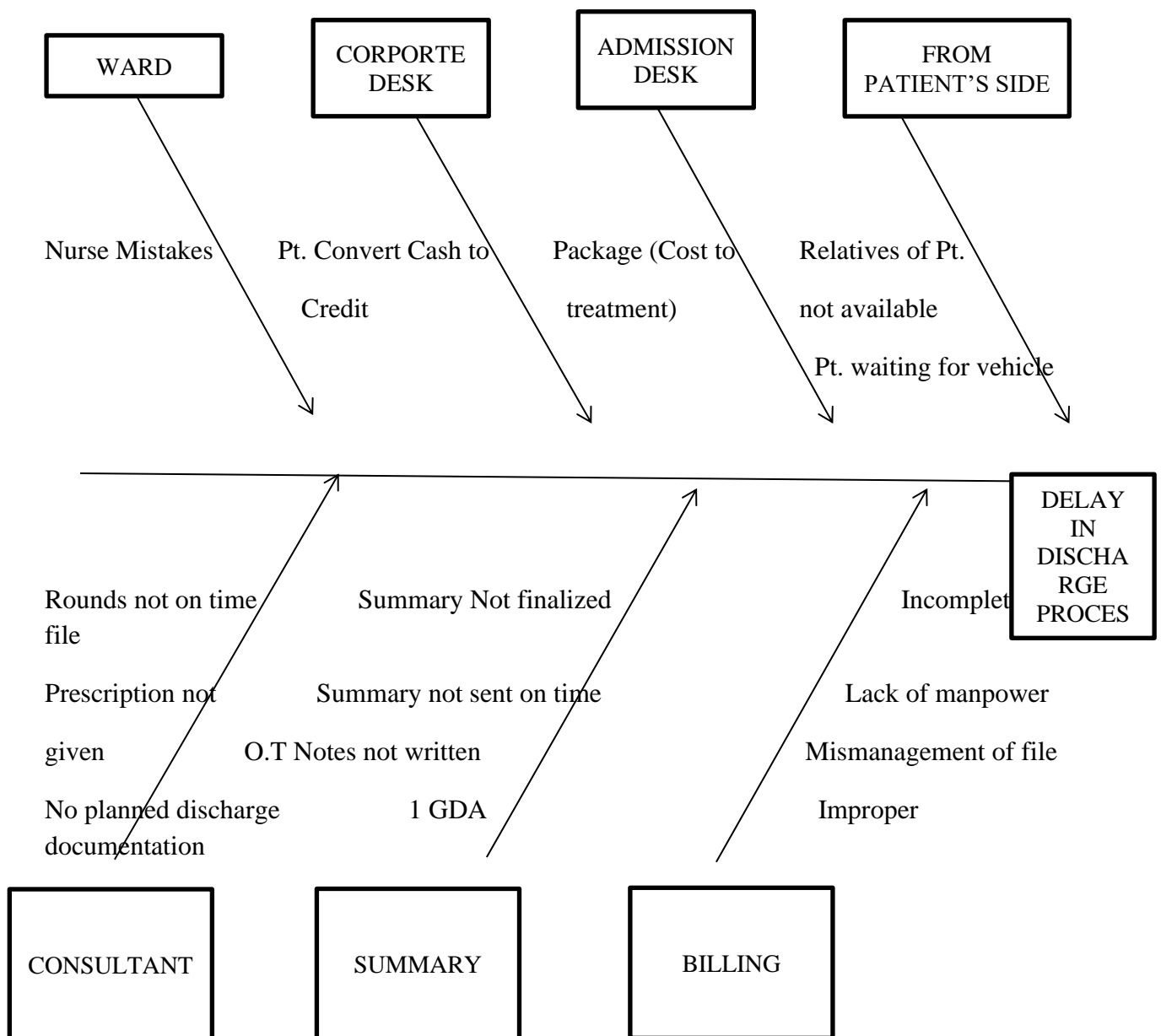
TOTAL DISCHARGE TAT	NUMBER OF PATIENTS	PERCENTAGE
LESS THAN 1 HOUR	20	13.3%
1-3 HOUR	58	38.6%
3-6 HOUR	58	38.6%
MORE THAN 6 HOUR	14	9.3%

**Pie Chart No. 5 : Showing Total Discharge TAT**



### C. ANALYSIS PHASE: -

#### 1. Fig. No. 3 : FISHBONE ANALYSIS

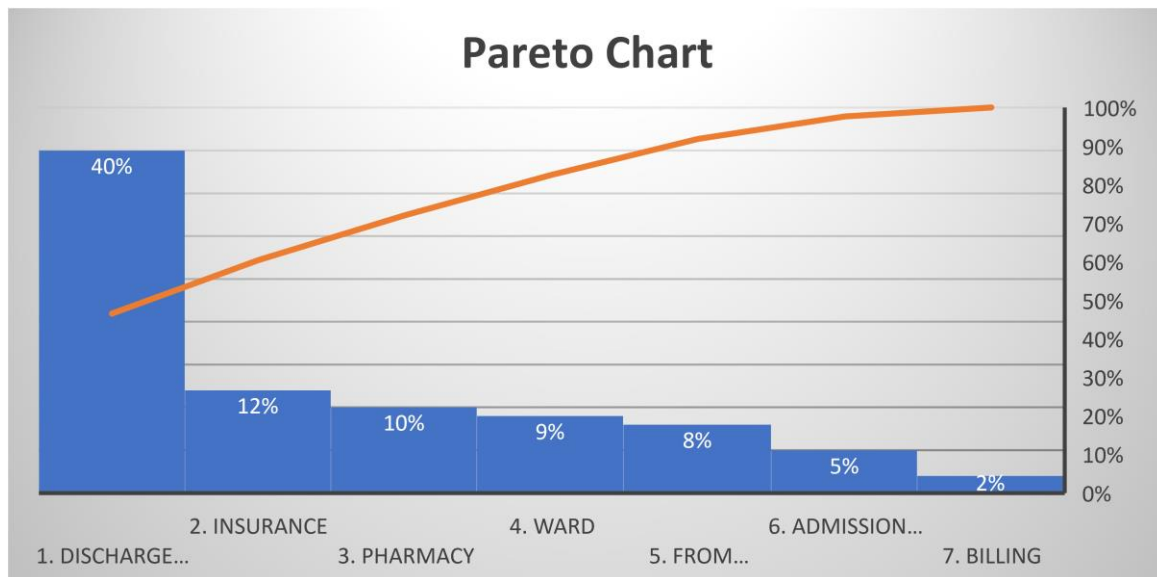


**Table No. 11 : Showing No. of patients as per reason causing High TAT**

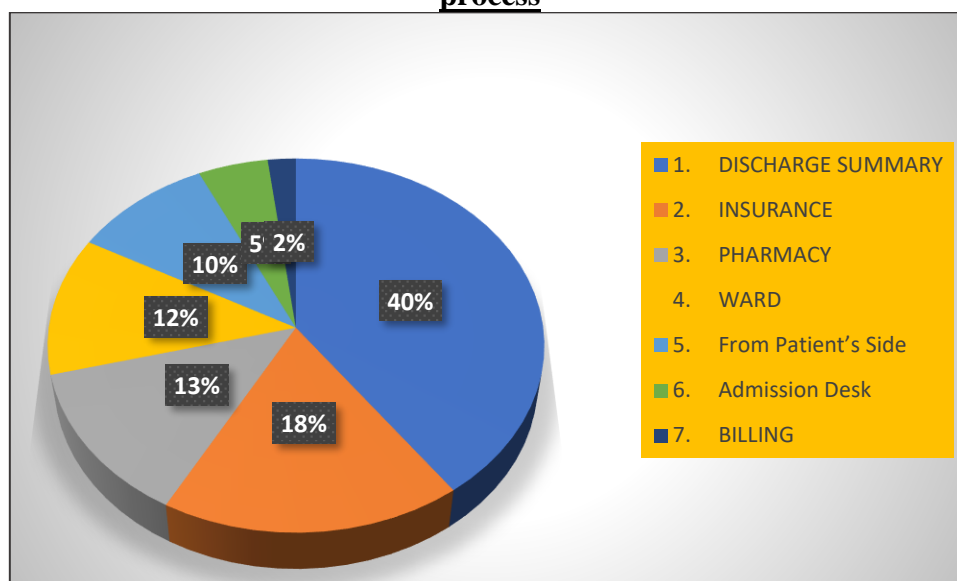
<b><u>Reasons of Delay</u></b>	<b><u>Percentage</u></b>	<b><u>No. of patient</u></b>
1. DISCHARGE  SUMMARY	40	28
2. INSURANCE	18	12
3. PHARMACY	13	10
4. WARD	12	9
5. From Patient's Side	10%	8
6. Admission Desk	5%	4
7. BILLING	2%	1
<b><u>TOTAL</u></b>  <b><u>(DISCHARGE ABOVE 180</u></b>  <b><u>MINUTES)</u></b>		<b><u>72</u></b>

**Graph No. 1: Showing no. of patients as per reason causing HIGH TAT**





**Pie Chart No. 6: Showing percentage of reasons catering to HIGH TAT of discharge process**



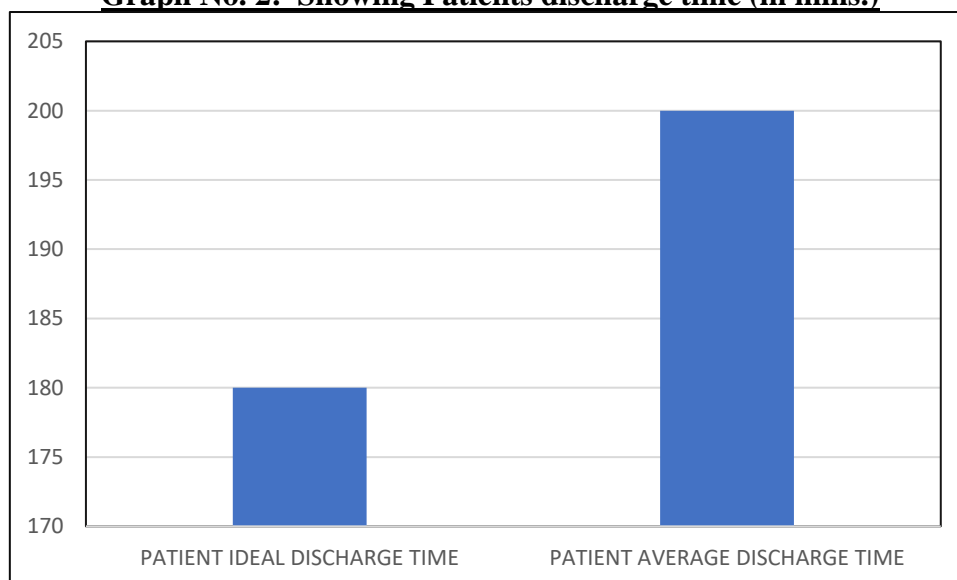
➤ **According to the table no. 11 analysis: -**

- a) 28 were delayed due to discharge summary
- b) 18 were delayed due to Insurance/TPA. So, this data is in decreasing order. It is shown that highest no. of patients (28) delayed due to discharge summary reason and then it is decreasing and last due to billing reasons 1 patient is delayed

**Table No. 12: Showing Ideal Discharge Time and average discharged time**

	<b><u>TIME</u></b>
Patients ideal Discharge time	3 hours (180 minutes)
Patients average discharged time	3 hours 20 minutes (200 minutes)

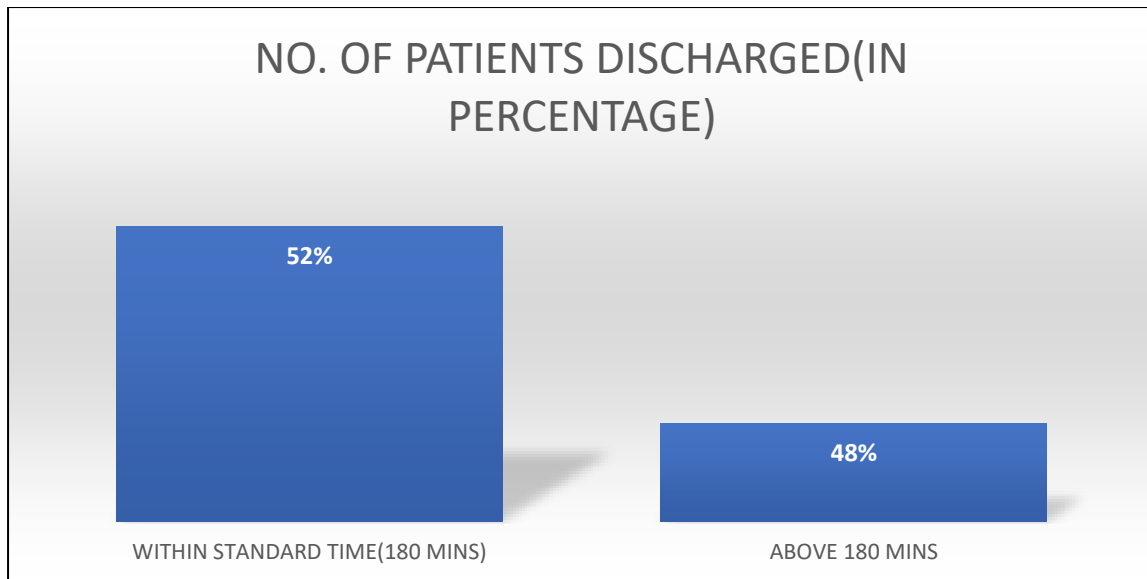
**Graph No. 2: Showing Patients discharge time (in mins.)**



**Table No.13: Showing no. of patients discharged within a standard time of 180 min.**

	<b><u>No. Of Patients Discharged</u></b>	<b><u>PERCENTAGE</u></b>
Within standard time 180 min.	78	52%
Above 180 min.	72	48%

**Graph No. 3 : Showing no. of patients discharged within a standard time of 180 mints.**



- This is shown that out of 150 patients, 52% (78) patients were discharged within the defined time frame of 180 minutes time and 48%(72) patients were delayed.

- **D. IMPROVEMENT PHASE**

- **Recommendations / Suggestions**

- **DISCHARGE SUMMARY**

- Tentative summary should be made for all the patients.
- Advanced summary for all the patients of medical/radiation cases can be done.
- In case of surgical patients when the main treating consultant is in surgery, a second in command doctor should be there to make the initial summary draft and at last it can be reviewed and signed by the main treating consultant. In this way it will save valuable time.
- More no. of housekeeping staff should be kept to get the corrections in summary from typist to consultants / signature of consultant / and etc. so that work load on single housekeeping staff is reduced.
- If tentative summary is ready, it should be ready, it should be verified by the consultant during round.

- Online summary can be written and can be accessed anywhere by the doctors if made available.
- All the system of the summary can be made online so that any consultant can access it from their place and can correct it from there system only and thus valuable time will be saved.

➤ **2.PHARMACY**

- 1 pharmacy on each floor so that time can be saved.
- If the medication will be told at the time of discharge announcement only then the indent can be sent earlier on and valuable time of patient will be saved at least.

➤ **3.INSURANCE/TPA**

- If the medication will be told at the time of discharge announcement only then the indent can be sent initially only and it will save the time for TPA patients.
- Any change in the total bill should be intimated to the TPA desk beforehand and should be sent to the respective TPA early on so that time can be saved.
- Appropriate file management system should be in place as sometimes it was seen that files were mismanaged and missing which further increased the discharge time.
- Additional staff can be incorporated into the TPA desk during peak hours.

➤ **4.Ward: -**

- Discharge order should be intimated to all stake holder as soon as consultant has declared
- Ward in charge should counsel the patient relative about the current status on daily basis
- Ward in charge should check all investigations reports in file on daily basis.
- They should keep all the files safely and should track the journey of the files throughout the day so that it cannot be lost.

➤ **5. From Patient's side**

- Patients relative must arrange the funds as per the cost of treatment and timely updated by the billing department.
- In case of admissions of emergency department, the relatives must ensure about their authorization letter and should submit within stipulated time.
- At least one relative should be available at the time of discharge for settlement of bill.
- One photocopy machine should be placed in every ward for the comfortability of patient as well as to save time.
- The vehicle for the transport of patient should be arranged at appropriate time.

➤ **6. Billing: -**

- The billing department should update and audit the billing card only on daily basis. If the cost increases, they should inform the patients relatives.
- Message system should start for the information of discharge by the concerned ward executive to patient relatives for the settlement of bill.
- Billing dept. has to verify the authorization letter for the credit billing and incase the letter is not available, they should pre – inform the concerned ward executive and corporate desk for getting Authorization letter.

➤ **7. ADMISSION DESK: -**

- At the time of admission, admission desk ensures that all details of admission form like cost of treatment and probable stay are filled by the consultant or not. If not, they should call to the consultant and ask for the same and as per consultant ordered they should write to the administration order form.
- Changing in to the billable tariff as per the Authorization letter.

➤ **8. CONSULTANT**

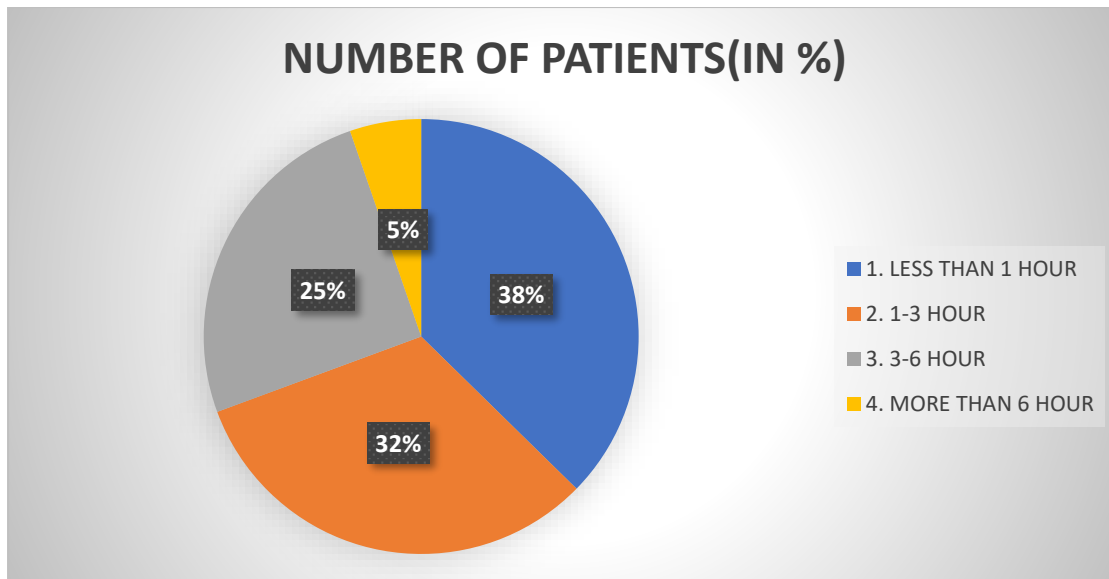
- Consultant round timing should be fixed and adhered to so discharge intimation and discharge process should start as ordered.

➤ **9.CORPORATE DESK: -**

- At the time of admissions, corporate desks should ensure about the receiving of authorization letter from respective corporate. In case of emergency admissions corporate desk should inform to respective corporate for sending their Authorization letter.
- Corporate desk should verify the billable status of the patient as per the Authorization letter and they should inform to patient and relative if any non-approved procedure or highly expensive medicine used for further approval or cash payment.

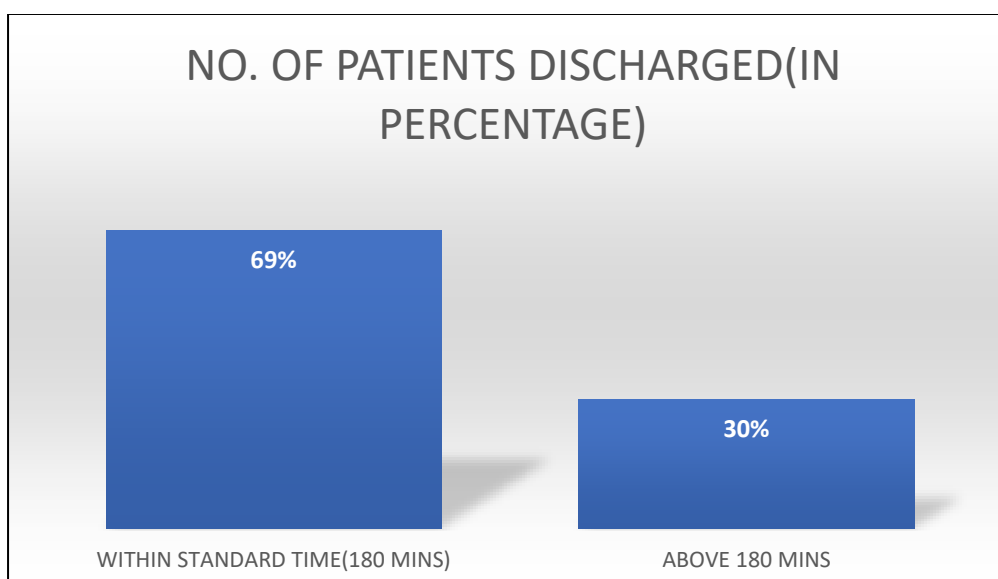
**TOTAL DISCHARGE TAT AFTER INTERRVENTIONS**

<u>TOTAL DISCHARGE TAT</u>	<u>NUMBER OF PATIENTS</u>	<u>PERCENTAGE</u>
LESS THAN 1 HOUR	56	37.3%
1-3 HOUR	48	32%
3-6 HOUR	38	25.3%
MORE THAN 6 HOUR	8	5.3%



**SHOWING NUMBER OF PATIENTS WITHIN A STANDARD TIME OF 180 MINUTE**

	NUMBER OF PATIENTS DISCHARGED	PERCENTAGE OF PATIENTS
WITHIN STANDARD 180 MINUTE	104	69.3%
ABOVE 180 MINUTES	46	30%



#### **E. CONTROL PHASE**

- Continuous Monitoring and training to staff is required to further avoid the high TAT or delay in discharge process.
- Cross functional committee can be made for the same.

#### **RESULTS: -**

- When possible, improvements were done which are mentioned above, the average discharge time in analytic phase and control phase are as follows: -

**Table No. 14: Showing Average TAT for discharge process**

PHASES	AVERAGE TAT
ANALYTIC PHASE	200 mints
CONTROL PHASE	178 mints.



## **DISCUSSION: -**

The commitment of top management is critical to system improvement efforts because hospitals are under many competing pressures. During the define phase the problem was defined based on the inputs captured through patient feedback forms.

During the measure phase the data of the patients discharge process was measured. The whole process consists of around 8 steps which were shown above.

During the Analyze phase of DMAIC, a root cause analysis was carried out. The root cause analysis yielded critical issues contributing to the delay in discharge process. These includes Delay in discharge summary, delay in receiving of clearance of billing from TPA, delay in indent receipt of pharmacy indent, inefficiencies procedures in ward etc. All the critical issues identified in the Analyze phase was carefully evaluated and appropriate solutions were implemented in the Improve phase of DMAIC.

After implementation of the improvement strategies the data on discharging time was again collected. It was found that the average time to discharge patients was measured as 178 minutes. When compared with the Pre intervention phase of DMAIC, there was a significant reduction in time from 210 minutes to 178 minutes demonstrating 15.26% decrease.

## **CONCLUSION: -**

- The results demonstrated a positive impact reducing the patient discharge time due to application of suggested recommendations for period of three months. The patient discharge process was complex and not fully standardized and involved multi department processing and sequential operations. Hence the improvement suggestions were given according to the various processes and departments. This project has provided analytic and valuable information to the top management and certain managerial decision which can reduce more Turn Around Time for the discharge. This project has been extremely challenging due mainly to the large scope and the complexity of the processes, and the involvement of stakeholders from a variety of levels and across different functional areas. However, understanding process dynamics and improving collaboration between stakeholders ensures a significant and suitable impact on operations. Thus, this will help us to increase the patient satisfaction and cost reduction.

## **LIMITATIONS**

- This study is focused on in Inpatient Department only.
- Study period is three months only
- Due to shortage of time questionnaire analysis for satisfaction of patients cannot be done post implementation phase.

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