

**A COMPREHENSIVE ANALYSIS OF DISCHARGE DELAYS AND THEIR
UNDERLYING CAUSES IN KEY DEPARTMENTS OF A TERTIARY CARE MULTI
SPECIALTY HOSPITAL**

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Master of Business Administration (MBA)

in

Hospital and Health Management

by

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Under the Supervision and Guidance of

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2025

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CERTIFICATE

This is to certify that dissertation titled **“A Comprehensive Analysis of Discharge Delays and Their Underlying Causes in Key Departments of a Tertiary Care Multispecialty Hospital”** is a record of the research work undertaken by **Dr. Shubhi Mishra** in partial fulfillment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and her approach to the research study has been sincere, scientific, and analytical.

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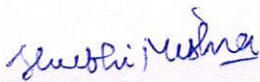
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DECLARATION BY STUDENT

I hereby declare that this dissertation titled **“A Comprehensive Analysis of Discharge Delays and Their Underlying Causes in Key Departments of a Tertiary Care Multispecialty Hospital”** I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.


(Signature)

Dr. Shubhi Mishra

Date: 18/06/2025

ABSTRACT

Title of the Study:

A Comprehensive Analysis of Discharge Delays and Their Underlying Causes in Key Departments of a Tertiary Care Multi-Specialty Hospital

Author:

Dr. Shubhi Mishra

Background:

Efficient hospital discharge is a critical aspect of hospital operations, directly affecting patient flow, satisfaction, and bed availability. Despite established protocols and digital systems, delays persist due to administrative, clinical, and logistical inefficiencies. This study investigates discharge turnaround times (TAT) and the root causes of delays in a tertiary care setting.

Aim:

The study aimed to assess the extent of discharge delays and their underlying causes in five major departments, evaluate the role of payment modes, and propose evidence-based strategies for process improvement.

Objectives:

- Measure average discharge TAT.
- Identify department-wise and reason-wise causes of delays.
- Compare TAT across different payment categories (Cash, TPA, PSU).
- Recommend improvements to streamline discharge workflows.

Methods:

An observational, cross-sectional, descriptive study was conducted between March and June 2025 at Max Super Specialty Hospital, Vaishali. A total of 826 discharge cases from five departments—Oncology, Urology, Obstetrics & Gynaecology, Orthopaedics, and General Surgery—were reviewed using hospital records, HIS data, and direct observation. TAT was defined from the consultant's discharge advice to the patient's physical exit. Delay reasons were classified into correctable and non-correctable categories.

Key Findings:

The study revealed that the average discharge turnaround time (TAT) at the hospital was 342.83 minutes, significantly exceeding the NABH benchmark of 180 minutes, highlighting the need for process optimization. Among the departments studied, Urology and Oncology experienced the highest delays, with average TATs of 323 minutes and above, while Orthopaedics and Obstetrics & Gynaecology reported relatively shorter discharge times.

A comparative analysis of payment modes showed that discharge TATs varied considerably. Cash patients experienced the shortest average TAT of 4 hours and 8 minutes, while TPA (Third Party Administrator) patients faced delays averaging 6 hours, and PSU (Public Sector Undertaking) patients averaged 5 hours and 57 minutes. These discrepancies were largely attributed to the additional administrative burden and documentation required for insured patients.

The most common reasons for discharge delays included: waiting for wheelchairs (20.2%), waiting for attendants, vehicles, or lunch breaks (19.2%), pending discharge summaries (19.2%), billing issues (12.8%), and pending floor clearance/no dues (11.5%). These causes were further categorized as correctable or non-correctable. Notably, approximately 71.5% of the delays were correctable, indicating significant scope for internal process improvement.

The study also found that TPA/insured patients consistently faced longer delays due to extensive billing documentation and insurance approval processes, which often required multiple rounds of verification and coordination with external agencies. These findings underscore the urgent need for hospitals to streamline discharge workflows, particularly for insured patients, through better coordination, automation, and role-specific accountability.

Conclusion:

The study concludes that discharge delays are largely preventable and stem from systemic inefficiencies—primarily in documentation, billing, and logistics. Non-clinical factors such as transportation and handovers were equally impactful. Streamlining interdepartmental coordination, digitizing billing and discharge summaries, assigning floor-level discharge coordinators, and setting fixed discharge timings could reduce TAT substantially. Implementing a real-time discharge tracking system and improving communication with patients and insurers are critical for optimizing the process. By

addressing correctable delays and operational bottlenecks, hospitals can improve patient satisfaction, meet accreditation standards, and enhance overall service delivery.

Keywords:

Discharge Process, Discharge Delay, Turnaround Time (TAT), NABH Standards, TPA Billing, Inpatient department, Discharge Efficiency.

ACKNOWLEDGEMENT

I would like to take this opportunity to express my heartfelt gratitude to all those who supported me throughout the course of my dissertation project titled “A Study on Reasons of Delay in Discharge Process in a Multi Super Speciality Hospital”, undertaken at Max Super Speciality Hospital, Vaishali, Ghaziabad, as a part of the Master of Business Administration (Hospital and Health Management) program at IIHMR University, Jaipur.

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I am also thankful to the entire medical administration team, nursing staff, billing department, pharmacy, TPA coordinators, and support staff at Max Hospital for their cooperation and assistance during the data collection and observation phases. Their willingness to share insights and support the study contributed significantly to the quality and depth of this research.

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Sincerely,

Dr. Shubhi Mishra

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LIST OF ABBREVIATION

S.No.	ABBREVIATION	FULL FORM
1.	NABH	National Accreditation Board for Hospitals and Health Care Organizations
2.	HIS	Hospital information system
3.	TAT	Turnaround time
4.	IPD	Inpatient department
5.	OPD	Outpatient department
6.	PSU	Public Sector Units
7.	TPA	Third party administrator
8.	ICU	Intensive care unit
9.	MICU	Medical Intensive care unit
10.	SICU	Surgical intensive care unit
11.	CCU	Cardiac/ Critical care unit
12.	MS	Medical Superintendent
13.	AMS	Assistant medical superintendent
14.	DMS	Director of Medical Superintendent
15.	GDA	General duty assistance
16.	CNO	Chief nursing officer

HOSPITAL PROFILE

Max Super Specialty Hospital, Vaishali, Ghaziabad is a 370+ bed facility providing an unmatched range of alternatives for diagnostic and preventive care in specialties like Oncology, Neuro Sciences, Cardiac Sciences, Orthopaedics, Nephrology, Kidney Transplant, Liver Transplant, Urology, Gastroenterology, Pulmonology, Aesthetic etc.

With 16 HDU, 128 critical care beds, and 14 high-end modular Operation Theatres, Max Hospital, Vaishali is home to the latest medical technology. And under the guidance of over 259 leading doctors and 610 nursing staff, and medical experts, the entire hospital is committed to providing the highest standard of medical care to every patient that walks through our doors.

With over 28 clinical specialties, Max Hospital, Vaishali delivers integrated medical care in a multidisciplinary environment supported by a team of highly qualified doctors, nurses, and healthcare professionals. The hospital offers comprehensive specialist services equipped with cutting-edge medical technology, making it a regional center for complex procedures such as neurovascular interventions, targeted cancer therapies, cardiac surgeries, orthopedic procedures, and fertility treatments. Located in Ghaziabad, Max Hospital, Vaishali is recognized as one of the leading hospitals in the Delhi-NCR region and has earned a strong reputation for its world-class infrastructure, advanced technology, and stringent health and safety standards, backed by numerous awards and industry accreditations.

What truly distinguishes us as one of the top hospitals in India is our accreditation by the National Accreditation Board for Hospitals and Healthcare Providers (NABH) and the National Accreditation Board for Testing and Calibration Laboratories (NABL).



SCOPE OF SERVICES

Outpatient Services (OPD) • General Medicine & Specialties • Internal Medicine • Endocrinology & Diabetes • Pulmonology • Rheumatology • Cardiology & CTVS • Gastroenterology • Nephrology • Urology • Psychiatry & Psychology • Cancer Care • Head & Neck Cancer • Breast & Gynaecological Cancer • Thoracic Cancer • Gastrointestinal Cancer • Musculoskeletal Cancer • Haemato-Oncology & BMT • Paediatric Cancer Surgical Specialties • GI Surgery • Liver Transplant & Biliary Sciences • Robotic, Minimal Access & Bariatric Surgery • Spine Surgery • Orthopaedics & Joint Replacement • Plastic & Reconstructive Surgery • Thoracic Surgery • Aesthetic Surgery • Neurology & Neurosurgery • Obstetrics & Gynaecology	Inpatient Services (IPD) • Critical Care Units (ICUs) • Specialty Inpatient Units • Bone Marrow Transplant Unit • Liver Transplant Unit • Kidney Transplant Unit • Oncology & Chemotherapy Day Care • IVF Lab Surgical Services • Operation Theatre Complex • Minimal Access Surgery • Robotic Surgery • General & Laparoscopic Surgery • Thoracic & Spine Surgery • Emergency Surgeries Diagnostic & Imaging Services • Radiology: MRI, CT, X-Ray, Ultrasound, Fluoroscopy • Nuclear Medicine & PET-Scan • ECG, ECHO, TMT, PFT, Holter Monitoring • Endoscopy / ERCP • Neuro Diagnostic Lab • Mammography, Ultrasound, and Lithotripsy
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• IVF & Infertility • Paediatrics • Paediatric Orthopaedics Other OPD Services • Dermatology • Homeopathy • Dental • Audiometry & Speech Therapy • Physiotherapy (Head, Neck, Breast Cancer, Rehabilitation)	Laboratory & Pathology Services • Central Laboratory • Pathology
Emergency & Critical Services • 24x7 Emergency Department • Trauma Services • Intensive Care Units (ICUs) • Cardiac Emergency (Cath Lab & CCU)	Pharmacy Services • Max Pharmacy (Multiple Locations)

HOSPITAL FLOORS

TOWER 1

Floor	IPD Services	OPD Services	Other Services
Seventh Floor	-Bone Marrow Transplant Unit -Medical ICU – 7 -Respiratory ICU -Kidney Transplantation ICU	NA	NA
Sixth Floor	-Economy Ward -Medical ICU - 6	-OPD - Nephrology	-Dialysis Unit 1 & 2 -Nursing Training Hall
Fifth Floor	-General Ward (MEN& WOMEN)	-Internal Medicine -Pulmonology -Endocrinology & Diabetes -Rheumatology -Neurology & Neurosurgery -Psychiatry and Psychology -Neuro Diagnostic Lab	-Max Pharmacy
Fourth Floor	-Rooms 3401 to 3427	-Minimal Access, Bariatric & Robotic Surgery	-Chemo Day Care I & II -Gastro & Liver ICU
Third Floor	-Rooms 3300 to 3328 -Birthing Centre & Neonatal ICU	-Obstetrics & Gynaecology -IVF & Infertility -Paediatric -Orthopaedics -Homeopathy	-International Lounge

Second Floor	-Coronary Care Unit -Paediatric ICU -Day Care Surgical -Surgical ICU -CTVS ICU	NA	-Cath Lab -Lithotripsy Procedure Room -Operation Theatre
First Floor	-Rooms 3101 to 3133 -Neuro ICU -Day Care Surgical Ward	-Dental -Dermatology -GI Surgery -Cardiology & CTVS -Urodynamic Suite -Ophthalmology - Orthopaedics & Joint Replacement -Speech Therapy -Urology -Aesthetic & Plastic Surgery -General & Laparoscopic Surgery -Spine Surgery -Thoracic Surgery	-IVF Lab
Service Floor	-IPD Pharmacy Store	NA	-Administrative Block -Physiotherapy - Other (Conference Hall – 1, Library, Nursing Office, Doctors’ Lounge)
Ground Floor	NA	-Preventive Health Programme	-Emergency -Blood Bank -MRI, CT, X-Ray, USG, ECG -Billing & TPA Desk -ATM & Cafeteria

Basement (-1)	NA	NA	-Billing -Linen Room -Bio-medical Waste -Mortuary
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TOWER 2

Floor	IPD Services	OPD Services	Other Services
Ground Floor (GF)	NA	-Oncology Physiotherapy (Breast & Gynaecological Cancer)	-Max Pharmacy -Women Wellness Centre -Bronchoscopy / EBUS / EUS, Oral Oncology & Dental Rehab, Tobacco Cessation
Sixth Floor (6F)	NA	-OPD: Head & Neck Cancer -OPD: Thoracic Cancer -OPD: Gastroenterology -OPD: Liver Transplant & Biliary Sciences -OPD: Haematology, Haemato-Oncology & BMT -OPD: Paediatric Cancer -OPD: Urogenital Cancer -OPD: Musculoskeletal Cancer	-Tumour Board Room - Oncology Physiotherapy (Head & Neck) -Ultrasound -Mammography -Endoscopy / ERCP
Seventh Floor (7F)	-Bed No. 2701-2729 -General Ward (Women & Men) -HUD	None	None

Eighth Floor (8F)	-Bed No. (2801–2804) & (2807– 2826) -VIP Suite 2805–2806 General Ward	NA	NA
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CHAPTER 1: INTRODUCTION

1.1 Background

Hospital discharge is the formal process through which a patient is released from the hospital once the treating physician determines that the patient is medically stable and no longer requires inpatient care. This process involves multiple steps to ensure a safe and smooth transition from hospital to home or another care facility. It begins with medical clearance, where the doctor assesses the patient's recovery and confirms that hospital-level treatment is no longer needed. Following this, necessary documentation is prepared, including a discharge summary that outlines the diagnosis, treatment received, medications prescribed, and follow-up care instructions. Discharge planning is a crucial component, involving coordination among healthcare providers to educate the patient and caregivers about post-discharge care, medication management, and warning signs that may require medical attention. Additionally, the discharge process includes administrative and billing procedures, such as finalizing hospital bills, settling insurance claims, and obtaining necessary approvals. Only after all clinical and administrative steps are completed does the patient physically leave the hospital. A well-structured discharge process plays a vital role in ensuring patient safety, reducing the risk of complications or readmissions, and enhancing overall healthcare outcomes.

1.2 Type of Hospital Discharges

Routine discharge to home: The most common type, where the patient has recovered sufficiently and can continue recovery at home. This type of discharge includes providing the patient with a discharge summary, medications, and follow-up instructions. It represents a successful completion of inpatient care and transition to outpatient or home-based management.

DAMA (Discharge against medical advice), also known as **LAMA (leave against medical advice).** The patient decides to leave the hospital in this case before the medical staff suggests discharge. This may occur due to personal, financial, or cultural reasons. The patient or their legal guardian is usually required to sign a consent form acknowledging the risks and releasing the hospital of legal liability.

Discharge to another healthcare facility is necessary when a patient still requires care that cannot be provided in the current hospital setting. This includes transfer to rehabilitation centers, long-term care facilities, psychiatric institutions, or skilled nursing homes. Such transfers are coordinated by the medical and administrative teams to ensure continuity of care.

Discharge on request occurs when a patient or their family requests discharge, often for transfer to another hospital or due to non-medical factors such as financial concerns or preference for a different provider. While similar to DAMA, this type of discharge may happen with the agreement of the medical team and proper planning for further care.

Mortality discharge in cases where a patient passes away during hospitalization, it is classified as a mortality discharge. This type of discharge involves specific legal and documentation procedures, including issuing a death certificate and handing over the body to the family with due sensitivity and respect.

Daycare or day surgery discharge, which involves patients undergoing minor procedures that do not require overnight admission. These patients are admitted, treated, and discharged on the same day with appropriate post-operative instructions.

Discharge for home-based or palliative care, typically for patients with terminal illnesses who prefer to spend their remaining time at home. In such cases, home care services or hospice support may be arranged to provide comfort-focused care outside the hospital setting.

1.3 Delayed discharge is a common challenge faced by hospitals and needs urgent attention to improve bed occupancy rates and minimize patient waiting times. Extended waiting periods often lead to patient frustration, which can negatively impact overall satisfaction levels. The discharge process is complex and requires seamless coordination among various hospital departments to avoid unnecessary delays.

This study focuses on tracking and analyzing the time taken by key departments involved in the discharge process, including billing, pharmacy, insurance, cash counters, discharge summary preparation, and ward-level procedures. By systematically observing these processes, the study identifies the primary factors contributing to discharge delays and provides actionable recommendations aimed at improving quality of care, enhancing patient satisfaction, and strengthening the hospital's reputation. The main objective is to

investigate the causes of discharge delays. As discharge is considered a critical quality indicator in hospital operations, the study also compares discharge turnaround times (TAT) with standards set by NABH to identify performance gaps.

In a hospital setting, discharge refers to the formal point at which a patient leaves for home or another care facility after receiving treatment. The decision to discharge a patient is made by the consultant doctor. Once this decision is made, patients are advised to inform the ward secretary of their expected departure time. The ward secretary then ensures that all necessary documentation and billing processes are initiated in advance. Upon receiving the discharge order, the secretary coordinates with the billing department, which begins preparing the final bill after pharmacy clearance is complete. Once the payment is processed, patients are allowed to vacate their rooms. Before exiting the hospital premises, patients receive their discharge summary and prescribed medications from the ward secretary.

This study underlines the importance of efficient discharge planning and process management, recognizing discharge as not only a clinical milestone but also a key operational metric that influences bed availability, workflow efficiency, and overall patient experience.

Significance of the Study

In India's urban healthcare settings, delays in discharge have become increasingly common due to a mix of systemic inefficiencies, communication gaps, and administrative hurdles. This study is significant as it not only quantifies these delays but also examines their root causes using real-time hospital data. It contributes evidence-based insights to hospital administrators and policymakers for process redesign and quality improvement.

Research Problem-Despite advancements in hospital information systems (HIS) and care coordination, discharge delays persist in tertiary care facilities. The extent, variation, and causes of these delays differ across departments and depend on variables such as payment type and clearance protocols. Understanding these differences is essential for targeted interventions.

Aim

To identify the causes of delays and explore practical solutions to minimize variability in the discharge cycle time at Max Hospital, Vaishali.

Objectives

- To estimate the Average Discharge turnaround time (TAT) of the patients in a multi-speciality hospital.
- To identify and analyse the underlying causes contributing to discharge delays across key clinical departments.
- To evaluate how different payment methods influence the nature and extent of discharge-related delays.
- To recommend actionable, evidence-based strategies aimed at eliminating root causes of delays and improving discharge workflow efficiency.

1.4 Turnaround Time (TAT)- A key performance metric in evaluating the efficiency of the discharge process. TAT in discharge refers to the total time taken from the moment the consultant advises discharge to the actual physical departure of the patient from the hospital. It encompasses all administrative, clinical, and logistical steps involved. Prolonged TAT indicates process inefficiencies and may lead to patient dissatisfaction, delayed bed availability for incoming patients, and increased operational costs. Therefore, monitoring and optimizing discharge TAT is essential for improving hospital workflow, meeting accreditation standards such as those set by NABH, and ensuring high-quality patient care. The National Accreditation Board for Hospitals and Healthcare Providers (NABH) has established guidelines to ensure a timely and efficient discharge process, which is crucial for patient satisfaction and optimal hospital operations.

1.5 Standard (NABH) Discharge TAT Guidelines

Standard Discharge TAT: NABH recommends that the entire discharge process should be completed within **180 minutes (3 hours)**.

Breakdown of Discharge Process Time:

- Preparation of Discharge Summary: **30 minutes**
- Return of Unused Medicines to Pharmacy: **30 minutes**
- Preparation of Final Bill: **30 minutes**
- Bill Settlement/Approval and Departmental Clearances: **60 minutes**
- Variations Based on Payment Mode:

Cash Patients: The standard TAT is **2–3 hours**.

Insurance Patients/TPA/PSU: Due to additional steps like third-party approvals, the TAT **extends to 3–4 hours**.

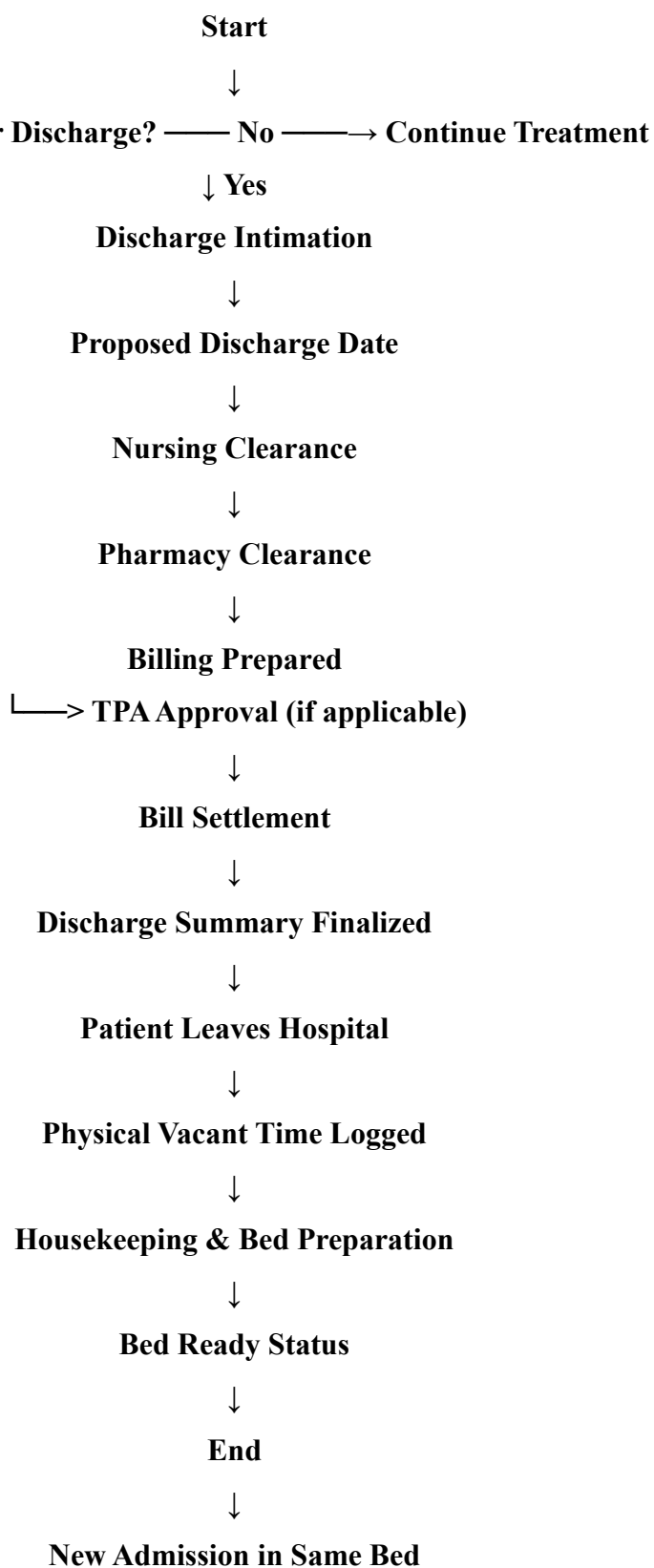
1.6 Risks and Implications of Discharge Delays

Delays in the discharge process not only disrupt operational flow but also have wide-ranging clinical, administrative, financial, and reputational consequences for hospitals.

- **Increased Risk of Hospital-Acquired Infections (HAIs):** Patients who remain in the hospital longer than necessary are more susceptible to infections, especially in multi-bedded wards and ICU-adjacent settings.
- **Reduced Bed Availability:** Discharge delays block timely bed turnover, especially in departments with high patient flow such as Emergency, ICU, and Surgical Units, leading to admission bottlenecks and longer wait times for incoming patients.
- **Patient Dissatisfaction and Anxiety:** Delays often result in frustration, confusion, and dissatisfaction among patients and their families. Poor discharge experiences negatively impact hospital ratings and word-of-mouth reputation.
- **Operational Inefficiency:** When beds are not vacated on time, scheduling of new admissions, elective surgeries, and critical transfers are adversely affected, causing a cascading impact across departments.
- **Billing Conflicts and Revenue Loss:** If patients are not informed of charges applicable after the standard discharge time (e.g., post 12:30 PM), disputes may arise, potentially leading to non-payment of extended stay charges.
- **Increased Cost of Care:** Extra hours of inpatient care increase resource consumption—nursing time, utilities, medications—which adds to the hospital's cost without proportional financial recovery.
- **Non-compliance with NABH Standards:** Prolonged discharge turnaround times violate NABH benchmarks (180 minutes), affecting audit scores, accreditation status, and institutional quality ratings.
- **Stress on Support Staff:** Delays often lead to unplanned workload spikes for billing, pharmacy, housekeeping, and nursing teams, affecting their efficiency and morale.
- **Poor Coordination Among Teams:** Systemic delays highlight underlying gaps in interdepartmental communication, real-time task monitoring, and clarity of roles.

Discharge delays have a ripple effect that compromises patient care, resource utilization, and hospital performance.

1.7 PROCESS FLOW OF DISCHARGE OF IP DEPARTMENT OF MAX HOSPITAL



Discharge Intimation: The discharge process begins when the treating doctor or junior resident determines that the patient is clinically stable and ready for discharge. The doctor communicates this intent to the ward staff and records the decision, which officially initiates the discharge process.

Proposed Discharge Date: The doctor specifies the expected discharge date, enabling other departments such as billing, pharmacy, and housekeeping to prepare accordingly. This advance notice helps avoid last-minute rushes and reduces delays.

Nursing Clearance: The ward nurse prepares the patient for discharge by removing intravenous lines, disconnecting monitoring equipment, checking vital signs, and completing all necessary nursing documentation and inventory.

Pharmacy Clearance: The pharmacy department processes the return of any unused medications, dispenses prescribed take-home medicines, and finalizes the billing for medications consumed during the hospital stay.

Bill Preparation: The billing department consolidates all charges related to the patient's stay, including room rent, procedures, investigations, and consumables. They prepare the provisional or final bill and share it with the patient or their attendant.

TPA Approval (if applicable): For insured patients, the bill is sent to the Third-Party Administrator (TPA) desk for verification and approval. The TPA sanctions the covered amount and communicates any balance payable by the patient.

Bill Settlement: The patient or their attendant settles any outstanding amount. Once the payment is made, a receipt and clearance slip are issued, allowing the discharge process to continue.

Discharge Summary Finalization: The doctor prepares a formal discharge summary that includes the diagnosis, treatment details, follow-up instructions, and prescribed medications. This summary is handed over to the patient by the nurse.

Patient Departure: The patient is escorted out of the hospital by a nurse or ward attendant, and the time of physical exit is recorded.

Physical Vacant Time Logging: The nursing station or ward clerk records the exact time when the bed becomes physically vacant, which is important for monitoring bed turnover efficiency.

Housekeeping Assignment: The ward-in-charge or housekeeping supervisor assigns housekeeping staff to clean and sanitize the vacated bed.

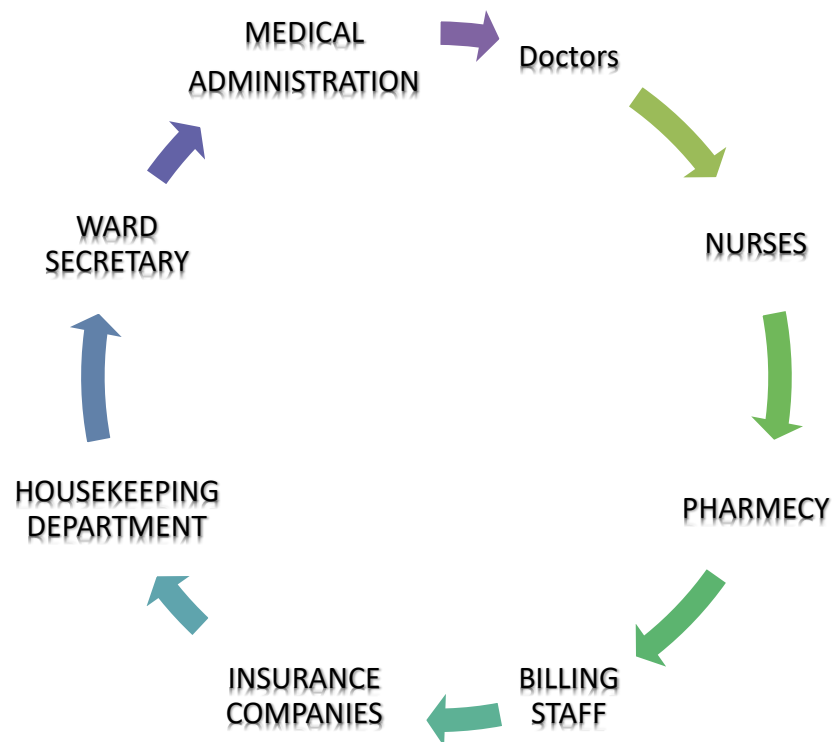
Bed Ready Status Update: Once cleaning and disinfection are complete, housekeeping updates the bed's status as ready in the hospital's bed management system.

New Admission in the Same Bed: Finally, the admission desk or bed management team admits a new patient to the now-available bed, thus completing the discharge process and supporting efficient utilization of hospital resources.

1.8 Departments of discharge process

Departments	Role in Discharge Process
Medical/Clinical Team (Doctors)	Initiates discharge; provides medical clearance; prepares discharge summary.
Nursing Department	Prepares patient for discharge (e.g., checking vitals, removing IV lines, assisting in shifting); coordinates and ensures proper patient handover.
Pharmacy Department	Processes return of unused medications; issues prescribed take-home medicines; completes pharmacy billing.
Billing Department	Generates final invoice; coordinates with TPA desk if insurance is involved; issues final bill for payment.
TPA/Insurance Desk	Verifies insurance documents; submits final bill to the TPA for approval; monitors claim processing.
Housekeeping Department	Cleans and sanitizes bed after discharge; updates on bed readiness for the next admission.
Ward Clerk / Reception	Updates patient movement status; logs time of physical bed vacancy; coordinates with housekeeping and admission.
Admission Desk / Bed Management Team	Admits new patients to available beds; monitors and manages bed turnover to optimize bed occupancy.
Medical Administration	Oversees the entire discharge process; ensures interdepartmental coordination; maintains discharge records and updates.

1.9 Key stakeholders of Discharge Process



Each stakeholder plays a critical role in ensuring a smooth and timely hospital discharge process. Doctors are central to the process as they assess the patient's clinical status and give final approval for discharge, ensuring medical readiness. The nursing department coordinates closely with patients and other departments, executes discharge orders, and educates patients about post-discharge care. Pharmacy staff are responsible for preparing and dispensing medications, which are crucial for continuity of care after the patient leaves. The billing department finalizes payments, and any delay here can postpone discharge. For insured patients, the TPA/insurance desk ensures timely approval of claims, which is essential to prevent financial bottlenecks. After discharge, the housekeeping team prepares the bed for the next patient, contributing to hospital bed turnover and operational efficiency. The ward clerk or reception manages documentation and internal communication to coordinate the discharge process. The admission or bed management team relies on timely discharge to allocate beds for incoming patients, directly impacting hospital resource utilization. Finally, the medical administration team oversees the entire discharge workflow, resolves escalations, and ensures policy compliance, making them key to process efficiency and patient satisfaction.

CHAPTER 2: REVIEW OF LITERATURE

S.no.	Author(s)	Year of Publication	Study Title	Key Findings
1.	Binda F., Marelli F., Cesana V., Rossi V., Boasi N., Lusignani M.	2023	Prevalence of Delayed Discharge Among Patients Admitted to the Internal Medicine Wards: A Cross-Sectional Study	This study found that 5.9% of patients admitted to internal medicine wards experienced delayed discharges, primarily due to advanced age, absence of caregivers, and high dependence in ADLs. Notably, 31.3% of these patients developed delirium, and hospital-acquired infections such as respiratory (18.4%) and urinary tract infections (17.7%) were common. The lack of available long-term care beds was the leading cause of delay, with some patients even dying (in-hospital mortality: 8.8%) before placement. Tools like the BRASS score accurately identified 87.8% of at-risk patients but did not significantly reduce hospital stays without systemic interventions. The study emphasizes the need for daily situation reports, robust bed management systems, and enhanced post-acute care infrastructure to improve discharge efficiency, reduce complications, and optimize hospital capacity.

2.	Kasturi Shukla Shrishti Upadhyay	2018	Predictive Modelling for Turn Around Time (TAT) of Discharge Process for Insured Patients in a Corporate Hospital of Pune City	The study found that insured patients experienced an average discharge Turn Around Time (TAT) of approximately 390 minutes (6.5 hours). Among the various steps in the discharge process, the submission of the discharge summary to the TPA department (TAT 4) and the final bill approval from the insurance company (TAT 5) were the most time-consuming and had the strongest predictive impact on the overall discharge TAT (TAT 7). It was also observed that patients with a longer hospital stay (more than 5 days) faced significantly greater delays in discharge, with overall TAT increasing by around one hour. However, there was no significant difference in discharge time between planned and unplanned discharges. The study concluded that coordinated efforts between hospitals and insurance companies, along with timely documentation and response to queries, are essential to reducing discharge delays for insured patients.
3.	Jenyz M. Mundodan , K.S. Sarala, V. Narendran ath	2019	A Study to Assess the Factors Contributing to Delay in Discharge Process in a Teaching Hospital	The average discharge process time was 5 hours and 41 minutes, significantly exceeding the NABH recommended limit of 180 minutes. Only 18.8% of patients were discharged within this timeframe. The main causes of delay were discharging summary preparation, delay in picking up the chart for billing, communication gaps regarding the final bill, and final checkout. Patients using insurance took longer than those paying by cash, though the difference was not

				statistically significant. The study highlights the need for better discharge planning and streamlined coordination across departments to reduce patient waiting time and improve hospital efficiency.
4.	Ms. S. Arthi , <i>Dr. N.G.P</i>	2020	A Study on Causes of Delay in Discharge Process in One of the Prominent Hospitals in Tamil Nadu	The study found that the main reasons for discharge delays were room vacation (34%), cash payment (20%), pharmacy clearance (18%), and insurance processing (8%). The average discharge time exceeded NABH's recommended 180 minutes, with most patients taking 6–8 hours. Only 8% were discharged within 2–4 hours. The authors recommend better discharge planning, faster summary preparation, improved interdepartmental coordination, added staff in pharmacy and transport, and a clear discharge policy to reduce delays and improve patient flow.

5.	Dr. Saurabh Sharma, Dr. Ravi Pratap Singh, Dr. Archita Kansal Tiwari, Dr. Pawan Parashar	2024	Analysis of Time Taken for the Discharge Process and its Determinants in a Tertiary Care Teaching Hospital	The study found that the average duration of the discharge process was 372 minutes (approximately 6.2 hours), with the main delays occurring during discharge summary preparation (248 minutes), file completion (164 minutes), and billing (74 minutes). Key reasons for these delays included overburdened junior residents, poor coordination between doctors and nursing staff, incomplete documentation, and mismatches with the Hospital Information System (HIS). Billing was especially delayed for TPA/insurance patients due to missing documents and a mandatory two-hour turnaround time for approvals. Other operational challenges included staff shortages, untrained personnel, multiple ward responsibilities, and inadequate communication with patients about discharge timelines and billing requirements. Focus group discussions revealed that residents often prioritized clinical duties over discharge procedures and that early preparation of discharge summaries could help. The study recommends process improvements such as pre-discharge summary preparation, fixed discharge timings (e.g., 3:00 PM), and prior patient notification regarding billing. Managerial suggestions include time management training for residents, regular staff orientation, and enhanced interdepartmental coordination.
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6.	Scott Levin, Sean Barnes, Matthew Toerper, Arnaud Debraine, Anthony Deangelo, Eric Hamrock, Jeremiah Hinson, Erik Hoyer, Trushar Dungarani, and Eric Howell	2021	Machine-learning-based hospital discharge predictions can support multidisciplinary rounds and decrease hospital length-of-stay	The study conducted at Johns Hopkins Hospital demonstrated that a machine learning-based discharge prediction system significantly improved hospital efficiency. By providing 24-hour advance alerts on likely discharges, the system enabled care teams to initiate early planning, streamline multidisciplinary workflows, and coordinate tasks more effectively. This led to a measurable reduction in patient length of stay and improved discharge turnaround times. The predictive tool supported more structured multidisciplinary rounds and enhanced decision-making, ultimately contributing to better bed utilization and patient flow. The study suggests that such data-driven systems can transform hospital discharge planning and be adapted to other settings to improve overall care delivery.
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CHAPTER 3: METHODOLOGY

3.1 Study Design

This is an observational, cross-sectional, descriptive study conducted aimed at improving the discharge process.

3.2 Research Question

What are the reasons/factors that contribute to delays in the hospital discharge process of IPD patients.

3.3 Study Setting

The study was conducted at Max Super Specialty Hospital, Vaishali, Ghaziabad, a 370+ bedded multi-specialty hospital. It involved IPD patients from five major departments: General Medicine, Oncology, Obstetrics & Gynaecology, Urology, Orthopaedics.

3.4 Study Duration

22nd March -05th June 2025

3.5 Sample Size

All eligible patients discharged from the selected departments during the study duration were included:

-Total discharges (826)

Inclusion Criteria

- IPD patients from the five selected departments
- Discharged between 22nd March and 5th June 2025
- Complete discharge data available in the Hospital Information System (HIS)

Exclusion Criteria

- DAMA (Discharge Against Medical Advice) / LAMA (Left Against Medical Advice)
- Patients who expired during hospitalization
- Incomplete/missing discharge data in HIS/CPRS
- Discharges from ER, Day-care, Chemo Day-care

- Discharges from ICU, NICU, HDU

3.6 Sampling Technique

Convenience sampling was used to include all discharged patients meeting the inclusion criteria during the study period.

3.7 Data Collection Procedure

Data was collected from the Hospital Information System (HIS), CPRS, discharge records, TAT logs, and direct observations. The primary metric measured was discharge Turnaround Time (TAT)- the duration from the physician's discharge order during ward rounds to the patient's physical exit from the hospital bed.

3.8 Data Analysis Plan

Quantitative data was compiled and analysed using Microsoft Excel.

Data Tracking Format Used-

To ensure accurate monitoring of the discharge process, a structured Excel-based discharge tracking tool was used. This sheet captured all key timestamps, from discharge intimation to physical bed vacancy and new admission. It facilitated the analysis of turnaround time (TAT), departmental delays, and coordination between departments such as nursing, billing, pharmacy, and housekeeping.

IPI D	Patient Name	Doctor Name	Specialisation	Bed No	Channel	Discharge Intimation	Proposed Discharge	Nursing Clearance	Pharmacy Clearance

Bill Prepared	TPA Approval	Bill Settled	Discharge Date Time	Discharge Summary	Physical vacant time	Reasons of delay	Bed ready (Hk)	New Adm.

3.9 Ethical Considerations

Patient confidentiality, data security, and ethical research conduct were strictly maintained. All identifiable information was anonymized. The data was used exclusively for academic and research purposes.

3.10 Basic Conceptual Framework

In an environment where efficient bed turnover is critical, discharge delays directly affect hospital operations, resource utilization, patient satisfaction, and reputation. This study is rooted in the principle that streamlining discharge workflows and addressing operational bottlenecks can enhance quality of care, reduce bed occupancy time, and boost hospital performance metrics. It allowed for the assessment of practical improvements and their impact on reducing discharge TAT.

CHAPTER 4: RESULTS

This chapter presents a detailed analysis of discharge delays observed at Max Super Speciality Hospital, Vaishali, between March 22 and June 05, 2025. The results are based on data extracted from the Hospital Information System (HIS), discharge logs, and qualitative remarks entered during the discharge process. The data includes 826 inpatient discharges across five key departments.

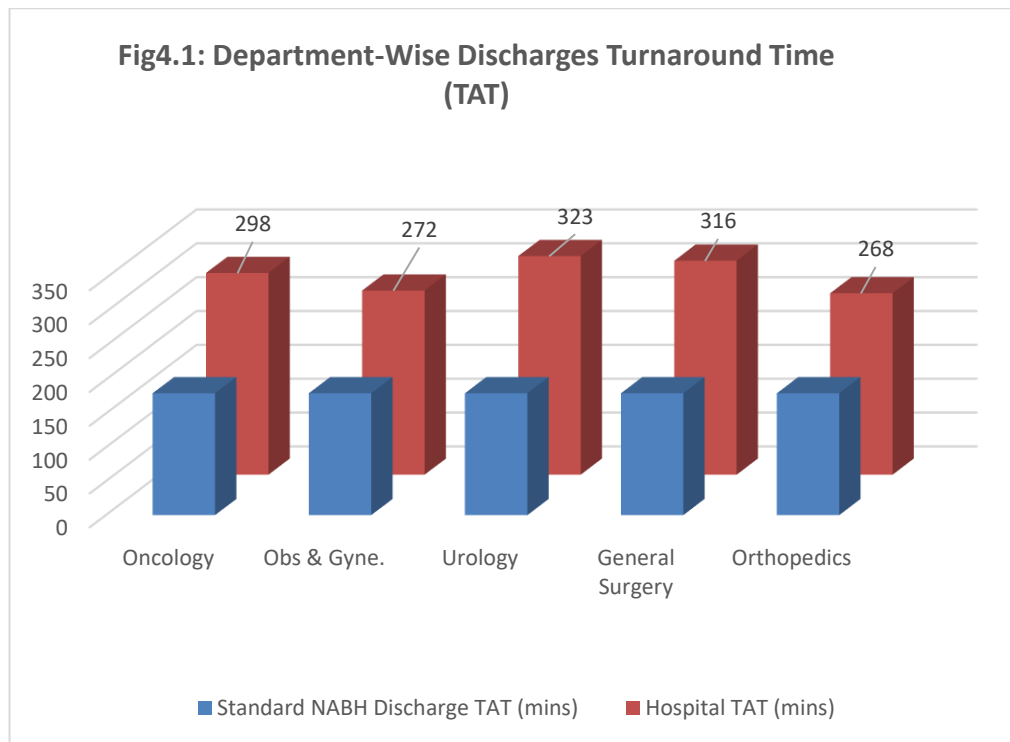
Table 4.1 Department-Wise Discharges Turnaround Time (TAT)

The average TAT was calculated from the time of discharge proposed by the consultant to the actual physical exit of the patient from the hospital.

Department	Standard NABH Discharge TAT (mins)	Hospital TAT (mins)	Delay in TAT (mins)
Oncology	180	298	118
Obs & Gyne.	180	272	92
Urology	180	323	143
General Surgery	180	316	136.05
Orthopedics	180	268	88

Observations:

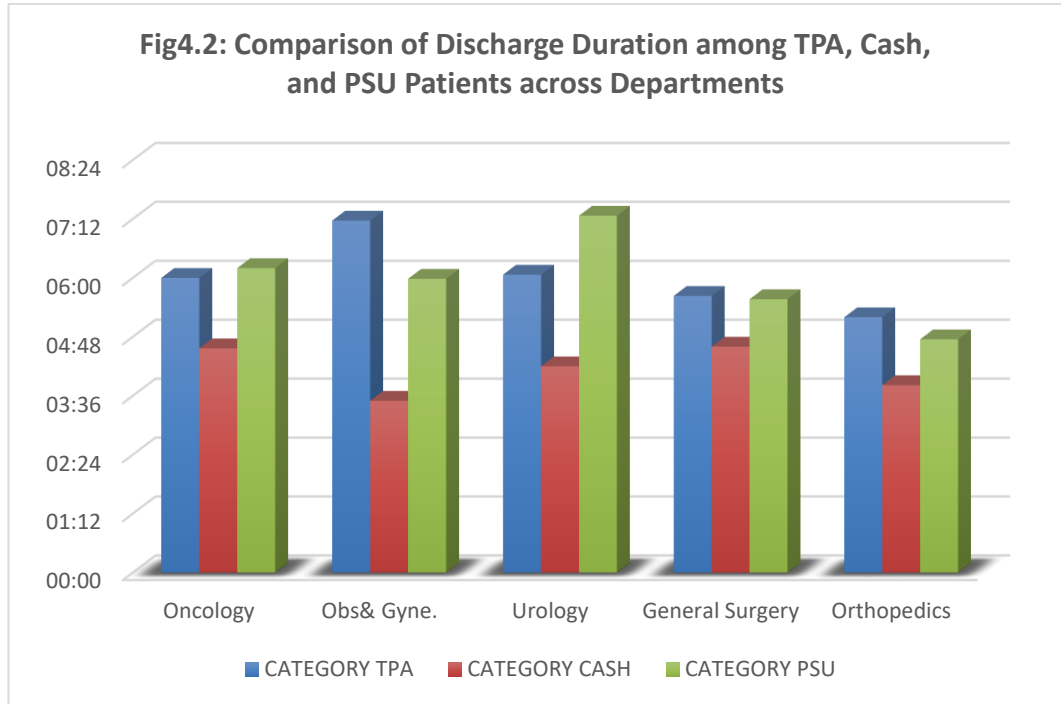
- **Range:** From ~268 minutes (04:28) - best case to ~ 323 minutes (05:23) - worst case.
- **Departments with highest delay:** Oncology and Urology departments (especially TPA patients)
- **Departments with faster discharges:** Obstetrics & Gynecology and Orthopedics (especially cash patients).
- All departments had **TATs significantly exceeding the NABH standard**, highlighting systemic inefficiencies.
- Hospital TAT: 342.83 mins (05:42:50)
- Delay in TAT: 162.83 mins (02:42:50)



The bar graph in fig1, showing a consistent trend of all departments exceeding the NABH TAT of 180 minutes. The Urology and General Surgery departments exhibit the largest gaps, reflecting major bottlenecks in discharge coordination. Orthopaedics and Obs. & Gynae., although better performing, still require workflow refinement to meet accreditation standards.

Table 4.2: Comparison of Discharge Duration among TPA, Cash, and PSU Patients across Departments

Department	Payment Mode		
	TPA	CASH	PSU
Oncology	06:00	04:34	06:12
Obs& Gyne.	07:10	03:30	05:59
Urology	06:04	04:12	07:16
General Surgery	05:38	04:36	05:34
Orthopedics	05:12	03:49	04:45



The chart compares discharge durations among TPA, Cash, and PSU patients across five departments. TPA patients face the longest delays, especially in Obstetrics & Gynecology (~7 hrs 15 mins) and Urology. Cash patients have the shortest discharge times in all departments, with Orthopedics and Obstetrics & Gynecology showing the lowest durations. PSU patients experience moderate to high delays, often exceeding TPA in Urology. These variations highlight the need for streamlined TPA processes, better PSU coordination, and department-wise interventions. Standardizing discharge protocols and improving communication can help reduce delays and ensure timely, efficient, and equitable discharge for all patient categories.

Table 4.3: Average Discharge Turnaround Time (TAT) by Payment Mode

Payment Mode	Average TAT
Cash	04:08
TPA	06:00
PSU	05:57

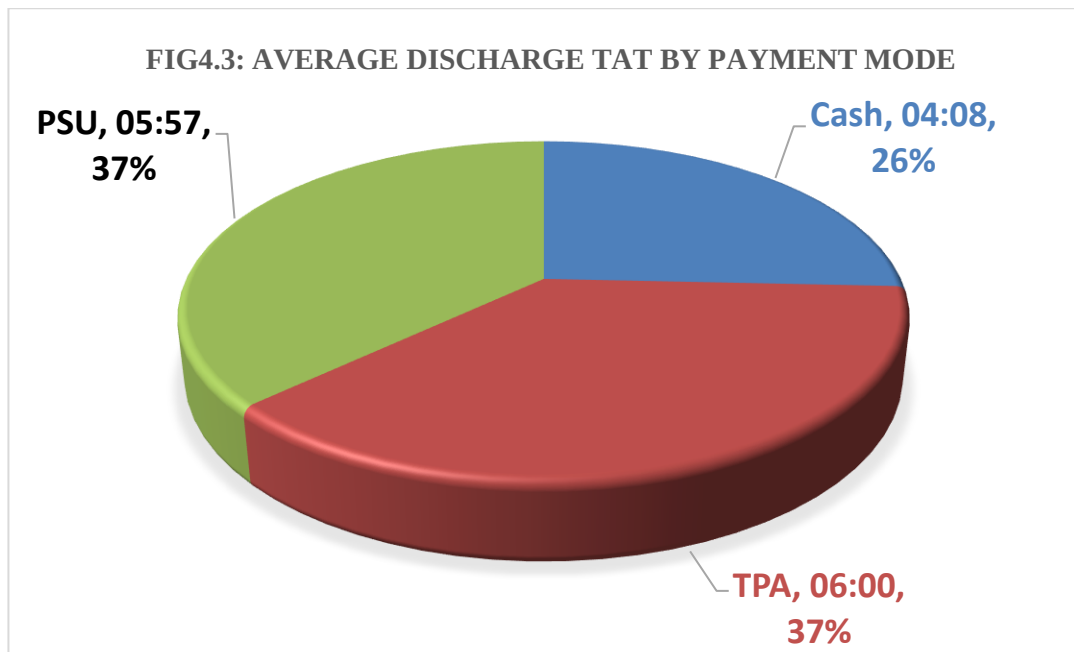


Fig 4.3 illustrates the average discharge turnaround time (TAT) based on payment categories—Cash, TPA, and PSU. The pie chart shows that TPA patients account for the largest share of discharge time, indicating they experience the longest delays. PSU patients follow, occupying a moderate portion of the TAT, while Cash patients represent the smallest segment, reflecting the shortest discharge duration. This suggests that discharge processes are fastest for cash-paying patients due to simpler billing procedures, while TPA discharges are delayed due to complex documentation and approval requirements. Optimizing TPA and PSU discharge workflows can significantly improve overall hospital efficiency.

Table 4.4 Department-Wise Breakdown of Discharge Delay Reasons

Delay Reason	General Surgery	Obs & Gynae	Oncology	Orthopedics	Urology
Waiting for Wheelchair	20	12	18	6	7
Pending Floor Clearance/ No dues	14	6	5	10	1
Ongoing Medication/Procedure	12	7	5	2	3
Waiting for Attendant/Vehicle/Lunch	17	14	14	8	7
Discharge Summary Pending	9	10	14	9	18
Billing Issues	7	9	11	7	6
Consultation Pending	3	7	5	2	7

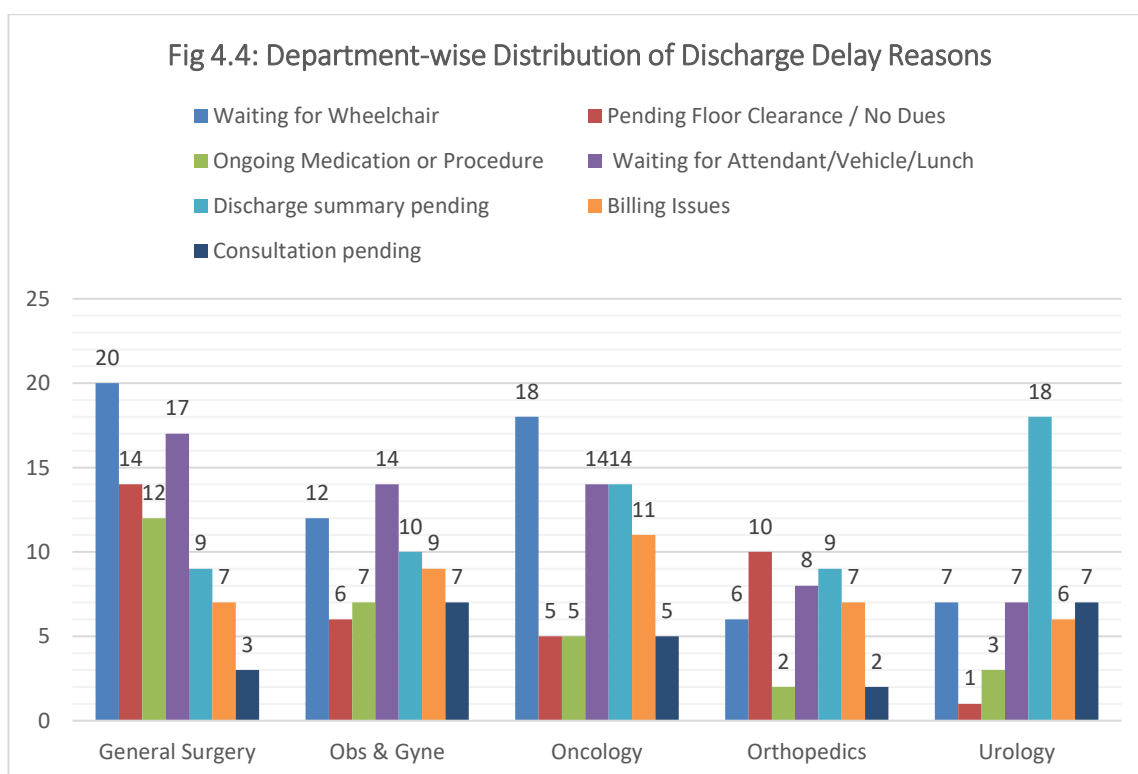


Fig 4.4 shows department-wise distribution of discharge delay reasons. The most common delay across all departments is “Waiting for Wheelchair,” peaking in General Surgery (20 cases) and Oncology (18). The least common reason is “Consultation Pending,” with the lowest in Urology (1 case). General Surgery has the highest total delays, driven by wheelchair wait, floor clearance, and waiting for attendant/vehicle/lunch. Orthopedics shows the lowest overall delays, with comparatively fewer counts across all categories. Departments like Oncology and Urology also face significant delays due to discharge summary and logistics. The data highlights the urgent need to strengthen logistics support (wheelchairs, GDA availability) and ensure timely documentation (discharge summaries). Interventions must focus on improving transport coordination and pre-scheduling discharge components to reduce these operational bottlenecks.

Table 4.5 Major Reasons of Delay in Planned Discharges

Reasons of Delay	Frequency	Cumulative %
Waiting for Wheelchair	63	20.19%
Waiting for Attendant/Vehicle/Lunch	60	19.23%
Discharge Summary Pending	60	19.23%
Billing Issues	40	12.82%
Pending Floor Clearance / No Dues	36	11.54%
Ongoing Medication or Procedure	29	9.29%
Consultation Pending	24	7.69%
Total	312	100.00%

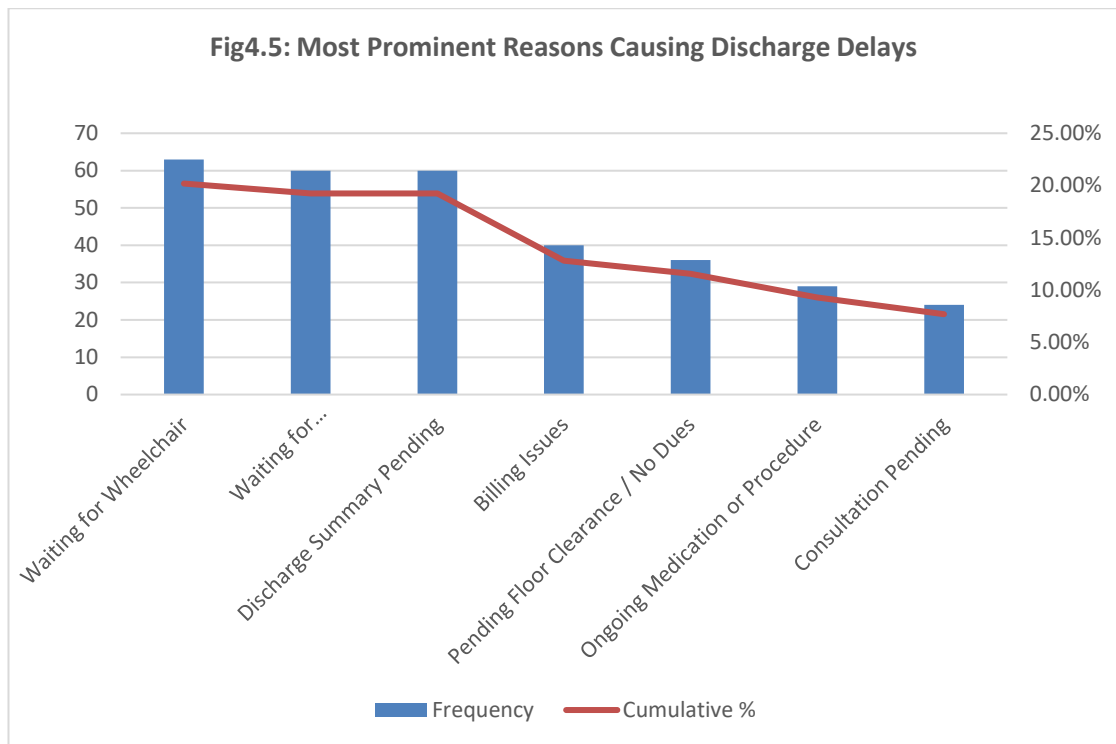


Fig 4.5 illustrates the most prominent reasons causing discharge delays, based on frequency and cumulative percentage. The leading cause is “Waiting for Wheelchair” (20.19%), followed closely by “Waiting for Attendant/Vehicle/Lunch” and “Discharge Summary Pending” (both nearly 19.23%). These top three reasons collectively account for over half of the total delays. Secondary contributors include Billing Issues, Pending Floor Clearance/No Dues, and Ongoing Medication/Procedure, while Consultation Pending is the least frequent. The graph emphasizes the need to address logistical challenges, particularly transportation and communication with attendants, alongside streamlining the documentation process. Strengthening floor-level operational readiness can significantly reduce discharge turnaround time and enhance patient satisfaction.

Correctable and Non-Correctable Reasons of Delays

Correctable Delays: Delays that can be reduced or eliminated through better hospital processes, resource management, or improved communication. Correctable delays are process-related and can be improved by the hospital.

Examples

- Pending floor clearance / No dues delay
- Waiting for wheelchair
- Discharge summary not ready / Explanation or handover delay
- Billing issues / Bill not prepared
- Waiting for consultation (doctor, dietician, physiotherapist)

Non-Correctable Delays: Delays that are mostly outside the hospital's direct control, often due to patient needs or external factors. Non-correctable delays depend on patient condition or external factors and are less controllable by the hospital.

Examples

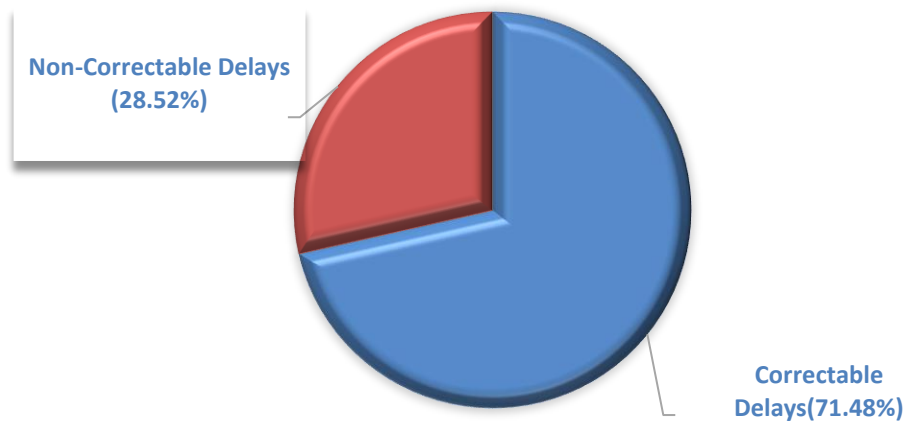
- Ongoing medication or procedure (e.g., chemo, cannula removal, dressing)
- Waiting for attendant, vehicle, or lunch.

Table 4.6 Correctable Delays vs Non-Correctable Delays

Correctable Delays	%age	Non-Correctable Delays	%age
Waiting for Wheelchair	20.19%	Ongoing Medication or Procedure	9.29%
Pending Floor Clearance / No Dues	11.54%	Waiting for Attendant/Vehicle/Lunch	19.23%
Discharge Summary Pending	19.23%		
Billing Issues	12.82%		
Consultation Pending	7.69%		
Total	71.48%		28.52%

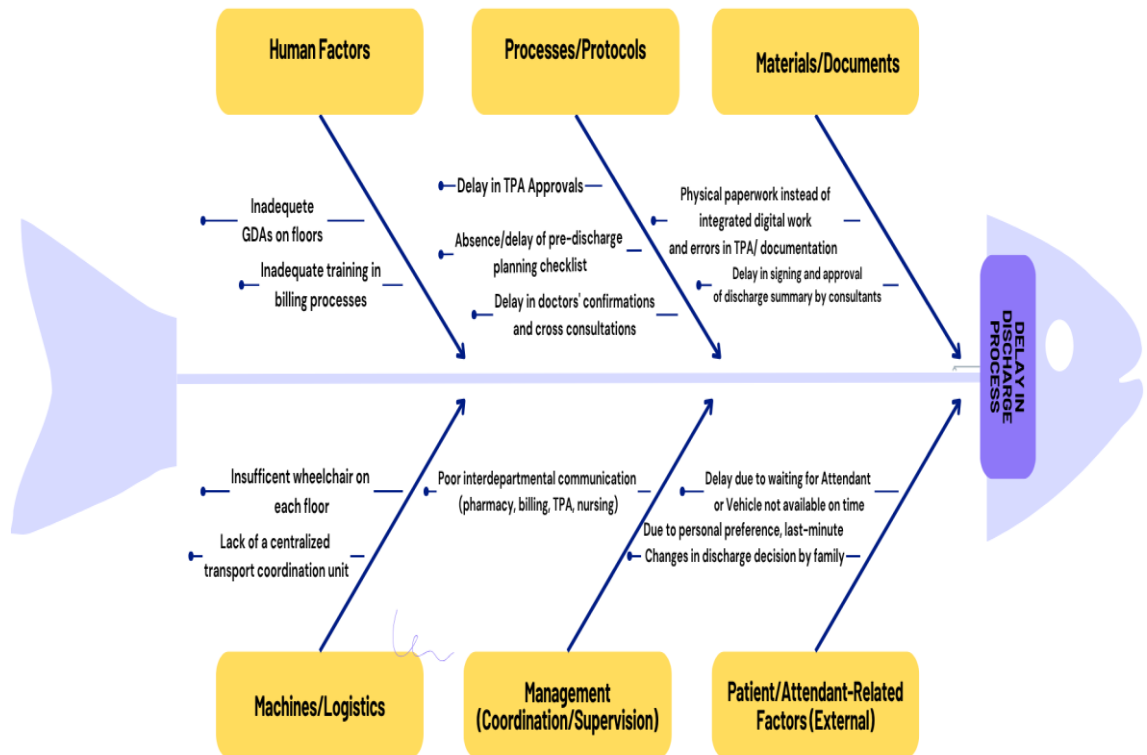
The discharge delay reasons were categorized into two groups: correctable and non-correctable. Correctable delays accounted for 71.47% of the total delays and included issues like *waiting for wheelchair, billing problems, pending discharge summaries, and consultation delays*. Non-correctable delays made up 28.52%, largely driven by *ongoing treatments and unavailability of attendants or vehicles*. This highlights a major opportunity for process improvements in hospital discharge planning.

FIG4.6: CORRECTABLE DELAYS VS NON-CORRECTABLE DELAYS



The analysis revealed that a significant portion (**71.47%**) of discharge delays were correctable in nature. These delays can be addressed through improved logistics, streamlined processes, and better coordination. Only **28.52%** of delays were due to unavoidable medical or external reasons, suggesting that most delays are within the hospital's control and can be reduced through focused quality improvement initiatives.

FISH BONE ANALYSIS (ROOT CAUSE ANALYSIS)



The fishbone diagram above categorizes the root causes of discharge delays under six main headings: Human Factors, Processes/Protocols, Machines/ Logistics, Materials/ Documents, Management (Coordination/Supervision, and Patient/ Attendant-related factors (External Factors). These categories represent systemic and operational factors observed during the study. Common issues include insufficient wheelchairs, pending discharge summaries, billing delays, and poor interdepartmental coordination. Patient-side factors such as waiting for attendants or transport also contributed. The diagram helps visualize the complexity of the discharge process and highlights key areas for intervention and quality improvement.

CHAPTER 5: DISCUSSIONS

5.1 Interpretation of Findings

This study aimed to analyse the reasons for delays in the discharge process at Max Super Specialty Hospital, Vaishali, Ghaziabad focusing on key departments such as Oncology, Obstetrics & Gynaecology, Urology, General Surgery, and Orthopaedics. The findings indicate that the average discharge turnaround time (TAT) exceeded the 180-minute NABH requirement. The average TAT for the hospital was 342.83 minutes, with a delay of 162.83 minutes. These delays were consistent across all departments studied, and the range of delays varied from 88 minutes in Orthopaedics to 143 minutes in Urology. These results are significant, as prolonged discharge times affect hospital operations, bed availability, and patient satisfaction.

The longest delays were observed in the Oncology and Urology departments, with the TAT for TPA (insurance) patients being notably longer than for cash patients. This suggests that insurance-related processes, including documentation and approvals, are a major contributor to discharge delays. This is consistent with the findings of Shukla and Upadhyay (2018), who reported that insurance-related paperwork significantly extended the discharge process due to the need for third-party approvals and verifications. This impact was particularly noticeable in Urology, where TPA patients experienced a delay of 143 minutes compared to cash patients who experienced delays of 88 minutes. Similarly, in Oncology, TPA patients had a discharge time of 298 minutes compared to cash patients, who had a discharge time of 180 minutes.

The study also identified several common reasons for discharge delays across departments, including "waiting for a wheelchair," "pending discharge summaries," "Medication ongoing (drip, cannula removal, chemotherapy, etc.)," and "billing issues." Non-clinical factors such as "waiting for attendants," "transport issues," and "lunch delays" were also frequently cited. These issues reflect logistical inefficiencies that often impede the timely completion of discharge procedures. These delays are consistent with findings from Arthi et al. (2020), who observed that logistical problems such as patient transport and delays in discharge summary preparation were significant contributors to discharge delays in hospitals.

In terms of the role of payment methods, this study found that cash patients had a quicker discharge process (average TAT of 4:08 hours) compared to TPA and PSU patients (average TATs of 6:00 hours and 5:57 hours, respectively). This highlights the operational

burden associated with insurance-based discharges, where additional steps such as insurance verifications, approvals, and documentation processing contribute to prolonged discharge times. This is in line with findings from Mundodan et al. (2019), who also observed that insurance patients faced longer discharge times due to paperwork and insurance claims processing.

5.2 Comparison with Existing Literature

Several studies have explored the issue of discharge delays, providing valuable context for the findings of this research. In a study by Sharma et al. (2024), discharge times were also found to exceed the recommended 180 minutes, with delays primarily caused by discharge summary preparation, billing, and coordination issues between departments. The findings of this study align with those of Sharma et al. (2024), particularly in identifying discharge summary preparation and billing processes as major bottlenecks. Similarly, Binda et al. (2023) highlighted that hospital-acquired infections, patient dependence on caregivers, and lack of available post-acute care beds contributed to delayed discharges, which mirrors some of the logistical delays found in this study.

One notable difference, however, is the finding related to payment methods. The variation in discharge times based on payment type (cash, TPA, PSU) has not been extensively discussed in previous literature. While some studies, such as those by Arthi et al. (2020), mentioned insurance processing as a factor, this study provides a more detailed quantitative analysis of how payment modes directly influence discharge timelines. The findings suggest that hospitals should consider streamlining their billing and insurance processes, particularly for TPA and PSU patients, to reduce delays and improve discharge efficiency.

5.3 Strengths of the Study

This study has several strengths that contribute to its reliability and relevance. One of the key strengths is the comprehensive data collection methodology. By utilizing real-time data from the Hospital Information System (HIS) and direct observation of the discharge process, the study provides a detailed and accurate analysis of discharge turnaround times. The focus on five high-major departments within the hospital allowed for an in-depth examination of the discharge process across different specialties, which enhances the generalizability of the findings within the hospital setting.

Furthermore, the study's mixed-methods approach, combining both quantitative data (TAT measurements) and qualitative feedback (reasons for delays), provides a

comprehensive view of the discharge process. This holistic perspective allows for a better understanding of the operational challenges faced by hospital staff and the factors contributing to delays, which can inform targeted interventions for improvement.

5.4 Limitations of the Study

Despite its strengths, this study has several limitations that should be considered.

- The research focused on only five departments within the hospital, which may not fully represent the discharge processes across the entire hospital.
- Additionally, the study excluded clinical variables, such as the complexity of medical conditions and the readiness of patients for discharge, which could influence discharge times.
- Also, study excludes Day-care patients, Emergency discharges, ICU, NICU patients as well.
- The reliance on data from HIS also assumes the accuracy of recorded timestamps and documentation, which may be subject to human error or inconsistencies in data entry.

Another limitation is that the study did not account for external factors (non-correctable), such as patient family dynamics or transportation issues, which could affect the discharge process. While these factors were identified as common causes of delay, they were not systematically measured or included in the data analysis.

5.5 Implications for Hospital Administration

The study findings have significant implications for hospital administration and the management of discharge processes. The identification of key delay drivers—such as waiting for wheel chair, patient waiting for attendant transport issues, pending discharge summaries, no dues on floor pending, summary handover delays and insurance-related delays—provides clear areas for intervention. Hospitals can enhance discharge efficiency by implementing strategies to address these operational bottlenecks.

Streamlining Documentation and Communication: One of the most critical recommendations is to streamline the discharge documentation process. The implementation of pre-discharge checklists, early preparation of discharge summaries, and automated reminders for medical staff can significantly reduce delays related to documentation.

Improving Payment and Insurance Processes: The study highlights the operational challenges associated with TPA and PSU discharges. Hospitals can collaborate with insurance providers to establish fast-track approval systems, ensuring quicker clearance

of payments. Pre-billing verification and the automation of billing systems could further expedite the discharge process for insured patients.

Logistical Improvements: Addressing non-clinical delays—such as waiting for wheelchairs, transport, and attendants—requires enhanced logistics management. This can be achieved by forming a dedicated transport team, introducing transport management software to streamline coordination, and appointing one General Duty Assistant (GDA) on each floor with at least two wheelchair facilities, as the unavailability of wheelchairs is one of the major issues contributing to discharge delays.

Training and Staff Coordination: Regular training for staff on discharge protocols and interdepartmental communication is essential. Discharge coordinators should be appointed to act as liaisons between departments, ensuring smooth coordination and reducing delays caused by miscommunication.

Monitoring and Continuous Improvement: Finally, it is essential to establish a continuous feedback loop, using performance reviews, patient satisfaction surveys, and real-time monitoring systems to assess and optimize discharge processes.

CHAPTER 7: CONCLUSION AND RECOMMENDATIONS

7.1 Conclusion

Efficient discharge planning and execution is a critical component of hospital operations, directly influencing bed availability, patient satisfaction, and overall resource utilization. This study aimed to assess the factors causing delays in the discharge process at a multi-specialty tertiary care hospital, with the goal of identifying specific operational inefficiencies and recommending actionable improvements.

An in-depth analysis of 826 discharge cases across five key departments—Oncology, Obstetrics & Gynaecology, Urology, General Surgery, and Orthopedics—revealed that the hospital's average discharge turnaround time (TAT) significantly exceeded the standard time recommended by the NABH for Hospitals, which is 180 minutes. Hospital's overall TAT stood at 342.83 minutes, resulting in an average delay of over 2.5 hours per discharge. This discrepancy signals serious process inefficiencies.

Among all departments studied, the Urology department recorded the highest average TAT (323 minutes), followed closely by General Surgery and Oncology. Orthopedics and Obstetrics & Gynaecology had relatively better but still delayed discharge processes. Furthermore, discharge time varied significantly depending on the type of payment. Patients under Third Party Administrators (TPA) and Public Sector Undertakings (PSUs) consistently faced longer discharge durations compared to those who settled their bills in cash. These delays were mainly attributed to the added layers of documentation, approvals, and insurance processing involved in TPA/PSU billing.

A deeper evaluation of delay reasons identified seven common causes, including prolonged waiting for wheelchairs, delay in discharge summary completion, billing issues, and pending no dues clearance. Notably, a distinction was made between correctable delays—those that can be mitigated through internal hospital process improvements—and non-correctable delays, which stem from patient-side factors such as waiting for transport or ongoing treatment.

The study concluded that most discharge delays were, in fact, correctable and rooted in inadequate coordination, lack of real-time process monitoring, communication gaps between departments, and the absence of clearly defined responsibilities. Addressing these areas is vital for improving discharge efficiency, enhancing patient experience, and ensuring compliance with national quality benchmarks.

7.2 Recommendations

Based on findings of study, the following evidence-based recommendations are proposed to streamline the discharge process and reduce inefficiencies.

1. Strengthening Logistical Support for Patient Movement

Dedicated Transport Coordination Unit: Addressing non-clinical delays—such as waiting for wheelchairs—requires improved logistics management. This can be achieved by forming a dedicated transport coordination team, introducing transport management software to streamline operations, and appointing one General Duty Assistant (GDA) on each floor with at least two wheelchairs, as the unavailability of wheelchairs is a major issue contributing to discharge delays. A specific team should be deployed to manage and streamline patient movement during discharge. Their responsibilities should include ensuring the timely availability of wheelchairs, stretchers, and porters.

Transport Management Dashboard: A digital dashboard should be developed to allow real-time tracking and scheduling of transport resources. This system can also notify porters and nurses when patients are ready to be moved, preventing unnecessary waiting times.

2. Advance Preparation of Discharge Documentation

Pre-Discharge Planning Checklist: Departments should adopt a mandatory checklist that includes pending diagnostics, medication reviews, discharge summary preparation, and nursing clearances. This checklist should be initiated at least 24 hours before expected discharge.

Doctor Reminders and Task Triggers: Automated reminders should be built into the hospital information system (HIS) to prompt residents and consultants to complete the discharge summary and related documentation before a predefined cut-off time like in between 10:00 AM to 10:45 AM on discharge day.

Planned discharges should be **informed and explained to patients and attendants well in advance**, ideally during the morning rounds/ day before discharge day planned. This reduces last-minute delays such as **waiting for dress change, attendant, or vehicle**.

3. Resolution of Consultation Pending

Fixed Discharge Rounds Timings: Set and communicate a standard daily discharge round time across departments like in between 9–12 morning).

Prioritization of Planned Discharge Patients: Create a priority list for doctors to see patients scheduled for discharge first.

Discharge Intimation Alerts: Use HIS (Hospital Information System) to send early morning alerts to consultants to meet faster to planned discharge patients before 10:30am in order to reduce last minutes delays related to consultations.

Backup/Junior Consultant Authorization: Authorize junior doctors or duty consultants to give clearance when the primary consultant is unavailable or in case patient need immediate consultations at the time of discharges.

4. TPA and PSU Billing Streamlining

Fast-Track Insurance Clearance Protocol: Create a dedicated fast-lane process for TPA and PSU discharges. Pre-authorization, final bill review, and document submission should be initiated at least 12–24 hours in advance.

Pre-Discharge Billing Audit: Billing teams should conduct early audits to verify insurance-related documents and pre-empt common claim rejections. This proactive approach will minimize last-minute discrepancies.

Also, at the time of admission clearly inform patient about the extra bed charges or rent applicable after 12:30 pm on the day of discharges planned.

5. Digital Billing Infrastructure

E-Billing System Implementation: Transition to an end-to-end digital billing system that automatically integrates with insurance platforms and TPA approval portals. This will eliminate unnecessary paperwork, enable faster processing, and reduce manual errors.

TPA Liaison Officers in Each Major Department: Dedicated staff should be assigned to manage TPA and PSU cases from admission to discharge. Their presence will reduce communication delays and speed up claim follow-ups and approvals.

6. Real-Time Discharge Management Platform

Centralized Discharge Monitoring Tool: A software platform should be introduced that integrates real-time discharge tracking, task status, departmental handoffs, and discharge readiness indicators.

HIS and EHR Synchronization: The hospital's Electronic Health Record (EHR) system should be linked to the discharge management tool so that discharge summaries, prescriptions, and other medical documentation flow seamlessly between teams.

7. Patient Empowerment Through Technology

Mobile App for Discharge Tracking: A mobile application can help keep patients and their families informed about the discharge timeline, outstanding tasks, billing status, and readiness for transport.

Self-Service Discharge Kiosks: Kiosks should be installed at nursing stations and waiting areas, allowing patients or caregivers to check discharge progress and make inquiries directly without queueing up at reception counters.

8. Training for Discharge Coordinators and key stakeholders of discharge process.

Structured Discharge Training Modules: Staff involved in discharge (including ward nurses, medical residents, billing officers, and housekeeping) or key stakeholders of discharge process should undergo periodic training programs focused on coordination, communication, documentation, and operational workflows.

Ward-Level Discharge Champions: Each ward or unit should designate a discharge coordinator responsible for liaising between clinical, billing, and support teams.

9. Continuous Knowledge Enhancement in Billing and Insurance

Train billing and TPA staff regularly on how to fill forms, submit documents, and get faster approvals. Make a small guidebook with steps and contacts for easy help. Use practice cases to teach staff how to handle problems. Check their performance with simple targets like approval time and fewer mistakes. Cross-training between billing, TPA, and discharge teams will further improve coordination and reduce discharge delays.

10. Weekly and Monthly Discharge Review Meetings

The hospital should hold Weekly and monthly interdisciplinary review meetings to analyze discharge data, identify departments with frequent delays, and share best

practices. KPIs should include average TAT, cause-wise delay analysis, and patient feedback scores.

11. Implementation and Enhance Feedback Collection System

Patient Feedback Surveys on Discharge: Feedback should be collected specifically on the discharge experience, focusing on clarity of instructions, timeliness, communication, and ease of exit.

Real-time Digital Feedback: Use tablets or mobile links for patients/attendants at the time of discharge.

Multiple Languages: Offer feedback forms in regional languages for better participation.

QR Codes: Display QR codes at nursing stations and waiting areas to encourage easy feedback submission.

Personalize the Experience like Thank You Notes (Provide handwritten or digital thank-you notes from staff at discharge.)

Discharge Counseling: Assign a floor manager to explain properly discharge instructions clearly and ask for immediate feedback.

Feedback Escalation Protocol: Set up an alert system for low scores (e.g., NPS 0–6) to trigger real-time intervention by the duty manager or floor in-charge, and deploy a trained team to handle negative feedback before the patient leaves.

Analyze and Act on Feedback

Regularly review feedback reports to identify recurring service issues, and then track NPS scores by department to identify specific strengths and weaknesses, and share feedback insights in team meetings to motivate and guide staff performance.

7.3 One-Month Implementation Roadmap (Gantt Chart) for Reducing Discharge Delays

Task	Week 1	Week 2	Week 3	Week 4	Responsible	Notes
Add more GDAs & wheelchairs (each floor)					Medical admin. Department	High priority
Discharge checklist & reminders					Floor Mangers	Pilot dept
Standardize discharge rounds					Floor Mangers	Across depts
TPA/PSU billing streamlining					Billing Team	Pre-approval
Staff Meeting/Training					MS/DMS/AMS	3 sessions/month

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