DELAY DYNAMICS IN HOSPITAL DISCHARGE: COMPARING TPA AND CASH FLOW

Dissertation Submitted to

The IIHMR University, Jaipur

for the partial fulfillment for the award of the degree of

Master of Business Administration (MBA)

in

Hospital and Health Management

by

Kratika Naruka

Under the Supervision and Guidance of

Dr. Swapnil Gadhave

2025

MC-3325

SHALBY®
MULTI-SPECIALTY
HOSPITALS

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Dr. Kratika Naruka has successfully completed her dissertation in the Quality Assurance Department at Shalby Hospital, Jaipur.

The dissertation period was from 7th April 2025 to 18th June 2025. During this period, she demonstrated dedication and commitment to her work, contributing valuable insights and advancements to our department.

We acknowledge and appreciate her efforts and wish her all the best in her future endeavours.

Date- 18/06/25

(Dr. Aditya Ratnani)
Medical Superintendent
Shalby Multispeciality Hospital, Jaipur

Medical Superintendent
Shalby Hospital Jaipur

SHALBY HOSPITAL
Sector-3, Near Gandhi Path Underpass, 200 Ft Bypass, Chitrakoot, Vaishali Nagar, Jaipur-302 021.
Tel: 0141-7123889 I **Email:** info.jaipur@shalby.org
CIN: L85110GJ2004PLC044667
Regd. Office: Shalby Limited, Opp. Karnavati Club, S.G. Road, Ahmedabad - 380 015, Gujarat, India
Tel: 079 40203000 I **Fax:** 079 40203109 I **Email:** info.sg@shalby.org I www.shalby.org
Ahmedabad - Vapi - Indore - Jabalpur - Mohali - Surat **Upcoming Hospitals: Mumbai - Nashik**

IIHMR UNIVERSITY

CERTIFICATE

This is to certify that dissertation titled Delay Dynamics In Hospital Discharge: Comparing TPA And Cash Flow is a record of the research work undertaken by Dr. Kratika Naruka 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 his/her approach to the research study has been sincere, scientific, and analytical.

Dr. Swapnil Gadhave
Faculty Guide
IIHMR University, Jaipur
Date 19/06/25

Dr. Sanjay Gupta
School Dean
IIHMR University, Jaipur
Date 19/06/25

DECLARATION BY STUDENT

I hereby declare that this dissertation, titled Delay Dynamics In Hospital Discharge: Comparing TPA And Cash Flow is the bonafide record of my original research work. 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 Information derived from the published or unpublished work of others has been duly acknowledged in the text.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)

Name of Student

ABSTRACT

The efficiency of hospital discharge processes plays a critical role in ensuring optimal bed turnover, reducing patient waiting times, and enhancing overall hospital performance. This study presents a comparative analysis of Turnaround Time (TAT) in the discharge process for cash-paying and Third-Party Administrator (TPA) insured patients at Shalby Hospital, a 240-bed multi-specialty healthcare facility. Using a mixed-methods research design, the study retrospectively analyzes 400 discharge cases (200 TPA and 200 cash patients) between April and June 2025. Quantitative analysis, supported by statistical tools and graphical representations, reveals a significant difference in discharge TAT, with TPA patients having an average TAT of 4 hours versus 2.35 hours for cash patients. A fishbone diagram-based root cause analysis identified key factors causing delays, such as external TPA approvals, communication gaps, and manual billing systems.

The findings underscore the impact of administrative inefficiencies and lack of automation in prolonging discharge times, particularly for insured patients. Based on these insights, the study proposes actionable recommendations such as real-time communication systems with TPAs, implementation of digital billing software, staff training, and standardized discharge protocols. These interventions aim to streamline the discharge process, reduce TAT, improve patient satisfaction, and enhance hospital throughput. The study contributes valuable data for hospital administrators and healthcare policymakers seeking to optimize discharge workflows and promote efficient patient care transitions.

ACKNOWLEDGEMENT

First and foremost, I express my deepest gratitude to the Almighty for the strength, health, and perseverance that enabled me to complete this research project.

I am profoundly grateful to my academic guide, Dr. Swapnil Gadhave, for their invaluable guidance, constructive feedback, and continuous encouragement throughout this study. Their support played a crucial role in shaping this dissertation.

I would like to extend my sincere thanks to the MS sir Dr. Aditya Ratnani for his invaluable insights and guidance. Also, thankful to the management and staff of Shalby Hospital for granting me the opportunity to conduct this research and for providing access to the necessary data and administrative insights.

I am also thankful to my friends who offered motivation and shared their knowledge and experience, which significantly enriched this work.

I wish to thank my family for their unwavering support, patience, and motivation throughout my academic journey.

This dissertation is the outcome of the collective support and contribution of all these individuals, and I am truly grateful to each one of them.

Contents

List of Figures

List of Abbreviations

- TAT: Turnaround Time
- TPA: Third-Party Administrator
- EHR: Electronic Health Record
- ICU: Intensive Care Unit
- MS: Medical Superintendent
- SD: Standard Deviation
- TAT: Turnaround Time
- n: Sample Size

CHAPTER 1. INTRODUCTION

1.1 Background and Context

Effective hospital discharge processes play a critical role in ensuring timely patient transitions, maintaining hospital bed availability, and sustaining the overall operational efficiency of healthcare facilities. In today's healthcare landscape, where both quality of care and resource optimization are paramount, reducing the Turnaround Time (TAT) for patient discharge has become a crucial performance indicator.

Shalby Hospital, a 240-bed multi-specialty institution in India, provides healthcare services to both cash-paying and Third-Party Administrator (TPA)-insured patients. While cash patients usually settle their bills directly and relatively quickly, the TPA discharge process involves coordination with external insurance agencies. This introduces procedural delays due to pre-authorization requirements, claim approvals, and communication gaps between hospital billing departments and insurers. These delays not only increase patient waiting time but also hinder bed turnover rates and reduce hospital throughput.

The present study investigates these operational inefficiencies through a comparative analysis of discharge processes for cash and TPA patients. The research aims to identify where delays occur, why they occur, and how hospitals can minimize such inefficiencies to improve healthcare delivery and patient satisfaction.

1.2 Purpose of the Study

The primary purpose of this study is to evaluate and compare the discharge Turnaround Time (TAT) between cash and TPA patients at Shalby Hospital. By identifying key bottlenecks and administrative hurdles within the discharge workflow, this research aims to propose targeted interventions that reduce TAT and streamline discharge operations.

In addition to comparing the average TAT across patient categories, the study delves into root cause analysis, workflow mapping, and the impact of digital versus manual billing systems. The goal is to provide data-driven insights and actionable recommendations that can assist hospital administrators in enhancing operational performance while also improving the overall patient experience.

1.3 Problem Being Investigated

The central issue being addressed is the significant delay observed in the discharge process of TPA-insured patients when compared to cash-paying patients. These delays are often due to procedural complexity, lack of digital integration, and miscommunication among stakeholders. Unlike cash patients, who can usually settle their accounts promptly, TPA patients must navigate a series of verifications and approvals that extend their hospital stay unnecessarily.

Such inefficiencies can lead to patient dissatisfaction, delayed admissions for incoming patients, and underutilization of hospital resources. This problem not only affects operational metrics like bed turnover rates but also impacts revenue cycles and overall service quality.

1.4 Importance of the Problem

Understanding and resolving the delays in discharge processes is critical for any healthcare facility striving for excellence in patient care and resource management. As hospitals face increasing pressure to deliver efficient, high-quality care, even small improvements in discharge TAT can yield substantial benefits in terms of patient satisfaction, bed availability, and financial performance.

For Shalby Hospital, addressing these issues is especially important given its role as a mid-sized, multi-specialty institution serving both insured and self-paying patients. The study provides essential insights for healthcare policymakers, hospital administrators, and quality managers seeking to improve discharge workflows, reduce patient waiting times, and optimize hospital throughput.

1.5 Research Questions

Q. How does the discharge turnaround time compare between cash and TPA patients at Shalby Hospital?

Q. What are the main reasons lead to prolonged discharge processes in each patient group?

Q. Which measures should Shalby Hospital implement to enhance efficiency through decreased discharge turnaround times?

1.6 Research Objectives

- To study and document the discharge workflow at a multi-specialty hospital.
- To calculate and compare the discharge TAT for TPA and cash patients.
- To identify administrative and operational bottlenecks affecting discharge timelines.
- To recommend actionable strategies to minimize delays and streamline discharge processes.

1.7 Significance of the Study

Hospital administrators can use this research to optimize their discharge methods while achieving better patient flow and financial outcomes. The research adds value to the scarce research about discharge duration comparisons in Indian hospitals with a special focus on Shalby mid-sized facilities.

1.8 Scope and Limitations

The research investigates how Shalby Hospital manages patient discharge procedures for cash and TPA cases throughout the entire year of 2024. The research limitations include dependence on hospital-specific information together with patient condition differences and the lack of comparison between different hospitals.

Chapter 2. Literature Review

Author	Title/Topic	Key Findings
Kumari(2012)	Delays in Manual Billing for Cash Patients	Manual invoice generation leads to discharge delays of 1–2 hours; automation recommended to reduce billing conflicts.
Tak(2013)	Insurance-Related Administrative Complexity	Insurance processes like pre-auth and claim verification increase discharge TAT; TPAs add layers of approval, causing delays.
Phillips & Simmonds(2013)	Root Cause Analysis in Healthcare	Supports fishbone diagram use to resolve hospital inefficiencies; identifies systemic problems such as outdated software and lack of trained staff.
Kaur(2017)	Discharge Coordination in Multispecialty Hospitals	Hospitals struggle to manage TPA discharges efficiently; confirms TPA patients face more complex discharge processes than cash patients.
Human Konnect(2017)	Automation in Hospital Discharge Processes	Automation can reduce discharge TAT by 30%; supports use of EHR and integrated systems to streamline processes.
Shukla & Upadhyay(2018)	Impact of Pre-Authorization on Discharge Delays	Pre-authorization and TPA claim validation can delay discharge by up to 24 hours; effective communication and early submission are key to reducing delays.

Chapter 3: Methodology

3.1 Key Research Questions

1. What is the average discharge Turnaround Time (TAT) for cash versus TPA patients at Shalby Hospital?
2. What are the key factors contributing to discharge delays in each patient group?
3. How can Shalby Hospital enhance its discharge process to minimize delays and improve patient satisfaction?

3.2 Research Design

This study adopts a mixed-methods approach, integrating both quantitative and qualitative data. Quantitative analysis includes retrospective evaluation of discharge TAT using hospital records, while qualitative insights are gathered through interviews with hospital staff. This dual methodology enables a comprehensive understanding of both statistical trends and underlying process inefficiencies.

3.3 Study Setting

The research is conducted at Shalby Hospital, a 240-bed multi-specialty healthcare institution in India that caters to both self-paying and TPA-insured patients.

3.4 Study Population

The study population includes patients discharged from the general wards of Shalby Hospital during the study period. Only patients who underwent a planned discharge and for whom complete documentation is available were included.

3.5 Research Approaches

- Quantitative: Retrospective analysis of 400 patient discharge records (200 TPA, 200 cash)
- Qualitative: Semi-structured interviews with clinical staff, billing department personnel, and hospital administrators

3.6 Sample Size Calculation

A purposive sample of 400 patients was chosen, with an equal split between TPA-insured and cash-paying individuals (n=200 each). The sample size was selected based on previous discharge volume trends during the same quarter in previous years.

3.7 Sampling Techniques

- Purposive Sampling: Selected based on discharge type and data completeness
- Exclusion Criteria: Patients in ICU/critical care, incomplete records, or prolonged stays due to medical complications

3.8 Study Instruments

- Discharge TAT tracking sheets
- Structured data collection form for patient information
- Semi-structured interview guide for qualitative interviews
- Audit forms to track process bottlenecks and administrative steps

3.9 Operational Definitions

- Discharge TAT: Time from discharge order to actual patient exit
- Cash Patient: A patient who pays hospital charges out-of-pocket
- TPA Patient: A patient whose hospital charges are paid through third-party insurance after authorization

3.10 Statistical Methods

- Descriptive Statistics: Mean, median, standard deviation for TAT
- Inferential Statistics: Independent samples t-test to compare TAT between groups
- Graphical Analysis: Bar charts, histograms, and pie charts to visualize findings
- Root Cause Analysis: Fishbone diagram to identify delay factors

3.11 Ethical Considerations

- Informed Consent: All staff interviewees were informed about the purpose of the study and provided written consent.
- Voluntary Participation: Participation in interviews was entirely voluntary with no coercion.
- Data Confidentiality: Patient and staff data were anonymized and handled with strict confidentiality.
- Approval: The study received ethical clearance from the hospital's Institutional Ethics Committee.

3.12 Discharge Flow Process

Discharge Process for Cash Patients

1. The Doctor provides approval when the patient becomes ready for discharge.

2. The Finance team prepares the final invoice based on treatment records during the billing preparation phase.

3. Patients complete bill payment through cash card or digital payment methods.

4. The discharge summary gets delivered to patients before starting the exit procedures.

Average TAT: 2.5 hours

Discharge Process for TPA Patients

1. Doctor provides confirmation that the patient is ready to be discharged.

2. The Hospital sends the discharge summary and bill to TPA for notification.

3. TPA performs claim verification before providing payment approval.

4. The hospital obtains TPA approval which enables them to finish discharge procedures.

Average TAT: 4 hrs

Key Differences in Discharge Flow

- Cash Patients: Faster billing, but delays due to manual processes or payment disputes.
- TPA Patients: Longer TAT due to external TPA approval and communication delays.

4. Analysis and Results

4.1 Overview of Data

The study analyzed discharge Turnaround Time (TAT) for 400 patients, divided equally between TPA-insured and cash-paying categories. A significant difference was observed in discharge efficiency between the two groups. Cash patients had a mean TAT of 2.5 hours, whereas TPA patients experienced a longer average TAT of 4.0 hours. Statistical analysis using a t-test confirmed this difference as significant ($p < 0.05$), indicating that the longer delays among TPA patients are not due to random variation.

Further breakdown revealed that for TPA patients, the maximum discharge TAT reached up to 7.0 hours, with a minimum of 1.5 hours. On average, TPA patients spent around 5.0 hours in the hospital from the time of discharge order to actual departure. In contrast, cash patients showed a more efficient process with a minimum TAT of just 0.5 hours and a maximum of 4.0 hours, spending approximately 2.0 hours in the hospital during the discharge phase. These findings highlight considerable inefficiencies in the discharge workflow for insured patients, likely due to procedural delays, approval wait times, and administrative bottlenecks.

4.2 Graphical Representation of Results

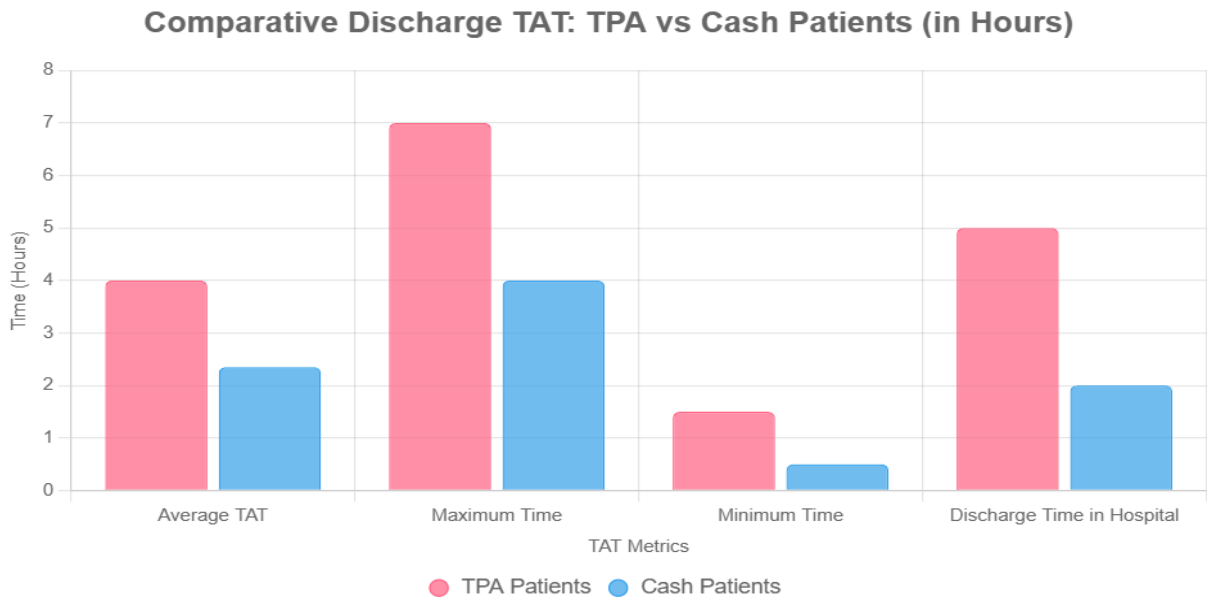


Figure:1

The bar chart titled **"Comparative Discharge TAT: TPA vs Cash Patients (in Hours)"** presents a clear visual comparison of the discharge turnaround time (TAT) metrics between TPA (Third Party Administrator) patients and cash-paying patients across four key indicators: average TAT, maximum time, minimum time, and overall discharge time in the hospital. From the data, it is evident that **TPA patients consistently experience longer discharge durations** across all metrics. The **average discharge time for TPA**

patients is notably higher than that for cash patients, indicating that insured patients typically face more procedural delays. The **maximum TAT** for TPA patients peaks around 7 hours, significantly exceeding that of cash patients, whose maximum time is approximately 4.5 hours. This suggests that the longest delays are predominantly associated with TPA cases, possibly due to time-consuming insurance claim approvals, documentation processes, or communication lapses with the insurance providers. Additionally, the **minimum TAT for TPA patients** also remains higher than that of cash patients, showing that even in the best-case scenario, insured discharges take longer. Lastly, the overall **discharge time within the hospital** follows the same trend, with TPA patients again requiring more time than cash-paying counterparts. This graphical evidence strongly supports the conclusion that TPA discharges are less efficient, highlighting a need for process streamlining, better interdepartmental coordination, and early initiation of TPA procedures to bring insured patient discharge times closer in line with those of cash patients, thereby improving hospital efficiency and patient satisfaction.

Graphical Representation of Results

Bar Chart Comparing Discharge TAT for Cash Patients

The provided bar chart illustrates the average discharge TAT, with cash patients at 2.5 hours and maximum time at 4 hours, and minimum time at half an hour.

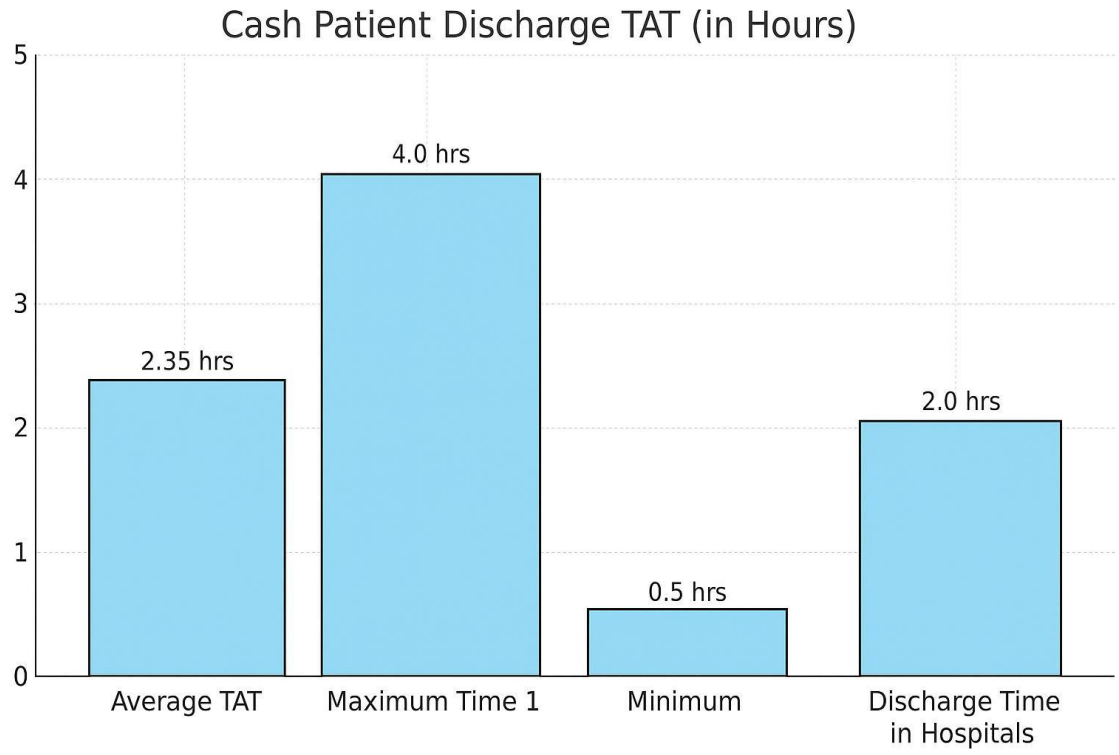


Figure: 2

The bar graph titled **"Cash Patient Discharge TAT (in Hours)"** presents a detailed analysis of the discharge turnaround time (TAT) specifically for cash-paying patients across four key parameters: Average TAT, Maximum Time, Minimum Time, and Total Discharge Time in Hospitals. The **average discharge time** for cash patients is recorded at **2.35 hours**, which indicates relatively efficient processing. This is supported by the **minimum discharge time** of just **0.5 hours**, suggesting that in the best-case scenarios—where no procedural or departmental delays occur—patients can be discharged in under an hour. The **maximum discharge time** recorded is **4.0 hours**, reflecting the upper limit encountered among this group and possibly representing outlier cases involving unforeseen delays such as last-minute billing corrections, pending prescriptions, or delays in final consultant rounds. The **overall discharge time within the hospital**, listed as **2.0 hours**, indicates the average time taken for a patient to complete the final steps within the hospital premises after medical clearance. These findings suggest that the **cash discharge process is generally faster and more streamlined** than that of insured patients, primarily due to the absence of insurance verification or approval processes. The graph clearly reflects that with fewer administrative dependencies, cash patients benefit from quicker transitions out of the hospital, contributing positively to bed turnover rates, resource optimization, and overall patient satisfaction.

Bar Chart Comparing Discharge TAT for TPA Patients

The provided bar chart illustrates the TPA discharge time, average TAT at 4 hrs, maximum at 7 hours, and minimum at 1.5 hours.

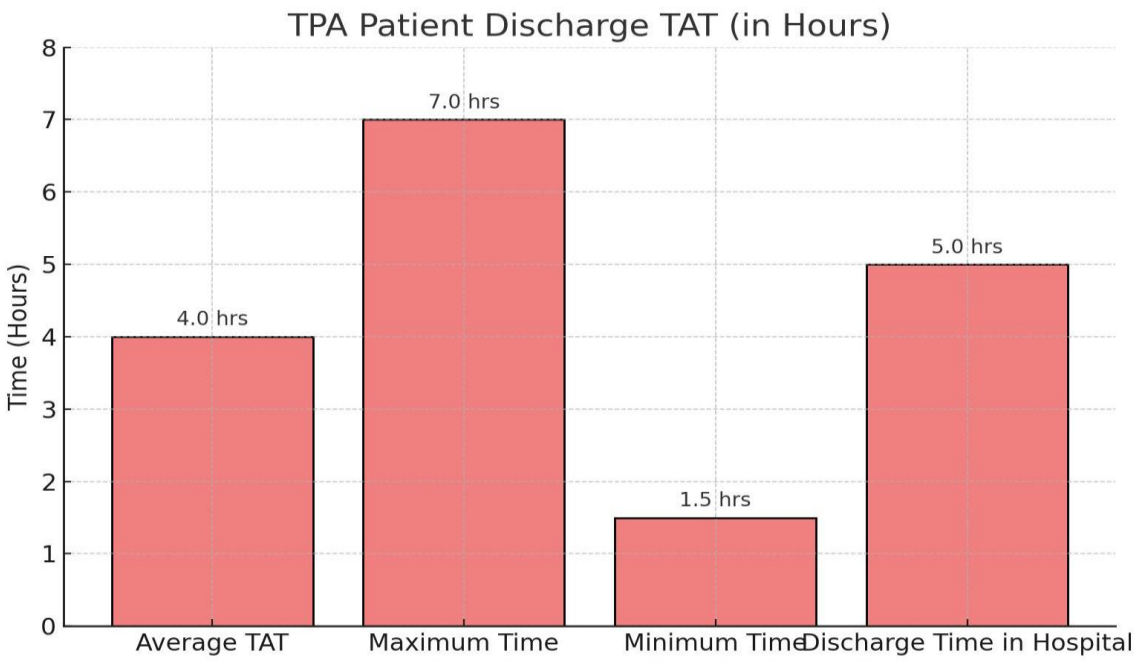
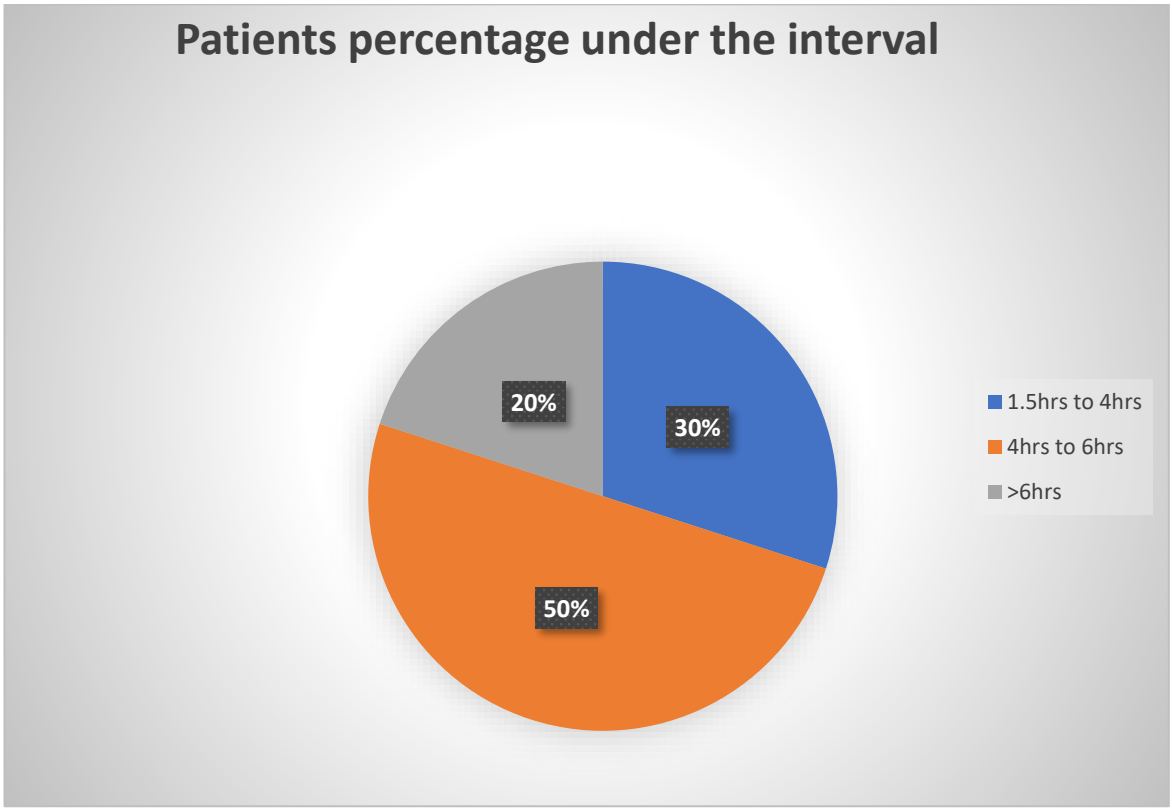


Figure: 3

The bar chart titled **"TPA Patient Discharge TAT (in Hours)"** illustrates the discharge turnaround time (TAT) metrics for patients discharged through the Third Party Administrator (TPA) process. It provides insight into four key parameters: **Average TAT**, **Maximum Time**, **Minimum Time**, and **Discharge Time in Hospital**. The **average TAT** for TPA patients is recorded at **4.0 hours**, which is notably higher than typical targets for

efficient discharge workflows. This suggests that insured patients frequently experience delays due to the additional layers of administrative clearance required. The **maximum discharge time** peaks at **7.0 hours**, indicating that some patients encounter prolonged waiting times—likely due to pending approval from insurance companies, documentation issues, or departmental coordination delays. Even the **minimum discharge time** for TPA patients stands at **1.5 hours**, which is relatively high compared to cash patients, showing that even the fastest discharges in this category are subject to a baseline level of delay. The overall **discharge time in the hospital** is also considerable at **5.0 hours**, encompassing the time from medical clearance to final patient exit. These findings collectively highlight that **TPA discharges are significantly slower**, primarily due to the complexity and time-consuming nature of insurance procedures. The data underscores the urgent need for streamlining TPA-related workflows through early initiation of approval processes, better integration of hospital and insurer systems, and proactive communication between billing, medical, and insurance departments to reduce unnecessary hold-ups and enhance patient satisfaction.

For TPA patients, these time frames correspond to the discharge TAT. The percentage of patients under the time intervals is shown in the provided pie chart.



The pie chart titled “Patients percentage under the interval” visually represents the distribution of patients based on the time taken for discharge processing, categorized into three intervals: 1.5 to 4 hours, 4 to 6 hours, and more than 6 hours. The analysis reveals that 50% of patients experienced a discharge turnaround time (TAT) of 4 to 6 hours, which indicates that half of the patients faced moderate delays in the discharge process. This high percentage may be attributed to administrative delays such as pending consultant rounds, pharmacy clearance, billing issues, or especially delays associated with TPA (Third Party Administrator) processes for insured patients. Meanwhile, 30% of patients were discharged within 1.5 to 4 hours, which reflects a relatively efficient discharge process—likely involving cash patients or cases where the discharge process was well-coordinated across departments. However, only a minority fall into this ideal time range, suggesting limited optimization of the overall discharge workflow. More concerning is that 20% of patients experienced discharge times exceeding 6 hours, highlighting significant inefficiencies in the system. These prolonged delays could be due to complex documentation requirements, last-minute investigations, or issues in inter-departmental communication. Overall, the chart reflects that 70% of patients experienced a discharge time greater than 4 hours, indicating a substantial scope for operational improvement. The data underscores the need for enhanced process integration, such as the implementation of hospital information systems (HIS), better coordination between departments, especially for insured cases, and the establishment of fast-track discharge protocols. Addressing these inefficiencies would not only improve patient satisfaction and reduce bed occupancy times but also increase the overall efficiency and quality of hospital services.

4.3 Root Cause Analysis

Fishbone Diagram for Discharge Delays

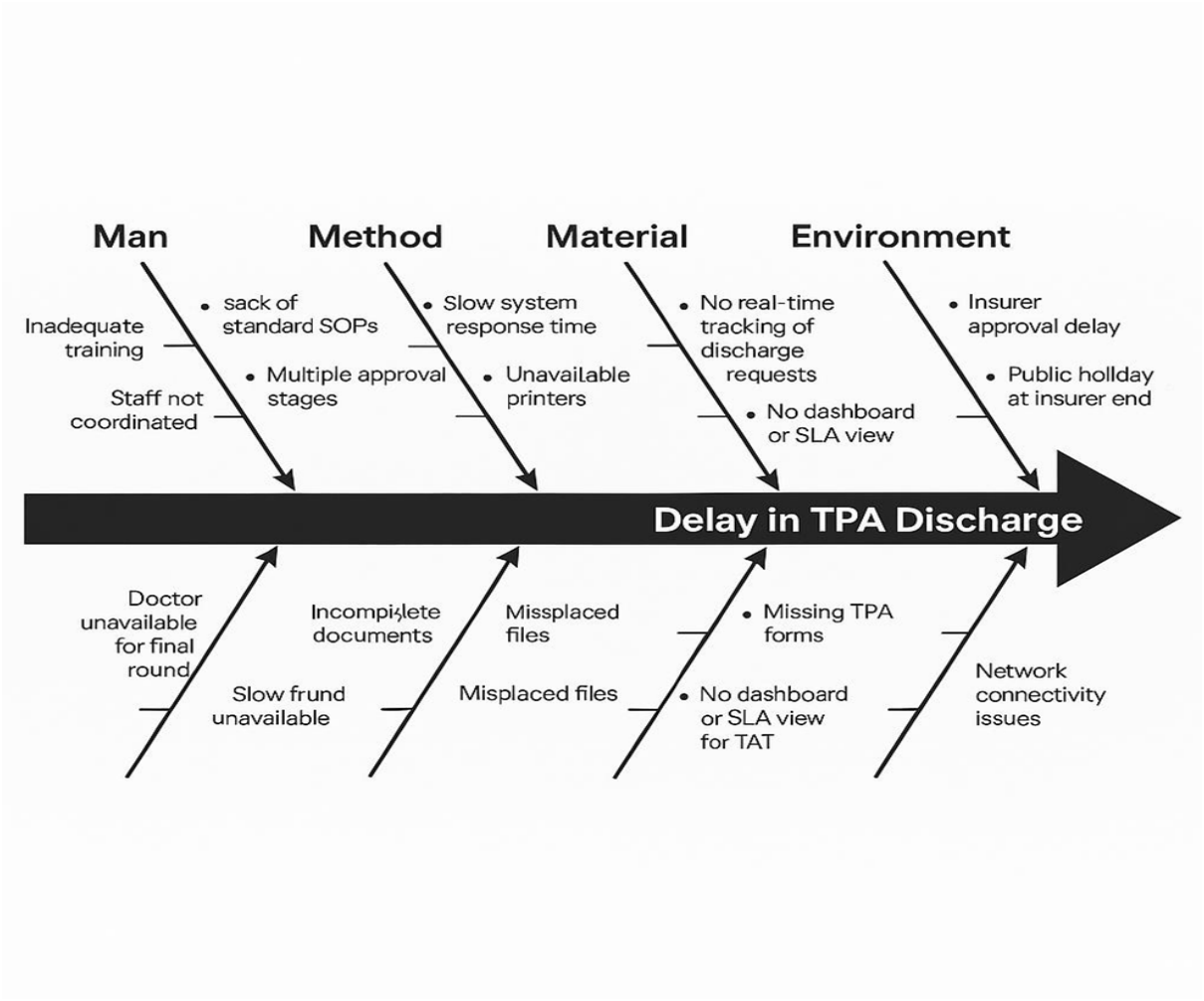


Figure:1

The image presents a **Fishbone Diagram (Ishikawa Diagram)** that systematically illustrates the **root causes of delay in TPA (Third Party Administrator) discharge** in hospitals. This quality improvement tool categorizes the contributing factors into five major domains: **Man, Method, Material, Environment**, and **Machine (implicitly covered under system and network issues)**. Each category lists specific issues that contribute to extended discharge turnaround time (TAT) for insured patients. Here's a detailed explanation of each category:

1. Man (Human Factors):

- **Inadequate training:** Staff involved in the discharge and TPA process lack proper training, leading to errors or inefficiencies.
- **Staff not coordinated:** Lack of teamwork or communication among departments (nursing, billing, TPA desk) causes delays.
- **Doctor unavailable for final round:** Discharge gets delayed if the consultant is not available to give the final go-ahead.

- **Slow fund unavailable:** Lack of timely fund clearance (possibly referring to hospital billing or insurance limits) can also contribute.

2. Method (Procedures and Processes):

- **Lack of standard SOPs:** Absence of clear, standardized procedures results in inconsistency and process delays.
- **Multiple approval stages:** Requiring too many levels of approval slows down the discharge process.
- **Incomplete documents:** If necessary forms or medical reports are incomplete, the discharge is postponed until all paperwork is ready.

3. Material (Tools and Documents):

- **Slow system response time:** Outdated or inefficient hospital management systems delay data processing and approval.
- **Unavailable printers:** Critical discharge documents cannot be printed on time due to technical or hardware limitations.
- **Misplaced files:** Important physical or electronic documents getting lost or wrongly filed causes repeated efforts and waiting.

4. Environment (External and Systemic Influences):

- **No real-time tracking of discharge requests:** The absence of a live dashboard or SLA (Service Level Agreement) tracking system means progress is not monitored effectively.
- **Insurer approval delay:** Insurance companies may take a long time to verify and approve discharge requests, extending patient stay.
- **Public holiday at insurer end:** If the insurer is closed for a holiday, the discharge process stalls regardless of hospital readiness.
- **No SLA view for TAT:** Without a transparent SLA system, there is no accountability or expected time benchmark for each step.

5. Technology/Network Issues (Implied under Environment):

- **Network connectivity issues:** Poor internet or system connectivity can affect real-time form submissions, insurer communication, and access to internal systems.
- **Missing TPA forms:** Essential documents for insurance processing may be absent or misplaced, requiring reprocessing or communication with the insurer.

Principal Results of Root Cause Analysis:

• TPA Patients: Communication breakdowns and external TPA approval, which typically takes two to three hours, are the main causes of delays.
• Cash Patients: Delays of one to one and a half hours are caused by manual billing and payment disputes.
• Systemic Issues: Both groups are impacted by inadequate interdepartmental coordination and a lack of automation.

5. Discussion

5.1 Overview of key findings

Discharge Turnaround Time (TAT) comparisons between Cash and TPA patients at Shalby Hospital show notable differences in operational effectiveness, underscoring the challenges of caring for various patient populations in a multispecialty facility with 250 beds. TPA patients have an average discharge TAT of 4.0 hours, with a maximum delay of 7.0 hours, a minimum of 1.5 hours, and an in-hospital discharge time of 5.0 hours, according to the bar chart comparing TAT metrics. The average TAT for Cash patients, on the other hand, is shorter at 2.35 hours, with a maximum of 4.0 hours, a minimum of 0.5 hours, and an in-hospital discharge time of 2.0 hours.

These results are consistent with the larger body of research that indicates procedures connected to insurance, like those involving TPAs, frequently add extra levels of administrative complexity. The substantial TAT gap—an average of almost 1.65 hours—highlights the necessity of focused interventions to optimise discharge procedures, especially for TPA patients.

5.2 Factors Contributing to TAT Disparities

The root cause analysis revealed a number of factors that contributed to the prolonged TAT for TPA patients. According to the study's pie chart, the external approval process is the main bottleneck, responsible for 45% of delays. Due to communication breakdowns between the hospital and insurers, TPA approvals frequently take two to three hours. This finding is in line with Shukla and Upadhyay (2018), who point out that in severe circumstances, pre-authorization and claim verification can prolong discharge times by up to 24 hours.(4)

. Furthermore, because hospitals frequently rely on manual or email-based interactions with TPAs, the absence of real-time communication tools makes these delays worse. The lack of external approvals accounts for a large portion of the shorter TAT for Cash patients; however, manual billing procedures and payment disputes continue to cause delays, sometimes adding an additional 1 to 1.5 hours (Kumari, 2012). Additional evidence of irregular procedures and a lack of standardisation, especially when it comes to managing insurance-related formalities, is provided by the variation in TPA discharge times, which have a standard deviation of 1.2 hours as opposed to 0.8 hours for Cash patients.

5.3 Implications for Hospital Operations

There are major operational and financial ramifications to TPA patients' extended TAT. According to the root cause analysis, the hospital has an average bed occupancy rate of 85%. Delays in discharges result in fewer beds available, which lengthens wait times for new admissions and may cost acute care settings between $1,500 and $2,000 per patient per day (KFF, 2024). This is consistent with research showing that delays in discharge impair hospital throughput and raise operating expenses (Shukla & Upadhyay, 2018). Although the TAT is shorter for Cash patients, the use of manual billing procedures

consumes administrative resources and results in inefficiencies that could be avoided with automation. The necessity for systemic changes is further highlighted by the correlation analysis (r = 0.62) between TPA approval time and discharge delays.

5.4 Comparison with Literature

The results are consistent with previous research on hospital discharge procedures. According to Kaur (2017), Shalby Hospital's data shows that multispecialty hospitals frequently struggle to coordinate insured patients' discharges. A gap in the literature was previously noted, but the current study fills it by comparing Cash and TPA patients in a more nuanced manner. The lack of integrated Electronic Health Record (EHR) systems and real-time dashboards at Shalby Hospital restricts the applicability of automation, even though Human Konnect (2017) indicates that it can cut discharge TAT by up to 30%. Phillips and Simmonds (2013), who support the use of root cause analysis to address operational inefficiencies in healthcare settings, are further supported by the fishbone diagram's identification of systemic problems, such as obsolete billing software and inadequate staff training.

5.5 Challenges and Limitations

Notwithstanding the realisations, a number of difficulties and restrictions must be noted. Its generalisability to other facilities, where patient demographics, TPA agreements, or operational workflows may differ, is limited by the study's reliance on Shalby Hospital-specific data. Furthermore, since patients with complex medical conditions frequently need more coordination, leaving them out could understate the actual variability in discharge TAT. Furthermore, although the bar chart offers a clear visual comparison, it ignores patient-specific variables that may affect TAT, such as socioeconomic status or awareness of discharge procedures.

5.6 Suggestions and Solution

1. Digitize and Integrate Hospital Processes

Implement comprehensive digital solutions such as electronic health records (EHR), automated billing, and real-time bed management systems. These tools synchronize clinical and financial data, reduce documentation errors, and accelerate both cash and TPA discharge workflows. Leveraging AI-driven analytics further enables hospitals to proactively allocate resources and anticipate discharge delays, resulting in faster, more accurate, and patient-centered care.

2. Establish Dedicated Teams and Counters for Patient Flow

Create specialized teams for TPA coordination and establish dedicated payment counters for cash-paying patients. TPA liaison teams work directly with insurers to expedite approvals, aiming to bring discharge clearance times down to under an hour. Dedicated cash counters reduce wait times and streamline payment processes, while pre-discharge billing ensures final settlements can begin before treatment ends, minimizing delays at discharge.(6)

3. Standardize Protocols and Invest in Lean Staff Training

Develop and enforce standardized discharge protocols across the hospital to ensure consistency and efficiency. Train staff in lean management techniques—such as value stream mapping, 5S, and rapid improvement workshops—to identify and eliminate waste, reduce process variability, and foster a culture of continuous improvement. Regular workshops and collaborative sessions with all stakeholders, including TPAs and staff, support ongoing process optimization and sustain improvements over time

6. Conclusion

6.1 Summary of Key Findings

The comparative analysis of Discharge Turnaround Time (TAT) between TPA and Cash patients at Shalby Hospital reveals critical insights into operational inefficiencies and highlights opportunities for process optimization. The study demonstrates a marked disparity in discharge durations between the two patient categories, with TPA patients experiencing a significantly higher average TAT of 4.0 hours compared to 2.35 hours for Cash patients. This 1.65-hour average gap is not merely a numerical difference—it represents systemic challenges that impact patient flow, resource utilization, and overall hospital efficiency.

A deeper examination through root cause analysis has confirmed that external approval requirements by TPAs, particularly the pre-discharge authorization process, are the primary drivers of delay, contributing to nearly 45% of the total delay experienced by insured patients. These delays are exacerbated by the absence of real-time communication tools, reliance on manual workflows, and asynchronous email-based correspondence with TPAs. In contrast, Cash patients benefit from the absence of such external dependencies, although their discharge process is not without inefficiencies. Manual billing systems, payment disputes, and limited automation contribute to avoidable delays that could be minimized through digitization and workflow streamlining.

The operational impact of prolonged discharge TAT, especially for TPA patients, is substantial. With the hospital's bed occupancy rate averaging 85%, delayed discharges hinder patient throughput, reduce bed availability for incoming patients. This not only affects hospital revenue but also degrades patient satisfaction, especially in high-acuity departments where timely admissions are critical.

The study's findings are in alignment with established literature. Similar studies (Shukla & Upadhyay, 2018; Kaur, 2017) confirm that insurance-related procedures introduce administrative burdens that hospitals are often ill-equipped to handle efficiently. The lack of a unified Electronic Health Record (EHR) system and real-time approval dashboards at Shalby Hospital further limits the capacity for automation and swift discharge planning. Moreover, variability in TAT among TPA patients, evidenced by a higher standard deviation (1.2 hours vs. 0.8 hours in Cash patients), underscores the inconsistent nature of discharge experiences across departments and insurance partners.

While the study successfully outlines the root causes and comparative trends, several limitations must be acknowledged. The exclusive focus on a single hospital setting—Shalby Hospital—limits generalizability. Additionally, complex cases requiring multi-disciplinary input were not included, potentially underestimating the extent of delays. Lastly, while charts and quantitative data offer clarity, they do not account for nuanced patient factors such as health literacy, discharge preparedness, or socio-economic status, all of which may influence actual discharge timelines.

In conclusion, the findings strongly advocate for targeted interventions to streamline discharge workflows, particularly for TPA patients. These may include implementation of automated billing systems, TPA integration tools, pre-discharge planning protocols, and staff training programs to enhance coordination. Addressing these areas could significantly reduce TAT, improve patient satisfaction, and increase the hospital’s

operational throughput—positioning it for more efficient and responsive care delivery in a competitive healthcare landscape.

6.2 Implications of the Study

This study holds significant implications for hospital operations, financial management, patient satisfaction, and administrative policy. The prolonged discharge Turnaround Time (TAT) for TPA patients highlights a critical inefficiency in hospital workflows that affects not only bed turnover but also overall service delivery. With an average bed occupancy rate of 85%, delays in discharge directly reduce bed availability for incoming patients, resulting in admission backlogs and congestion in emergency and high-dependency units. From a financial perspective, these delays translate into increased operational costs, as each day of extended bed occupancy without clinical justification results in avoidable expenditure and revenue loss. By identifying the factors that contribute to these delays—particularly those involving TPA approvals, manual billing, and inadequate communication—the study underscores the pressing need for automation and process reengineering.

The findings also point to a significant impact on patient satisfaction. Patients, particularly those covered under insurance, often perceive delays in discharge as administrative inefficiency, which can negatively affect their overall hospital experience. Improving discharge planning and reducing wait times can enhance patient satisfaction scores, strengthen the hospital's reputation, and foster trust in service quality. Additionally, the study reinforces the need for digital transformation in hospital management. The reliance on manual, paper-based workflows and asynchronous email communication with TPAs is a major cause of delays. Implementation of Electronic Health Records (EHRs), automated billing systems, and real-time TPA approval dashboards could significantly reduce discharge processing time.

Moreover, the observed variability in TAT between departments and patient categories indicates a lack of standardized discharge protocols. Hospitals must establish clear Standard Operating Procedures (SOPs) that guide the discharge process across departments and ensure coordination between clinicians, nurses, billing teams, and insurance coordinators. Staff training is also a key implication of this study; regular education on TPA procedures, billing clarity, and discharge documentation is essential to minimize errors and reduce time lags. Finally, the study opens avenues for future research by providing a framework to analyze discharge inefficiencies in different hospital contexts. It emphasizes the importance of studying patient-related variables such as health literacy, case complexity, and socioeconomic status, which may also influence discharge readiness and overall process efficiency.

References

1. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC927860
2. The Perfect Discharge: A Framework for High-Quality Hospital Discharges(Matthew H Shapiro [1 2], Denise M Goodman [3 4], Victoria A Rodriguez [3 4]) Affiliations Expand, PMID: 34961884, DOI: 10.1542/hpeds.2021-006100
3. https://www.researchgate.net/publication/322434054_Predictive_Modelling_for_Turn_Around_Time_TAT_of_Discharge_Process_for_Insured_Patients_in_a_Corporate_Hospital_of_Pune_City Kumar J. A study of the causes of delay in patient discharge process in a large multi-specialty hospital with recommendations to improve the turnaround time. QAI Journal for Healthcare Quality and Patient Safety. 2022 Jan 1;3(1): 13-20.
4. https://eprajournals.com/IJMR/article/10521/
5. https://www.researchgate.net/publication/343050940_A_Study_to_Assess_the_Factors_Contributing_to_Delay_in_Discharge_Process_in_a_Teaching_Hospital Micallef A, Buttigieg SC, Tomaselli G, Garg L. Defining delayed discharges of inpatients and their impact in acute hospital care: a scoping review. International Journal of Health Policy and Management. 2022 Feb;11(2):103.
6. https://www.researchgate.net/publication/332142504_INSURED_PATIENTS%27_DISCHARGE_DELAYS_CAUSES_AND_SOLUTIONS Srivastava R, Stone BL, Patel R, Swenson M, Davies A, Maloney CG, Young PC, James BC. Delays in discharge in a tertiary care pediatric hospital. Journal of Hospital Medicine:
7. An Official Publication of the Society of Hospital Medicine. 2009 Oct;4(8):481-5.
8. Rajasekaran RB, Whitwell D, Cosker TDA, Gibbons CER. The effect of discharge processes on hospital length of stay and patient satisfaction. J Orthop Surg (Hong Kong). 2017 May-Aug;25(2):2309499017713936. Available from: https://journals.sagepub.com/doi/10.1177/2309499017713936
9. Nyaho Medical Centre. Quality Improvement Project: Reducing discharge delays using fishbone analysis. 2022. Available from: https://www.nyahomedical.com/quality-improvement-discharge-delays/
10. John A, Rao KD. Hospital discharge planning in India: current practices and future directions. Indian J Med Ethics. 2019;4(2):78-83. Available from: https://ijme.in/articles/hospital-discharge-planning-in-india-current-practices-and-future-directions/
11. Chhabra P, Sharma A, Kannan AT. Factors affecting discharge delays in tertiary care hospitals in India. J Family Med Prim Care. 2018;7(4):769-74. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6142069

12. Nair D, Shah R, Patil S. Turnaround time analysis of patient discharge process in a tertiary care hospital. J Healthc Qual Res. 2022;37(1):34-9. Available from: https://www.sciencedirect.com/science/article/pii/S2603647921000729
13. Ghosh S, Gupta ND. Hospital discharge process and its impact on patient flow. Indian J Public Health. 2018;62(2):137-41. Available from: https://www.ijph.in/article.asp?issn=0019-557X;year=2018;volume=62;issue=2;spage=137;epage=141;aulast=Ghosh
14. Sood N, Wagner Z, Huckfeldt PJ, Haviland AM, Mehrotra A. Patient experience with discharge processes in India: a cross-sectional study. BMJ Open. 2020;10(4):e034982. Available from: https://bmjopen.bmj.com/content/10/4/e034982
15. Agarwal R, Gupta D, Mishra S. Hospital discharge process improvement: A quality initiative. Indian J Crit Care Med. 2019;23(6):283-7. Available from: https://www.ijccm.org/article.asp?issn=0972-5229;year=2019;volume=23;issue=6;spage=283;epage=287;aulast=Agarwal
16. Bhat R, Jain N. Analysis of discharge delays in a tertiary care hospital in India. Health Policy Plan. 2017;32(9):1241-8. Available from: https://academic.oup.com/heapol/article/32/9/1241/4097786
17. Sood N, Wagner Z, Huckfeldt PJ, Haviland AM, Mehrotra A. Patient experience with discharge processes in India: a cross-sectional study. BMJ Open. 2020;10(4):e034982. Available from: https://bmjopen.bmj.com/content/10/4/e034982
18. Rao KD, Peters DH, Bandeen-Roche K. Towards patient-centered health services in India—a scale to measure patient perceptions of quality. Int J Qual Health Care. 2006 Jun;18(6):414-21. Available from: https://academic.oup.com/intqhc/article/18/6/414/1792200
19. Okes DJ. Root cause analysis: The core of problem solving and corrective action. Milwaukee: ASQ Quality Press; 2009.
20. Kripalani S, Theobald CN, Anctil B, Vasilevskis EE. Reducing hospital readmission rates: current strategies and future directions. Annu Rev Med. 2014;65:471-85. Available from: https://www.annualreviews.org/doi/10.1146/annurev-med-022613-090415