

Appendix B: Cover Page

**OPTIMIZING DISCHARGE PROCESS EFFICIENCY FOR CASH AND
INSURANCE PATIENTS IN A TERTIARY HOSPITAL: A STUDY ON
DELAYS AND IMPLEMENTATION IMPACT ON TAT**

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

Dr. Bhogadula Saroja Susmitha

Under the Supervision and Guidance of

Dr. Sandesh Kumar Sharma

2023

Appendix C: Title Page

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Appendix D: Declaration by Student

DECLARATION BY STUDENT

I hereby declare that this dissertation titled Optimizing Discharge Process Efficiency for Cash and Insurance Patients in a Tertiary Hospital: A Study on Delays and Implementation Impact on TAT is the bonafide record of my original researchwork. 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 Information derived from the published or unpublished workof others has been duly acknowledged in the text.

Saroja

Name of Student

Date

Appendix E: Completion Certification

CERTIFICATE

This is to certify that Dr. Bhogadula Saroja Susmitha in partial fulfillment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur has successfully completed her internship at KIMS Hospitals, Hyderabad during February 20 - May 19, 2023.

Place:

Date:

Preceptor/Head of the Organization

Name of the organization

Appendix F: Certificate from Faculty Guide and School Dean

CERTIFICATE

This is to certify that dissertation titled Optimizing Discharge Process Efficiency for Cash And Insurance Patients in a Tertiary Hospital: A Study on Delays and Implementation Impact on TAT is a record of the research work undertaken by Dr. Bhogadula Saroja Susmitha 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.

Faculty Guide
IIHMR University, Jaipur

Date

School Dean
IIHMR University, Jaipur

Date

ABSTRACT:

OBJECTIVES: The study aims to assess the impact of implementing specific changes on the TAT metrics within the hospital discharge process. The objectives include identifying bottlenecks, analyzing corrective strategies, and improving operational efficiency to reduce TAT.

METHODOLOGY: A descriptive observational study was conducted at KIMS Hospitals, Paradise unit in Hyderabad, utilizing convenient sampling. Data was collected from March 15th to May 10th, 2023, using HIMS, EHR, and Remedinet as data collection tools. TAT-1 which is from discharge initiation to LAN bill preparation and TAT-2 which is from LAN bill preparation to insurance bill submission were measured before and after implementing changes.

RESULTS: The findings indicate significant improvements in both TAT-1 and TAT-2 after the implementation of necessary changes. TAT-1 compliance increased from 58% to 74%, while TAT-2 compliance increased from 18% to 83%. These improvements highlight enhanced efficiency, streamlined workflows, and reduced potential delays in the discharge process.

CONCLUSION: The study concludes that implementing specific changes effectively improved the LAN bill preparation process, insurance bill submission, and the TAT metrics. The implemented changes optimized coordination, minimized delays, and improved operational efficiency. This finding emphasizes the significance of continuous improvement efforts in improving the discharge process and ensuring a smoother patient experience.

KEYWORDS: Turnaround Time, HIMS, LAN bill preparation, EHR, insurance bill submission

ACKNOWLEDGEMENT

I hereby take immense pleasure in thanking everyone without whom this project would not have been completed.

I am deeply grateful to KIMS Hospitals, Hyderabad, for providing me with the opportunity to undertake my internship and for their invaluable support in successfully completing this project.

I would like to express my profound gratitude to IIHMR University, Jaipur, and its dedicated staff for their continuous support and guidance throughout the duration of this project in successful completion.

I sincerely thank my guide, Dr. Sandesh Kumar Sharma, for his continuous support, guidance, and encouragement.

I extend my heartfelt gratitude to my parents and well-wishers for their unwavering support in shaping my future and for showering me with their blessings, love, and encouragement in all aspects of my life.

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ABBREVIATIONS

TAT: Turnaround time is the duration of time to complete the process

IP pharmacy: Inpatient Pharmacy provides round-the-clock services to patients in the hospital where Pharmacists and Pharmacy Technicians work closely with Physicians and Nurses to assure that patients receive appropriate medications while hospitalized.

OT Pharmacy: Operation Theatre Pharmacy is a specialized pharmacy that operates within or in close proximity to an operating theatre and is responsible for providing the necessary medications, sterile products, and medical supplies specifically for surgical procedures.

TPA: Third Party Administrator is an authorized intermediary that operates between individuals holding health insurance policies and insurance companies.

HIMS: Hospital Information Management System aids in the efficient management of various hospital operations, including clinical, financial, laboratory, inpatient, outpatient, and pharmaceutical tasks.

EHR: Electronic Health Record is a digital rendition of a patient's medical history, systematically maintained by healthcare providers over time which encompasses essential administrative and clinical data relevant to the patient's care, such as demographic details, progress notes, medications, vitals, past medical history, immunizations, laboratory data, and radiology reports.

NABH: National Accreditation Board for Hospitals & Healthcare Providers

DMO: Duty Medical Officer

HOD: Head of the Department

F&B: Food and Beverages

CHAPTER 1: INTRODUCTION

The process of discharge involves shifting a patient out of the hospital while ensuring their stability, including all relevant discharge summaries. It begins upon the formal approval of discharge by the consultant and concludes when the patient departs from the clinical unit. This can be calculated using the formula – Sum of time taken for discharge/No. of patients discharged. The organization has an established discharge process.^[1]

The Turnaround Time (TAT) for the discharge process holds significant importance in hospitals as it greatly impacts patient satisfaction. The discharge process TAT serves as a key parameter for assessing the efficiency and quality of a hospital. Enhancing the quality of this process directly correlates with an increase in patient satisfaction, thereby establishing a positive association between a smooth discharge experience and patient's likelihood of returning to the same hospital for future treatments.^[3]

Stakeholders involved in the discharge process include the concerned consultant, DMO, nursing department, IP, OT, and Cath Lab pharmacies, Blood bank, floor billers, audit executives, insurance backend team, managers and HODs of concerned departments.

1.1 PROCESS FLOW:

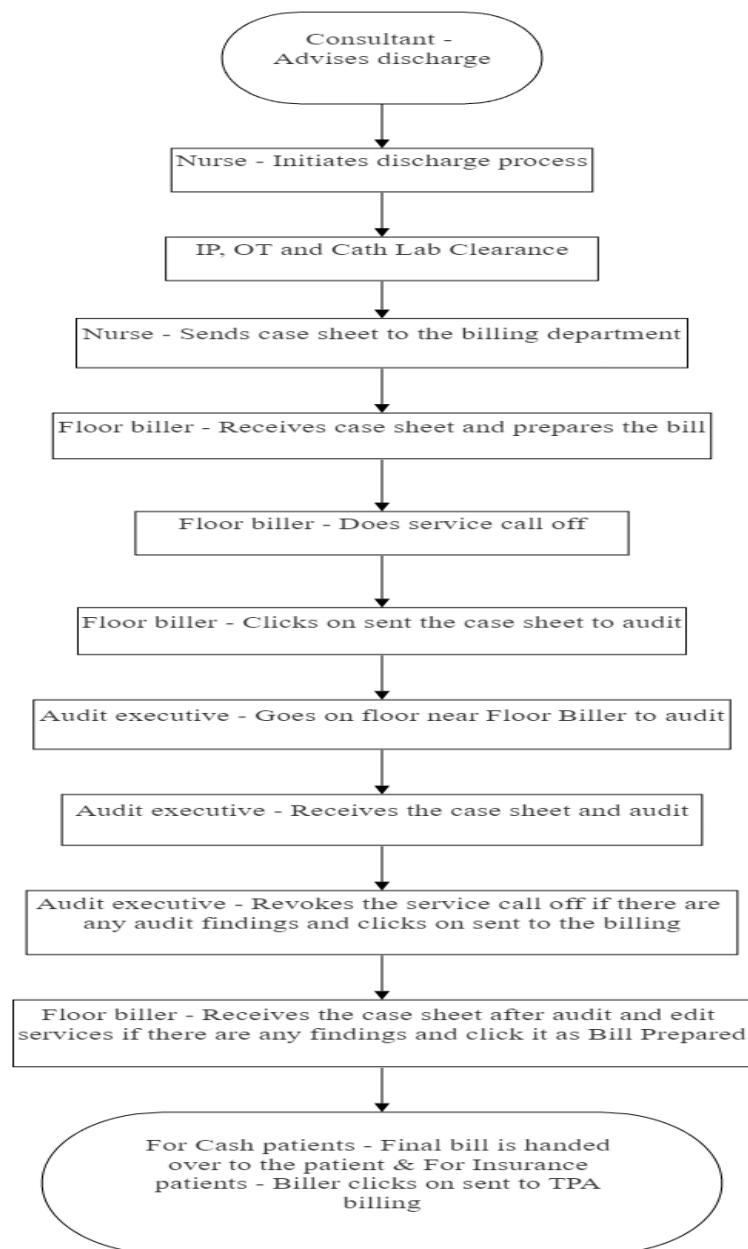
The consultant advises discharge. The nurse initiates discharge in the system. The following departments are intimated about patient discharge: Blood Bank, IP Pharmacy, OT Pharmacy, Cath Lab Pharmacy, and F&B. Once intimation is received, departments will post clearances on the system. The nurse identifies the drugs that are to be returned. The nurse places a return request against the indent on the system if there are any drugs that are to be returned.

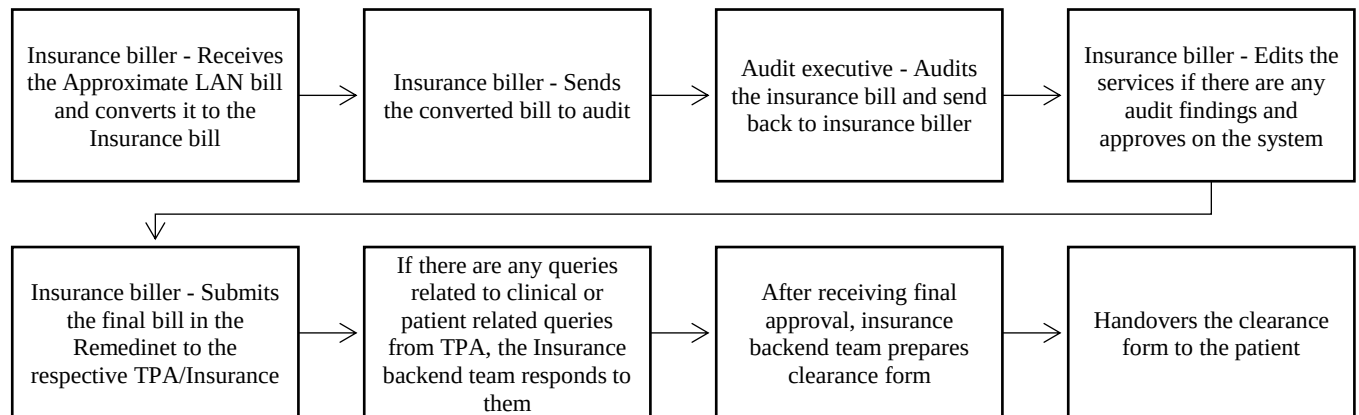
The nurse packs returnable drugs along with a return slip & sends them to the pharmacy. Pharmacy staff comes to the ward and collects drug returns after physical verification along with the nurse. The return acknowledgment is printed and signed by both the pharmacy staff and the nurse. Physical return can be done either in real-time or periodically during the day. Once Pharmacy acknowledges the return request, charges will be automatically deducted from the bill.

Once the nurse receives clearances, the nurse sends the case sheet to the Floor Biller. Floor Biller starts billing the case sheet. Floor Biller checks the case sheet and updates any pending services. Floor Biller follows up with departments for any pending indents and informs them to approve so that auto billing can happen. Floor Biller updates professional fees on the system as per policy after inquiry with the consultant, if applicable. Floor Biller does service call off before sending the case sheet to audit and informs the Audit team. Audit Executive approaches the floor upon receiving notification from Floor Biller. Audit Executive audits bill against case sheet. Audit Executive identifies if there are any discrepancies in the bill. The audit executive revokes the service call-off

and informs the Floor Biller to update the bill. Floor Biller updates the bill with missing or excess items. Floor Biller calls off service after updating. Audit Executive re-audits the updated bill. The audit executive indicates the completion of the audit. Floor Biller prints the approved IP approximate LAN bill from the system.

For cash patients, Floor Biller hands over the bill to the patient in the room. And then clarifies queries if any regarding the bill. Floor Biller informs the attendant about payment & clarifies any quick queries. And informs the patient to go to Financial Counsellor for the payment and further queries.





The insurance backend team receives an alert that the approximate bill is ready. Biller retrieves the approximate bill. Biller converts IP approximate LAN bill to insurance bill (package/open). Biller indicates that the bill is ready for audit and informs the Audit team. Audit Executive audits the bill. Audit Executive indicates to the biller that the audit is completed. If Audit Executive finds any discrepancies, he writes the discrepancies on the bill & handover the bill to the biller. Biller makes the necessary corrections. If there are no discrepancies, the biller approves the bill on the system. Once the biller approves the bill, a service call-off is done automatically.

Biller submits audited Insurance bill & Discharge Summary in the Remedinet/TPA portal for Insurance final approval. The backend team checks if any query was sent by the insurance company against patient details. If the query is related to the clinical query, then the DMO writes the response, and the backend team submits the query response. If it is a document-related query, then the backend team collects the documents from the patient and submits the response. The insurance company/TPA sends final approval through Remedinet/TPA portal. The backend team takes the print of the final approval. The backend team prepares clearance form based on the bill and final approval. Once the clearance form is completed, the backend team will print the clearance form and hand it over to the patient. The backend team asks the patient to meet Financial Counsellors for bill clearance and they counsel the patient on co-payment, NME charges & difference amount between Final Bill & Approval.

1.2 AIM:

The aim of this study is to compare the outcomes of discharge TAT for cash and insurance patients in a tertiary hospital, before and after implementing corrective strategies.

1.3 OBJECTIVES:

1. To ensure that cash and insurance patients are billed correctly and in a timely manner.
2. To assess the factors causing delays/bottlenecks in the discharge process and interventional measures to mitigate them until bill preparation in the discharge process.
3. To analyze the data before and after an intervention aimed at improving the billing time in the discharge process.

CHAPTER 2: REVIEW OF LITERATURE

Shobitha Sunil, et al., 2016 conducted a study at M. S. Ramaiah Hospital in Bangalore that examined the discharge process among 1872 patients who were discharged in March 2016. The collected data underwent analysis using Descriptive statistics, Co-relation, and Linear regression analysis. Convenience sampling was employed, and a self-administered questionnaire was given to the selected patients. The Chi-Square test was utilized for data analysis, leading to relevant results and subsequent recommendations. Statistical analysis was performed using SPSS and IBM-20. The study revealed that the average time taken for the discharge process was 3 hours and 38 minutes. Additionally, it was found that 50.9% of patients' discharges exceeded the standards prescribed by NABH i.e., 180 minutes. The investigation also showed that the time spent by the biller to prepare the bill, or 45% of the overall discharge time, was followed by the time required to prepare the discharge statement. Based on these results, the study recommends that appropriate and qualified staffing be provided, and that staff communication skills be improved through regular reinforcement training sessions, in order to increase the effectiveness of the discharge process.^[2]

A Singh, et al., 2018 conducted a cross-sectional and prospective study at a 250-bedded super specialty hospital in West Bengal over a period of three months, specifically from March 2018 to May 2018. The study included 174 patients selected through systematic random sampling. A tracking sheet was developed and utilized to record the TAT data for the four subprocesses of the discharge process. Unadjusted linear regression was employed to identify the key subprocesses influencing the overall discharge process time. Pareto analysis was conducted to determine the most frequently raised queries by external TPAs. The analysis revealed that out of the 128 categories of queries posed by TPAs, five categories accounted for 64 percent of the total queries. All the TATs underwent a

descriptive analysis after the data were analysed with SPSS-20. The results of the study highlight how discharge delays affect patient outcomes and hospital operations. Longer hospital stays, higher healthcare expenses, and delayed discharges are all possible outcomes. As a result, efficient discharge planning is essential for cutting down on hospital stays and enhancing patient outcomes..^[3]

Sima Ajami, et al., 2007 carried out a study in 2007 to examine the discharge procedure at Kashani Hospital in Iran. The statistical population is divided into two groups, including 40 hospital employees and 448 patients. The researchers have created two questionnaires and checklists to conduct this investigation. Throughout the entire discharge procedure, the average waiting time was calculated. SPSS and OR techniques were used to analyze the discharge process's stages. At Kashani Hospital, the average wait time for discharge was 4.93 hours. The days of the week with the greatest patient wait times for discharge were Mondays, Tuesdays, and Wednesdays. The patient's financial situation, delays in doctor appointments, the absence of a networked hospital information system, and other factors are the primary influences on the average waiting time..^[4]

Akansha Agarwal, et al., analyzed TAT using NABH criteria to evaluate the discharge procedures of three hospitals in an effort to increase patient satisfaction. In a hospital in Hyderabad, observational research involving 700 patients was done. 300 patients were included in cross-sectional descriptive research at a 300-bed hospital in Pune. 270 participants participated in an observational study conducted in Ludhiana's multispecialty hospitals with 250 beds. According to the data, all patient types take far longer than the NABH guidelines on average to complete the discharge process, with insured patients taking the longest amount of time. Additionally, the analysis reveals delays in all stages of the discharge process when compared to NABH norms, particularly in the billing process and room preparation with a certain insured patient type. According to this study, the hospital's future revenue and patient happiness both benefit from the discharge procedure TAT..^[5]

Kumar, et al., 2022 performed a study on the analysis of patient discharge delays for patients with cash payments and insurance after the treating physician notified discharge initiation. Descriptive statistics and Pareto analysis were utilized as analysis techniques. According to the survey, it takes an average of 3 hours, 57 minutes to discharge patients who paid cash, and 5 hours, 9 minutes to discharge patients who had insurance. The findings demonstrated that, with the exception of the step of sending the case sheet to the biller, delays were seen in every discharge procedure. Therefore, it is necessary to enhance each stage of the discharge procedure. To pinpoint the pertinent elements that materially slow down the discharge process, Pareto analysis is used. Due to the delay in receiving

clearance from the laboratory, pharmacy, and radiology department, preparing the bill took up the majority of the time. The discharge summary was then finalised.^[6]

Sheree Boyd, et al., 2017 conducted a study that focuses on the tactics used by hospital administrators to lessen discharge process delays and increase the institution's profitability. Delayed discharges can raise expenditures and overcrowding while also decreasing hospital profitability, lengthening the waiting list for hospital beds, and increasing waiting times. Implementing a number of efficient tactics, like case management efforts and discharge planning programs, will ensure patients receive the right care during the process and will help detect any bottlenecks that may be present. The triangulation approach, a technique for data analysis, assisted in integrating all the different kinds of data gathered for the study. Additionally, NVivo 10 software is utilized to organize. Process streamlining, improved communication, and the elimination of inefficiencies are encouraged through quality improvement programs like Lean Six Sigma techniques. The overarching goal is to enhance patient outcomes, cut expenses, and increase hospitals' financial performance.^[7]

Sayed Hisham, et al., 2020 have improved the discharge procedure by applying predictive modelling. The discharge process flow was watched, and the stage where most of the time was spent was documented. This study properly predicts the discharge process TAT and identifies the variables affecting it. ANOVA was used to examine the significance of discharge TAT for the factors that affected the discharge process. Based on the two characteristics discovered, the multiple linear regression approach was created using Python tools to predict the TAT. The purpose of this study was to identify the variables and forecast their impact on the hospital's discharge procedure. It was noted that the discharge TAT differed dramatically with different treating doctors when one of the reasons was referred to the treating physician. The discharge TAT is significantly delayed by a pending investigation or cross-consultation on the discharge day, according to the other element referred to as the discharge day cross-consultation.^[8]

U Suji, et al., 2023 performed a descriptive study for three months among 202 patients that focuses on the issues that are identified in the discharge process in hospitals in Kerala, which might have a significant impact on patients. There are certain challenges that were observed in the hospitals which include getting insurance authorization, documentation, coordination among various departments, and arrangement of post-hospital care which might be complex and time taking. This also includes identification of the causes of delay in the discharge process for insurance patients and timely allied services to reduce the delays. Data was collected using a census method for three months. Analysis

was done for all the stages involved in the discharge process which include sent for billing, pharmacy clearance, bill preparation, bill closure, and discharge. The results showed that 59.4% of patients' discharge TAT has exceeded the standard TAT. This recommends that the streamlining of the administrative processes is required which are involved in the discharge process to reduce repetitive delays and improve patient care.^[9]

Mehta, et al., 2015 conducted a cross-sectional study at a multispecialty hospital that demonstrates how patient-related difficulties and clearance timings might affect discharge time, an important quality measure. With a 95% level of confidence, the data was analysed using SPSS version 11.5; results with P 0.05 were deemed significant. A one-sample t-test was applied to investigate the statistical significance of both overall discharge time and overall clearing time. The mean discharge time was evaluated using an independent sample t-test to analyse the variances among several groups, such as scheduled and unplanned discharges, insured and uninsured patients, and planned and unplanned discharges. The study found that by minimising the total discharge time, more scheduled discharges can speed up clearance times by various departments. Additionally, putting in place nightly audits of all inpatient bills and actively encouraging on-call physicians to prioritise finishing discharge summaries for insurance patients before the morning shift will both be significant improvements.^[10]

Berengere Couturier, et al., 2015 aimed to compare the patient's opinions on the discharge process using two distinct approaches, such as a self-questionnaire completed on a dedicated website and a telephone interview, to compare the patient's perspectives on the discharge procedure. Evaluation of patient satisfaction levels was another secondary goal. Scores were computed for each dimension of satisfaction as well as an overall score. We used the randomized SENTIPAT experiment to examine patient satisfaction levels in the administration of hospital discharge between two patient groups. We sent the questionnaire to 1141 trial participants who had spent at least two days in the hospital as part of a separate investigation. 867 of these patients had access to the Internet at home and were randomly assigned to the internet or telephone group. The patient was highly satisfied, as evidenced by the overall satisfaction score. The results support the creation of a permanent website with a specific purpose, which could be used as a platform to collect user input on the discharge procedure as well as other elements of their hospital stay and follow-up.^[11]

Senu Thomas, et al., 2017 conducted a study in a 256-bed quaternary hospital in Chennai to track and record the length of time needed to complete different sorts of discharges and compare the

average turnaround time for patients with insurance and those who pay out-of-pocket for their care. The survey approach involves getting replies from a sample of respondents in order to collect data. The questionnaire is divided into three components, including the patient's satisfaction with the discharge procedure, the length of the discharge process, and sociodemographic information. It was discovered that cash patients completed the discharge process in about 677.67 minutes, but insurance patients required about 793.27 minutes. The ward with the longest duration for discharge was observed to be 800 minutes for insured patients and 690 minutes for cash patients. This highlights the need to address and improve the efficiency of the lengthy discharge process for in-patients, as it is a crucial aspect in enhancing the quality of healthcare facilities.^[12]

Kerry Kuluski, et al., 2022 have conducted a study using a policy-oriented framework to learn more about the root reasons of delayed hospital discharge. A total of 57 individuals from two hospital networks located in both urban and rural areas of Ontario, Canada, participated in in-depth interviews, including 18 patients, 18 carers, 11 providers, and 10 organisational leaders. The study found that the participants' shared causative factors included a lack of resources and an uneven distribution of personal and community responsibilities for elder care. The best care for patients and their families must be provided, hence cross-sectoral collaboration must be prioritised in efforts to address delayed release. Adopting a single-sector strategy, such as concentrating just on hospitals, results in an emphasis on organization-specific goals like increasing capacity and shortening stays, which can lead to conflict between providers as well as with patients and carers. To successfully address this long-standing policy dilemma, it is also crucial to cultivate strong connections with patients and carers as key team members, developing a shared understanding of aims and priorities.^[13]

Karen Bryan, et al., 2010 undertook a project in one region of Southern England to investigate the delayed discharges from acute hospitals, a problem that has persisted for the past ten years and poses a particular challenge for older people with complex medical needs because it can negatively affect their general health and well-being. The discharge steps that cause the most delays were discovered, and these include waiting for a decision regarding social service funding, looking for a care home placement through social services or privately, delays with family, the inability to receive home care, and a lack of subacute NHS beds. The findings primarily show that effective discharge coordinators or teams to support nurse-led discharge planning, agreed discharge protocols, and inter-agency communication systems, including early notification systems, regular monitoring of discharge data,

and regular meetings between NHS and Social Services staff to meet the Community Care standards are among the factors found to enhance discharge.^[14]

Alexander Micallef, *et al.*, 2022 conducted a thorough evaluation of the literature with a focus on several facets of delayed discharges in acute healthcare settings. This study outlined and analyzed the conceptual and practical definitions of delayed discharges, looked at the sources and consequences of the delays, and investigated current therapies intended to lessen their impacts by slowing the rate or frequency of delays. Using inclusion/exclusion criteria and the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) search methodology, 64 research papers were included in the review. A study that sought to create a discharge facilitation tool to encourage early discharges led to a 10% increase in the overall rate of discharges. Another intervention research attempted to address this issue by enacting a "discharge before noon" policy, which saw a 13-month increase from 11% to 38%. By encouraging increased hospital bed availability, decreasing emergency room overcrowding, strengthening partnerships between hospital and community care, and ultimately reducing healthcare waste and associated costs, measures to address the causes and mitigate the impact of delayed discharges are anticipated to alleviate the problem.^[15]

Lauren Cadel, *et al.*, 2021 identified the most successful practices that have been developed, put into practice, and/or evaluated for handling delayed discharge situations in a hospital environment by analyzing both peer-reviewed and grey literature. Furthermore, two specific goals were pursued to assess the nature of current delayed discharge initiatives and to find any research gaps that might direct future activities in this field. This scoping review comprised sixty-six papers. The majority of multidisciplinary team-implemented activities were covered in the review, which produced positive outcomes like shortened hospital stays and reduced release delays. However, it was discovered that patient and family experiences were infrequently recorded or reported. The initiatives that were assessed frequently lacked key contextual information as well, which is essential for accurately duplicating best practises and broadening their use. By focusing on the effective use of hospital resources, these projects' effectiveness is assessed. Instead of just focusing on system and hospital metrics like length of stay and occupancy rates, such a strategy would put more of an emphasis on improving outcomes and experiences. Despite the existence of many creative programmes aimed at reducing delayed discharges, it seems that existing approaches might not adequately address the root of the problem, especially in terms of treatments prior to hospital admission. Therefore, there is an

urgent need for solutions that can have an influence on this issue in a long-lasting and sustainable way.^[16]

CHAPTER 3: METHODOLOGY

Sample size: 1169 discharges for LAN bill preparation and 452 for Insurance bill conversion

Study design: Descriptive Observational study

Study area: KIMS Hospitals, Paradise unit, Hyderabad

Study period: March 15th to May 10th, 2023

Data collection tools: HIMS, EHR, Remedinet

Sampling technique: Convenient sampling

Analytical tools: Microsoft Excel

Study Criteria:

Inclusion Criteria:

- Cash and Insurance patients who have been admitted to KIMS Hospitals whose medical conditions have stabilized and are ready for discharge during the study period.
- Discharges that took place between 9:30 AM to 5 PM are considered.

Exclusion Criteria:

- Corporate patients who have been admitted during the study period.
- Discharges that took place after 5:00 PM are not considered.

Study procedure:

A study is carried out to identify the TAT for both cash and insurance patients and to find out where the corrective strategies are required and then implement them. Calculation of the TAT of the discharge process of cash and insured patients and finding out the bottlenecks. ^[17] The discharge process is subdivided into two phases such as TAT 1 and TAT 2 which includes:

TAT 1: The time taken for the preparation of the LAN bill from discharge initiation.

TAT 2: Time taken by the insurance biller to convert the bill for insured patients and send the final bill to the external TPA.^[17]

The ideal time for TAT 1 is 1 hour and TAT 2 is 45 min in the hospital. A comparison is done before and after the implementation changes for both the TATs.

CHAPTER 4: RESULTS

TAT 1 has been observed for 1169 discharges where the benchmark set for this TAT is within 1 hour i.e., from Discharge initiation to LAN bill preparation. Comparison of TAT before implementation i.e., from 15th March to 10th April 2023, and after implementation of necessary changes i.e., from 11th

Table-4.1: Total count of LAN bill closures that are within and beyond TAT from 15th March to 10th April 2023

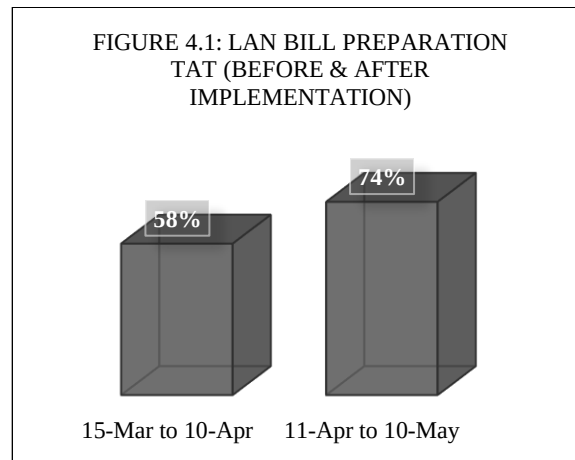
Row Labels	< 1 hr	> 1 hr	Grand Total
Mar	213	134	347
15-Mar	12	10	22
16-Mar	15	7	22
17-Mar	13	8	21
18-Mar	16	10	26
20-Mar	20	8	28
21-Mar	21	9	30
23-Mar	15	10	25
24-Mar	15	4	19
25-Mar	20	6	26
27-Mar	16	7	23
28-Mar	11	9	20
29-Mar	10	18	28
30-Mar	14	15	29
31-Mar	15	13	28
Apr	125	104	229
01-Apr	18	5	23
03-Apr	16	8	24
04-Apr	24	7	31
05-Apr	17	17	34
06-Apr	12	19	31
07-Apr	10	13	23
08-Apr	15	26	41
10-Apr	13	9	22
Grand Total	338	238	576

Table-4.2: Total count of LAN bill closures that are within and beyond TAT from 11th April to 10th May 2023

Row Labels	< 1 hr	> 1 hr	Grand Total
Apr	309	127	436
11-Apr	5	12	17
12-Apr	14	7	21
13-Apr	20	10	30
14-Apr	13	13	26
15-Apr	4	18	22
17-Apr	13	14	27
18-Apr	14	9	23
19-Apr	24	4	28
20-Apr	26	3	29
21-Apr	20	4	24
22-Apr	24	3	27
24-Apr	10	6	16
25-Apr	26	3	29
26-Apr	22	5	27
27-Apr	26	7	33
28-Apr	18	2	20
29-Apr	30	7	37
May	131	26	157
02-May	11	3	14
03-May	14	1	15
04-May	14	6	20
05-May	20	5	25
06-May	20	4	24
08-May	14	1	15
09-May	16	3	19
10-May	22	3	25
Grand Total	440	153	593

April to 10th May 2023.

Significant improvement has been noted in the TAT-1 i.e., from discharge initiation to LAN bill preparation following the implementation of corrective strategies, with an increase from 58% to 74%.



TAT 2 has been observed for 452 insurance patient discharges where the benchmark set for this TAT is within 45 minutes i.e., from LAN bill preparation to Insurance bill submission. Comparison of TAT before implementation i.e., from 15th March to 8th April 2023, and after implementation of necessary changes i.e., from 21st April to 10th May 2023.

Table-4.3: Total count of Insurance bill submissions that are within and beyond TAT from 15th March to 8th April 2023

Row Labels	< 45 min	> 45 min	Grand Total
Mar	9	157	166
15-Mar		12	12
16-Mar		13	13
17-Mar	3	3	6
18-Mar	1	6	7
20-Mar	1	11	12
21-Mar		17	17
23-Mar	2	6	7
24-Mar		12	12
25-Mar		18	18
27-Mar		11	11
28-Mar	1	8	9
29-Mar	1	9	10
30-Mar		16	16
31-Mar		15	15
Apr	9	88	97
01-Apr		11	11
03-Apr	1	10	11
04-Apr	3	13	16
05-Apr	1	14	15
06-Apr	1	15	16
07-Apr	2	7	9
08-Apr	1	18	19
Grand Total	18	245	263

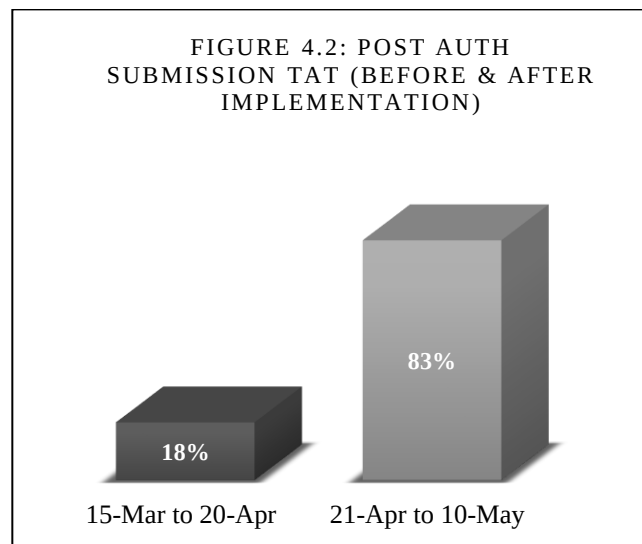
Table-4.4: Total count of Insurance bill submissions that are within and beyond TAT from 21st April to 10th May 2023

Count of Range2	Column Labels		
Row Labels	< 45 min	> 45 min	Grand Total
Apr	63	48	111
21-Apr	4	5	9
22-Apr	7	7	14
24-Apr	7	2	9
25-Apr	8	11	19
26-Apr	9	3	12
27-Apr	12	9	21
28-Apr	9	4	13
29-Apr	7	7	14
May	64	14	78
02-May	6	2	8
03-May	7	1	8
04-May	8	1	9
05-May	12	3	15
06-May	10	1	11
08-May	4	2	6
09-May	8	2	10
10-May	9	2	11
Grand Total	127	62	189

Sig

nificant improvement has been noted in the TAT-2 i.e., from LAN bill preparation to Insurance bill

submission following the implementation of specific changes, with an increase from 18% to 83% by excluding discharge summary delays.



CHAPTER 5: DISCUSSION

Before implementing certain changes, the discharge process encountered several issues from discharge initiation to LAN bill preparation. These issues include Package conversion delays, Audit delays, doctor fee confirmation delays, improper updation of bills by the billers, the necessity of reinforcement training for the billers, billers waiting for the nurse to give the case sheet, insurance/corporate package delays, other department staff taking the case sheet in between, late escalations to HOD or concerned departments, challenges related to HIMS and IT.

The necessary changes that are implemented to improve the LAN bill preparation process and TAT included the following measures conducting training sessions focused on package conversions, providing laptops to Audit executives and conducting frequent reviews, addressing delays in doctor fee confirmation by involving the Billing HOD in direct communication with doctors, ensuring regular and timely updation of bills, offering training to billers on specific challenges they encountered, encouraging billers to proactively request and retrieve case sheets if not received from nurses, establishing a responsive system for Insurance/Corporate staff to expedite their queries, instructing billers not to distribute case sheets to any department staff after receiving them, promptly

escalating any issues that arise to the relevant authorities, implementing daily reviews of biller's performance and progress.

Before implementing certain changes, the discharge process encountered several issues from LAN bill preparation to insurance bill submission. These issues include the process relying on aid to bring the case sheet leading to delays in bill conversion, confirmation of doctor fees experienced delays, patient flow within the department for queries, admissions, and document submission, there was only one biller responsible for both bill conversion and submission, with their shift starting at 11:30, billers had to wait for the aid to send the case sheet for auditing and then bring it back, the department lacked a dedicated aid to support the process, surgeon fees needed to be revised after bill conversion, discharge summaries were pending, attendants frequently visited to inquire about the bill, issues with the printer and double entries were observed in the HIMS system, challenges related to HIMS, Remedinet, and IT were also encountered.

Several necessary changes were implemented to improve the insurance submission process and reduce the TAT. These measures included eliminating the physical movement of case sheets and relying on EHR and WhatsApp notifications instead, instructing billers to refrain from confirming the doctor's fee as it was already confirmed by floor billers, locking the door to reduce the patient flow, and repositioning the billers, while providing a contact number for any queries and informing the Financial Counseling desk to provide thorough counseling, assigning two billers for bill conversion and submission, with staggered shift timings at 10:00 and 11:30, a dedicated Audit Executive within the department itself, a dedicated aid to assist in the department, escalating delays in discharge summaries to the Medical Admin through the manager, replacing faulty printers and addressing issues related to double entries, conducting regular reviews by the HOD for the manager and billers to ensure smooth operations.

The findings from the study highlight the positive impact of implementing specific changes on the TAT metrics within the hospital discharge process. Both TAT-1, from discharge initiation to LAN bill preparation and TAT-2, from LAN bill preparation to Insurance bill submission, exhibited significant improvements after the implementation of necessary changes.

The increase in TAT-1 compliance from 58% to 74% suggests enhanced efficiency in the LAN bill preparation process, while the rise in TAT-2 compliance from 18% to 83% indicates improved efficiency in the insurance billing process. These improvements signify the effectiveness of the

implemented changes in streamlining workflows, optimizing coordination, and reducing potential delays.

Research in M.S Ramaiah Hospital showed that about 50.9% of patients were discharged later than the recommended time of 180 minutes set by NABH. To reduce the discharge time, it is necessary to appoint a coordinator in each ward to oversee and manage the discharge process. The hospital should establish clear guidelines for the staff involved in discharge, which should be followed consistently throughout the hospital. And billing time contributed the most to the overall discharge time. Many patients also agreed that billing was the most time-consuming step, followed by completing the discharge summary. Therefore, it is important to ensure sufficient staffing, especially in the billing department, based on the patient load.^[18]

CHAPTER 6: CONCLUSION

Overall, the findings support the conclusion that the implemented changes significantly improved the LAN bill preparation process, insurance bill submission, and TAT metrics. These improvements not only enhanced operational efficiency but also contributed to a smoother patient experience by minimizing delays, optimizing coordination, and streamlining the billing process. Moreover, the prompt escalation of issues to the appropriate authorities and daily performance reviews fostered a proactive approach to addressing challenges and ensuring continuous improvement in the discharge process. By implementing these interventions, the hospital can effectively address process bottlenecks, reduce TAT, and improve overall operational efficiency. This study depicts the importance of continuous improvement efforts in enhancing the discharge process and ultimately improving the overall patient experience.

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