



HOSPITAL BED ALLOTMENT TURNAROUND TIME

ANALYSIS OF PROCEDURES AND ISSUES IN THE BED
BOARD MANAGEMENT FOR IMPROVING PATIENT
SATISFACTION: THE CROSS-SECTIONAL OBSERVATION
STUDY

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KIMS HOSPITAL | MINISTERS ROAD SECUNDERABAD

DISSERTATION

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“Hospital Bed Allotment Turnaround Time”

Dissertation Submitted to



The IIHMR University, Jaipur

for the partial fulfilment for the award of the degree of

Master of Business Administration
(MBA)

In

Pharmaceutical Management

By

Laxmikanta Lenka

Under the Supervision and Guidance of

Dr. Ashok Kumar Peepliwal

2023

Appendix C: Title Page

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Appendix D: Declaration by Student

DECLARATION BY STUDENT

I hereby declare that this dissertation titled “**Hospital Bed Allotment Turnaround Time**” 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 Information derived from the published or unpublished work of others has been duly acknowledged in the text.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: Laxmikanta Lenka

Date:

Appendix E: Completion Certification

CERTIFICATE

This is to certify that Mr. Laxmikanta Lenka in partial fulfilment of the requirements for the award of the degree of MBA (Pharmaceutical Management) from the IIHMR University, Jaipur has successfully completed his internship at KIMS HOSPITAL, Secunderabad during February 20-May 19, 2023.

Place:

Head of the Organization

Date:

Name of the Organization

Appendix F: Certificate from Faculty Guide and School Dean

CERTIFICATE

This is to certify that dissertation titled “**Hospital Bed Allotment Turnaround Time**” is a record of the research work undertaken by Mr. Laxmikanta Lenka in partial fulfilment of the requirements for the award of the degree of MBA (Pharmaceutical Management) from the IIHMR University, Jaipur under my guidance and supervision and his approach to the research study has been sincere, scientific, and analytical.

Faculty Guide

IIHMR University, Jaipur

Date:

School Dean

IIHMR University, Jaipur

Date:

Acknowledgement

We would like to express our ardent appreciation to all the people and organizations who have upheld and contributed to the completion of this research on prepare mapping within the Bed Board Management Division at KIMS Hospital, Secunderabad. Without their help, direction, and participation, this research would not have been conceivable. To begin with and first, we amplify our earnest appreciation to the administration and staff of KIMS Hospital, Secunderabad, for allowing us authorization to conduct this investigate Bed Board Management Division. Their participation and bolster all through the ponder have been important. We would like to recognize the patients who taken part in this inquiry and given their important feedback. Their readiness to share their encounters and experiences has been pivotal in understanding the qualities and shortcomings of the Bed Board Management and Administration. We would like to precise our appreciation to the healthcare professionals, including specialists, medical caretakers, professionals, and chairman, who liberally shared their ability and time to supply us with profitable bits of knowledge and data. Their information and involvement have been instrumental in forming the heading of this study. Our sincere appreciation goes to the investigate group individuals who committed their time and exertion to gather and dissect the information. Their commitment and consideration to detail have been basic in guaranteeing the exactness and unwavering quality of the discoveries. We are obliged to our advisors and coaches who given priceless direction and back all through the investigate prepare. Their ability and support have been instrumental in refining the investigate technique and deciphering the comes about. Finally, we would like to thank KIMS Hospital, Secunderabad, for giving us with the vital assets, offices, and conducive investigate environment. Their commitment to greatness in healthcare and inquire about has been a consistent source of inspiration. In conclusion, we expand our most profound appreciation to all those who have contributed to this inquire about process flow within the Bed Management division at KIMS Hospital, Secunderabad. Your bolster, participation, and ability have been essential within the fruitful completion of this consider, and we are earnestly appreciative for your association.

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Abbreviations

LOS	Length of Stay
ICU	Intensive Care Unit
HIMS	Hospital Information Management System
MICU	Medical Intensive Care Unit
SICU	Surgical Intensive Care Unit
IT	Information Technology
HBMS	Hospital Bed Management System
EHR	Electronic Health Records

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ABSTRACT

Title: Hospital Bed Allotment Turnaround Time

Author Name: Laxmikanta Lenka

Introduction: The turnaround time for hospital bed allocations is a crucial component of healthcare management since it affects patient flow, care quality, and overall operational effectiveness. To promote seamless patient transfers, maximize resource utilization, and reduce delays in the admission and discharge processes, timely bed assignment and allocation is crucial. Few people consciously observe bed management in hospitals; at least, not until something goes wrong. Ineffective bed management is the bane of hospitals around the nation, causing a plethora of issues for patients, nurses, and doctors, as well as clogging up admission offices with people waiting for rooms. Sometimes, poor bed management prevents the use of important ICU rooms, limiting the amount of care that can be given to critically sick patients. The aim of this dissertation is to figure out the factors affecting bed allotment turnaround time and propose strategies to enhance efficiency and patient flow in hospitals.

Study Objectives: The basic objective of this study is to provide better information-

- To determine the current turnaround time for hospital bed allocation.
- To study the impact of delayed bed allocation on the efficiency and efficacy of patient flow within the hospital.

Methodology: The research starts off by performing a thorough evaluation of the body of prior research on hospital bed management and related subjects. Key variables such patient demand patterns, bed availability, clinical complexity, and administrative procedures are identified in the literature analysis as having a significant impact on bed allotment turnaround time. The proposed research would analyse and address these aspects using the synthesized information as its basis. The dissertation suggests a multifaceted strategy to reduce the turnaround time for bed allocations. This strategy makes use of cutting-edge technology, process improvement methodologies, and potent communication techniques. First, the study investigates how real-time data analytics and automated bed management technologies can be used to assist effective bed assignment and allocation. These technologies allow for the monitoring of patient acuity levels, bed availability, and care needs, allowing for speedier and more efficient informed decisions.

The dissertation makes use of quantitative research and case studies based on actual data from healthcare organizations to validate the suggested techniques. To assess the efficacy of the

suggested improvements, key performance measures such as bed allotment turnaround time, patient satisfaction, and operational expenses are examined.

Key Results: The results of this study add to the corpus of knowledge in hospital management by offering evidence-based suggestions for speeding up the bed allocation process. The suggested approaches provide managers and administrators in the healthcare industry with workable ways to maximize resource utilization, promote patient flow, and optimize bed allocation procedures.

Conclusion: This dissertation concludes by discussing the significance of hospital bed allocation turnaround time and outlining a thorough strategy to improve productivity and patient flow. Healthcare organizations may decrease delays, improve resource utilization, and raise the standard of care overall by utilizing cutting-edge technologies, process improvement approaches, and efficient communication tactics. The study's conclusions have real-world applications for hospital executives and decision-makers, guiding them in making wise choices to streamline the bed allocation procedures and eventually enhance patient outcomes.

Keywords: Overall Operational Effectiveness, Process Improvement, Productivity, Resource Utilization, Seamless patient Transfers.



Figure 1: Hospital Bed with Basic Facilities.

CHAPTER 1: INTRODUCTION

The provision of high-quality healthcare services depends on the effective management of hospital beds. Patient flow and operational effectiveness within healthcare organizations are significantly impacted by hospital bed allotment turnaround time, which is the period of time it takes to assign and allocate beds to patients. Smooth transitions between various stages of patient care, such as admission, treatment, and discharge, depend on timely bed assignment and allocation. Inadequate turnaround times for bed allocations can lead to longer wait times for patients, overcrowding, worse patient satisfaction, and subpar treatment outcomes. Therefore, it is crucially important in modern healthcare administration to comprehend the variables affecting bed allotment turnaround time and to put into practise measures to increase efficiency.

The intricacy and significance of bed allotment turnaround time are both emphasized in the literature on hospital bed management. This process is influenced by a number of variables, such as patient demand trends, bed availability, clinical complexity, and administrative processes. There are various patient demand patterns, and admissions and discharges change during the day, the week, and the year. The number of available beds, occupancy rates, and patient acuity levels are only a few examples of the variables that affect bed availability. Clinical complexity includes all of the many treatment needs and specialty-specific factors that influence bed assignments. Last but not least, administrative processes like paperwork, healthcare team coordination, and communication standards might cause delays in bed allocation.

This dissertation offers a thorough method to reduce the turnaround time for hospital bed allocation in order to address these issues. To improve decision-making and allow effective bed assignment and allocation, the research will examine the integration of cutting-edge technologies. These technologies include automated bed management systems and real-time data analytics. To locate and remove administrative process bottlenecks, process improvement approaches such as Lean Six Sigma and workflow optimisation will be looked at. To facilitate smooth transitions and coordination among healthcare teams, emphasis will also be placed on effective communication techniques and interdisciplinary teamwork.

Problem - The turnaround time for hospital bed allocation presents various difficulties for healthcare organizations. Patient demand variations, bed availability restrictions, clinical complexity, specialized care needs, administrative backlogs and communication breakdowns, bed turnover times, and data availability and accuracy are some of these difficulties.

Importance of the Problem -

To assign patients to the proper bed type and specialist unit, careful planning and coordination are required due to clinical complexity and the need for specialized treatment. Bed assignments may be delayed as a result of ineffective administrative procedures, including paperwork, documentation, and communication. This might obstruct the timely flow of patients.

Bed availability and patient admission delays are impacted by bed turnover time, the amount of time needed to clean and arrange a bed for the following patient after discharge. Patients who are waiting for a bed may have longer wait times as a result of longer turnover periods.

Effective bed allocation requires accurate and timely data on patient acuity levels, bed occupancy, and other pertinent variables. However, acquiring thorough and trustworthy data can be difficult for healthcare organizations, which makes it difficult to forecast accurately and make decisions.

Objective - The purpose of conducting a three-month long study on this topic is to examine the difficulties and opportunities related to the turnaround time for hospital bed allocation and to suggest methods for improving this vital area of hospital operations. This study aims to add to the body of knowledge in hospital administration and enhance patient flow and resource use by investigating cutting-edge methodologies and technology, as well as analysing the factors impacting bed assignment and allocation. The basic goal of our research is focussed on this aspect:

- To determine the current turnaround time for hospital bed allocation.
- To study the impact of delayed bed allocation on the efficiency and efficacy of patient flow within the hospital.
- To examine the effects of delayed bed allotment on the productivity and effectiveness of hospital operations.

- To recommend approaches for increasing the efficiency of bed allotment and streamlining patient flow in the hospital.



Figure 2: Represents KIMS Hospital Logo.

Hospital Bed Management Process

The hospital bed management process consists of a number of procedures and tasks designed to guarantee the effective and efficient use of beds inside a healthcare facility. The following are the main steps involved in hospital bed management, while exact processes may vary depending on the size, speciality, and current systems of the hospital:

1. Patients Admission:

- **Patient Registration:** Patients' names are entered into the hospital database and have their demographic data recorded as soon as they arrive.
- **Triage and Assessment -** Patients are triaged and assessed in order to evaluate their condition, the urgency of their care, and the type of care they need (e.g., emergency, critical, or general).
- **Bed Request:** A request is made for a bed that is available based on the patient's condition and the level of care that is necessary.

2. Bed distribution:

- **Assessment of Bed Availability:** The hospital's bed management team evaluates the availability of beds in various units or specialties.
- **Bed Assignment:** The patient is given an appropriate bed according to their clinical criteria, specialist requirements, and bed availability. This may entail considering elements including the necessity for isolation, specialized equipment, and care level.
- **Patient Transfer:** In the event that the requested bed is not available, the patient may be moved temporarily to a suitable unit until the intended bed becomes available or transferred to another facility if necessary.

2. Utilization and supervision of beds:

- **Bed Occupancy Tracking:** To give real-time visibility into bed availability, the status of each bed in the bed management system—occupied, available, or reserved—is routinely updated.
- **Bed turnover:** The process of cleaning, sanitizing, and preparing a bed for the subsequent patient once a patient has been dismissed. The goal of effective bed turnover procedures is to cut down on the amount of time between patient discharge and the bed becoming available for a new admission.
- **Patient Flow Monitoring:** To guarantee seamless transitions and maximize bed utilization, the movement of patients within the hospital, including transfers, is monitored.

4. Coordinating and communicating:

- **Interdepartmental Communication:** Timely bed allocation and patient transfers depend on effective communication between multiple departments, including nursing units, emergency rooms, operating rooms, and specialist units.
- **Collaboration within the care team:** Effective coordination during bed management and patient transitions is made possible through collaboration among healthcare professionals, including nurses, doctors, and support workers.

5. Reporting and ongoing development:

- Data collection and analysis: To find bottlenecks, trends, and areas for improvement, pertinent data are gathered and examined, such as bed occupancy rates, average lengths of stay, and patient flow metrics.
- Process Evaluation and Optimisation: Regularly reviewing the bed management process enables inefficiencies to be found, process enhancements to be put into place, and resource allocation to be optimized for improved patient flow and bed utilization.

Process Map For Bed Allocation Turnaround Time

There are certain steps by which the bed is allocated to patients within specific interval of time and for smoothening the allotment procedure:

1. Patient Admission:
 - The patient checks in at the hospital and completes the registration process.
 - The triage team evaluates the patient's state and determines the patient's priority level.
2. Bed Request and Availability Check:
 - Accepting a request for a bed made by a medical practitioner.
 - The bed request is received and examined by the bed management team.
 - The bed management team investigates the availability of beds in the specified speciality or unit.
3. Bed Allocation:
 - Bed management team assesses the patient's clinical needs, specialty requirements, and bed availability.
 - Suitable bed is assigned to the patient.
 - If the requested bed is not available, alternative options are considered.
 - Bed allocation is communicated to the nursing unit or care team.
4. Bed Turnover Process:
 - Patient is taken out of the designated bed.
 - The bed discharge is communicated to the housekeeping personnel.
 - Cleaning and bed preparation are started by housekeeping workers.

- The preparation and cleaning of the bed are finished.
 - When a bed is made, housekeeping personnel alerts the bed management team ready for allocation.
5. Patient Transfer (if applicable):
- Coordinating is done between the appropriate teams when a patient needs to be transferred to a different unit or speciality.
 - A patient transfer has been planned, guaranteeing a seamless transition.
6. Continuous Monitoring and Reporting:
- The bed management staff keeps track of how long it takes for beds to be discharged.
 - Performance indicators are monitored and kept track of, including average bed turnover time.
 - Data analysis is used to find the causes of long turnaround times.
7. Process Improvement and Optimization:
- Identified bottlenecks and challenges in the bed turnover process are addressed.
 - Different strategies are executed to streamline bed cleaning and preparation activities.
 - Communication and coordination among stakeholders are enhanced to expedite the process.
 - Ongoing monitoring and feedback loops are established to track the impact of process improvements.

TYPES OF HOSPITAL ROOMS AVAILABLE AND NO. OF BEDS WITH AMENITIES

There are different types of rooms available for patients based on their requirements and convenience. This regards the basic facilities for the patients and the attenders for having the comfort which the patient's satisfaction and attract to come back again in case of any health issues and also the services provision for patients given on this rooms available and room allotment is done on the patient priority like surgery and organ transplantation. This involves the most important aspect of patient based on the room was allotted and increase the patients positive experience and helps in their healthcare.



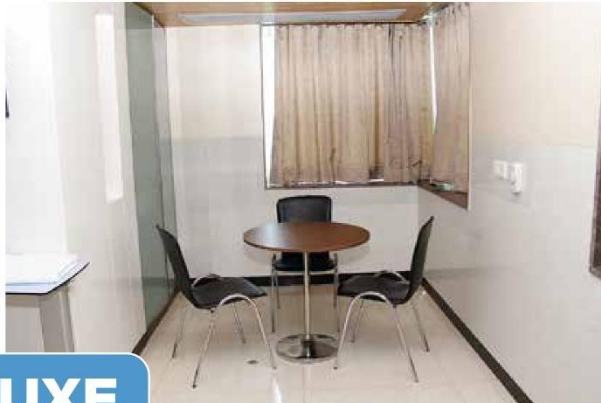
AMENITIES

- Two beds in a room with semi partition in between
- Centrally air-conditioned
- Fans for individual beds
- Attached common toilet and bathroom
- Fully automated motorized patient cot
- Cardiac table
- Bedside locker
- Attendant couch
- LED TV with cable connection for each bed with limited channels (Preferably Telugu)
- Phone with single connection (for each bed)



AMENITIES

- Spacious room
- Centrally air-conditioned
- Attached toilet and bathroom
- Attached pantry with:
 - Refrigerator
 - Microwave oven
- Fully automated motorized patient cot
- Cardiac table
- Bedside locker
- Sofa set (5 piece)
- Teapoy
- Attendant couch
- Wardrobe
- Laptop workstation
- LED TV with cable connection with limited channels (Preferably Telugu)
- Phone
- Wifi



DELUXE ROOM



AMENITIES

- Spacious room
- Centrally air-conditioned
- Attached toilet and bathroom
- Attached pantry with:
 - Mini refrigerator
 - Microwave oven
- Fully automated motorized patient cot
- Cardiac table
- Bedside locker
- Sofa set (3 piece)
- Teapoy
- Attendant couch
- Wardrobe
- Laptop workstation
- LED TV with cable connection
- Phone
- Wifi



AMENITIES

- Spacious room
- Centrally air-conditioned
- Attached toilet and bathroom
- Attached pantry with:
 - Mini refrigerator
 - Microwave oven
- Fully automated motorized patient cot
- Cardiac table
- Bedside locker
- Sofa set (3 piece)
- Teapoy
- Attendant couch
- Wardrobe
- Laptop workstation
- LED TV with cable connection
- Phone
- Wifi



AMENITIES

- Spacious room
- Centrally air-conditioned
- Attached toilet and bathroom
- Fully automated motorized patient cot
- Cardiac table
- Bedside locker
- Chair for two companions
- Teapoy
- Attendant couch
- Wardrobe
- LED TV with cable connection with limited channels (Preferably Telugu)
- Phone
- Wifi



AMENITIES

- Three beds in a room with curtains in between
- Centrally air-conditioned
- Attached common toilet and bathroom
- Manually operated patient cot
- Cardiac table for each bed
- Bedside locker for each bed
- Phone

SECUNDERABAD | KONDAPUR
NELLORE | RAJAHMUNDY | SRIKAKULAM | ONGOLE | VIZAG | ANANTAPUR | KURNOOL

FLOW CHART OF BED ALLOTMENT TO PATIENTS HAVING PRE-PLANNED SURGERIES AND AFTER DOCTOR CONSULTATION



Figure 3: Process flow of Bed Allocation Procedure.

Bed Allocation Procedure:

1. Patients comes for Admission after Consultation and Planned Surgeries.
 - Patients' UMR No. is generated, and consultation is done.
 - After consultation Doctor's decided to admit the patient for observation or surgical procedures.
2. Patient contacts FC and pre-advance is paid to avoid any delays in surgery procedures.
 - Patients' UMR No. Financial Counsellor with advice of Doctors' counsel patients for billing charges for procedures and also the room charges per day.
 - After pre-advance is paid FC meets bed board manager for room allocation.
3. After attender meet FC, the room tariff is explained to attender.
 - FC explains the room charges based on the room type like General Ward, Twin Sharing Room, Single Room, Deluxe Room, or Suite Room.
4. After patient comes to FC, FC contact Bed Board Manager to allot the bed which was booked for patient.
 - After patient confirming the desired room, the FC contacts Bed Board Manager for booking the room and room charges is collected in advance.
 - Bed Board Manager book the room for patient on advice of Healthcare Consultant and Floor Manager.
5. After FC contacts Bed Board Manager, he allots the bed booked for patient previously after informing floor manager.
 - Bed Board Manager contacts the floor manager about the vacant beds available and allots the bed in advance.
 - Floor Manager and Doctor Secretary is informed of the patient arrival next day for surgical procedures and updates doctor.
6. The Particular Room number is allocated and approved which shows in designated nursing station.
 - Then in the HIMS software the bed booked and on arrival of patients the bed is approved, and patients goes to required department.
 - After Housekeeping is done the patients is given immediately and attender is given attender pass and floor manager gives the contact number in case any problem.
7. If patient goes for any investigation and surgeries, the nursing station raise the bed transfer request to Pre-Operative Ward before surgeries.

- After Doctors' advice patient goes for investigation and any surgery to be done and patient is moved to Pre-operative Ward and Bed Board Manager on contacting nursing station retain the room for patients and attender uses the room.
8. Bed Board Manager retain the occupied rooms for patient coming to room after surgery.
 - The retained room is used by attender till patient come back from OT and no extra charges is added as it is included in the OT billing charges.
 - Then Doctor secretary contact nursing station for moving patient to room and if not, the bed is released from the HIMS for allotting the next patient.
 9. If patient moves to ICUs, the ICU manager informs Bed Board Manager and Bed board Manager vacate the specified room.
 - Then Patient is in ICUs for several hours till the patients' condition is stabilised and doctors recommends for room transfers.
 - After the ICU to room transfer request is raised and room is allocated based on the required room priorities of patients.
 10. Then Operation Theatre request raised after particular surgery procedure is over.
 - OT request is raised for surgical procedure and after surgery the room is vacated, and housekeeping is done and allotted to another patients.
 11. Vacant beds are allotted to next patient for surgery procedure.
 - Vacant beds of OT Room are allotted to next patient and all the procedures are over due to which the room transfers are done.
 12. After surgeries are done, the patient is shifted to Post-Operative Ward /SICU /MICU /ICCU /PICU /NICU /PCTICU /CTICU depending on type of surgery done.
 - The patient is shifted to the ICUs based on which the surgery is done, and extra care is taken of the patients and hourly charges is done for the ICUs room.
 - After the patient recovered from the critical condition the patients are transferred to room for further treatment.
 13. This shifting is done under the bed request raised by relationship manager from all ICUs.
 - Then patient is transferred to room after room request is raised from nursing station by floor manager and patient is transferred to room after surgery.
 14. Then Bed Board Manager allot the beds to particular room after coming from ICU after bed transfer request is raised in nursing station.
 - Then specific room is allotted to patients and patients and attender occupy the room.

15. After patient is discharged the room is vacated and gone to housekeeping and housekeeping staff allots the room as vacant for bed board manager to allocate to next patient.

- The patients vacate the room and FC gives system checkout and after patient leaves the room nursing station gives physical checkout.
- After this housekeeping staff cleans the room and allot the rooms as vacant.

* In case patient goes for emergency admission, Patient comes for Emergency admission. Then after doctors' consultation, the patient goes to FC for counselling. After admission by FC, the bed is allotted in Emergency Room. Depending on patient condition, bed request is raised for OT or ICUs. Then bed board manager approves the bed transfer request. Further processes are exactly same.

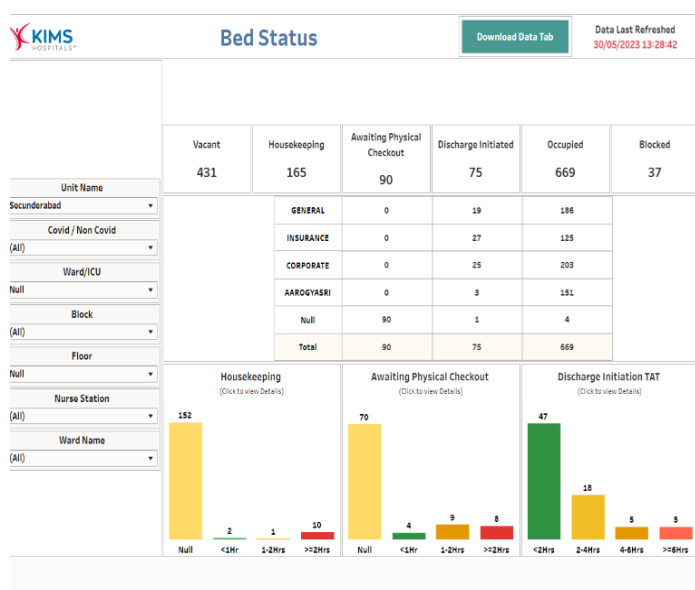


Figure 4: Bed Status Report Tableau

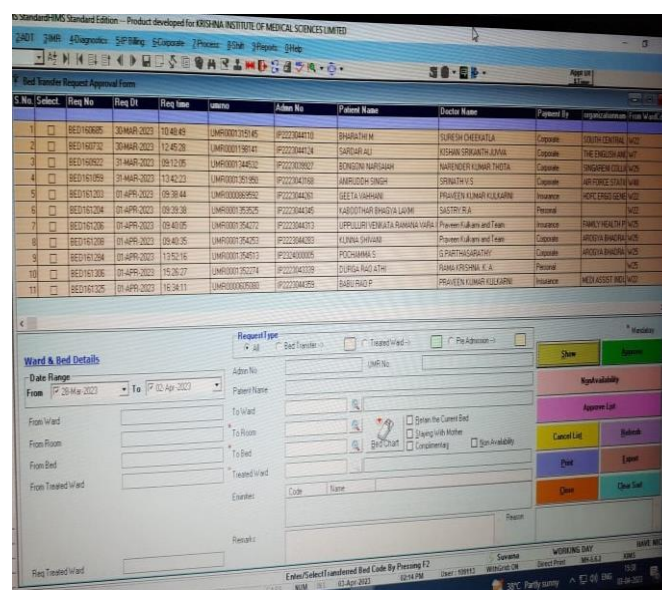


Figure 5: HIMS Software Screen

Bed Management Policy

Other Room Categories- by type of care provided.

Emergency ward: Patient can occupy an emergency bed in OP for a maximum of 4 hours after which he or she shall be admitted. These charges shall be cleared on OP basis and cannot be transferred to the IP bill. Patients can get admitted in ER as IP, upon doctor's advice (mostly for observation).

Day care: LOS up to 12 hours. Applicable only till midnight 12-post which billed as a day for the occupied ward. If the patient wishes to stay in a ward (General ward/twin/single/deluxe) after the day care procedure, the corresponding ward charges must be levied based on duration of the stay and day care charges do not apply.

ICU (ICCU/CTICU/MICU/SICU/PICU/NICU/Pre-Op/Post OP/Pre Angio/Post Angio).

Step down ICU includes isolation beds basically used for all infectious cases are charged the room rent with additional "isolation charges".

A patient room in an intensive care unit (ICU) is a specialised setting for critically ill patients. The physical environment can be unsettling for families due to the need for close monitoring and observation, as well as specialised equipment and technology, and requires unique considerations to maximise staff productivity, promote excellent treatment, and ensure patient care and safety.

ICU nurses often only have one or two patients, allowing for regular observation of the patients. ICU rooms are not usually partitioned off. Patients are more visible and reachable for the nurses and doctors that staff the intensive care unit, even if there may be curtains for privacy. This enables the medical personnel to monitor patients more closely and to be able to carry out a faster response to any sudden issues.

HIMS (Hospital Information Management System): The hospital uses HIMS as its patient information management system to handle patient data, appointments, billing, and other administrative duties. During registration, the HIMS receives information about the patient, including personal data and medical history. To provide smooth information flow, the HIMS is integrated with other departments, such as the Bed Board Management.

MEDINEED: The HIMS system particular module or feature. MEDINEED is presumably specific to handling patients' medication-related needs. It might have capabilities like managing prescriptions, delivering medications, and monitoring medication usage.

PATIENT DETAILS: Patient information, such as the patient's name, address, and contact information, as well as certain identification numbers like the UMR (Unique Medical Record) number, are collected throughout the registration process. The patient's details, including the UMR number, are used to track their medical history, appointments, and billing information.

Each patient is given a UMR number, which acts as a unique identifier for their medical records within the hospital's system.

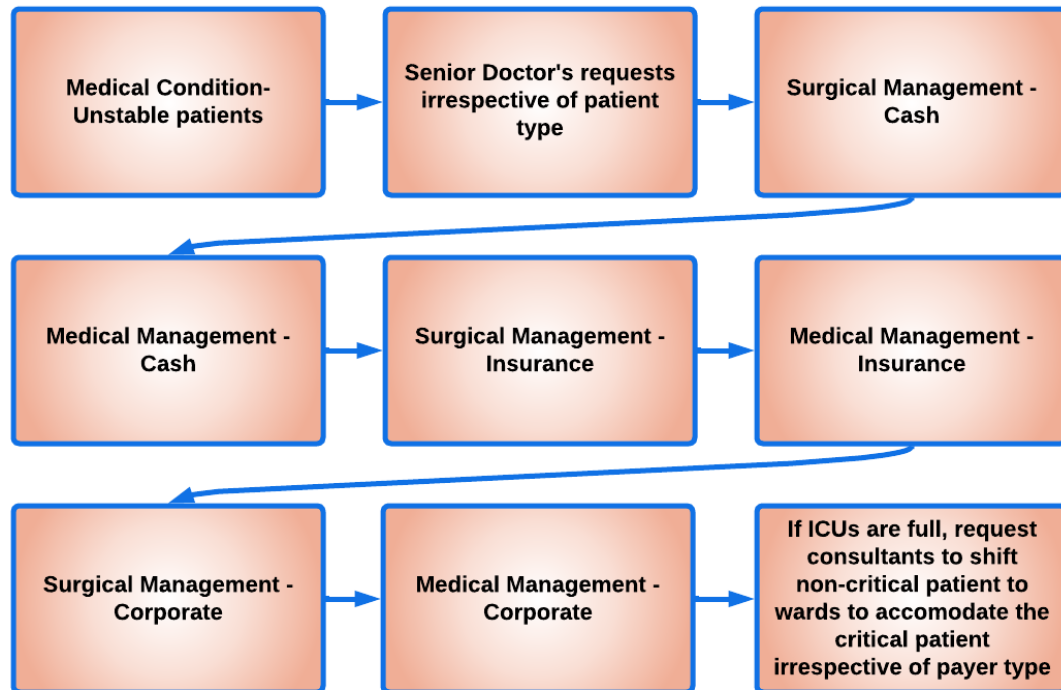


Figure 6: Represents the bed allotment priorities in ICUs based on patient types.

Indication: This picture shows the flow chart of the bed allocation priorities in ICUs of patient types and conditions.

- The hospital gives first importance to patients whose condition are not quite stable like accidental case, critical condition patients. Then after that, management priorities on Senior Doctors' request or recommendation of allowing patients regardless of the type of patient or payer type.
- The hospital administration focuses on patients having surgery or some medical condition and the payer type. It basically focuses on surgical management cash patients and then on medical management cash patients. After that, focuses on surgical management insurance patients and then on medical management insurance patients. After that, focuses on surgical management corporate patients and then on medical management corporate patients.

- If all ICUs are full like SICU and MICU, bed board manager request consultants to prioritize shifting non-critical patients to wards to accommodate the critical conditions patient regardless of payer type.

In Room or Ward Charges, 1 unit is considered as 24 Hours from the time of admission and system automatically calculate the room charges but checked and corrected by biller.

3 HOURS GRACE PERIOD: After admission-for cancellation of admissions, at time of discharge (from admission time) for checkout and if delay occurs at the time of discharge beyond (from admission time) due to pending services by the hospitals (posted as a concession in final bill). Room Rent will not be charged.

Day Care include Length of Stay below 12 hours.

Applicable wards: Pre-Operative, Chemotherapy, ICU, General Ward, Twin Sharing.

Departments: Ophthalmology, Post-Operative, Urology, Rheumatology and Minor Surgical Procedures (Gynaecology, Orthopaedics, General Surgery, etc).

If a patient desires to be upgraded to a higher room, the room charges will be charged extra to the package amount.

Nursing Station prioritizes patients in wards based on their vulnerability or critical condition:

- People above 70 years of age.
- Children below 13 years of age.
- Patients who are mentally challenged.
- All major surgery post-operative patients (for 2 days).
- All transfer in patients from ICUs (for 2 days).
- All oncology patients with chemo drugs on flow.
- All patients with decreased level of consciousness.
- Patients who are physically challenged.
- All patients on syringe pumps.
- New-born babies and their mothers.

Ward transfers priority for transfer to ICUs.

In case of MICU, first priority given to ward transfer, then second priority given to Emergency ward transfer and then to pre-operative ward and post-operative ward transfer.

In case of SICU, first priority given to ward transfer if MICU is full, then second priority given to emergency ward transfer and then to post-operative ward transfer. All admissions to ICU from lobby are routed through Emergency Ward.

In case of ICCU, first priority always given to emergency ward patients, then second priority given to patients from MICU likely if MICU is full, patients from wards needs to be shifted to MICU. Then third priority given to patients from SICU likely if SICU is full, patients from ward needs to be shifted to SICU.

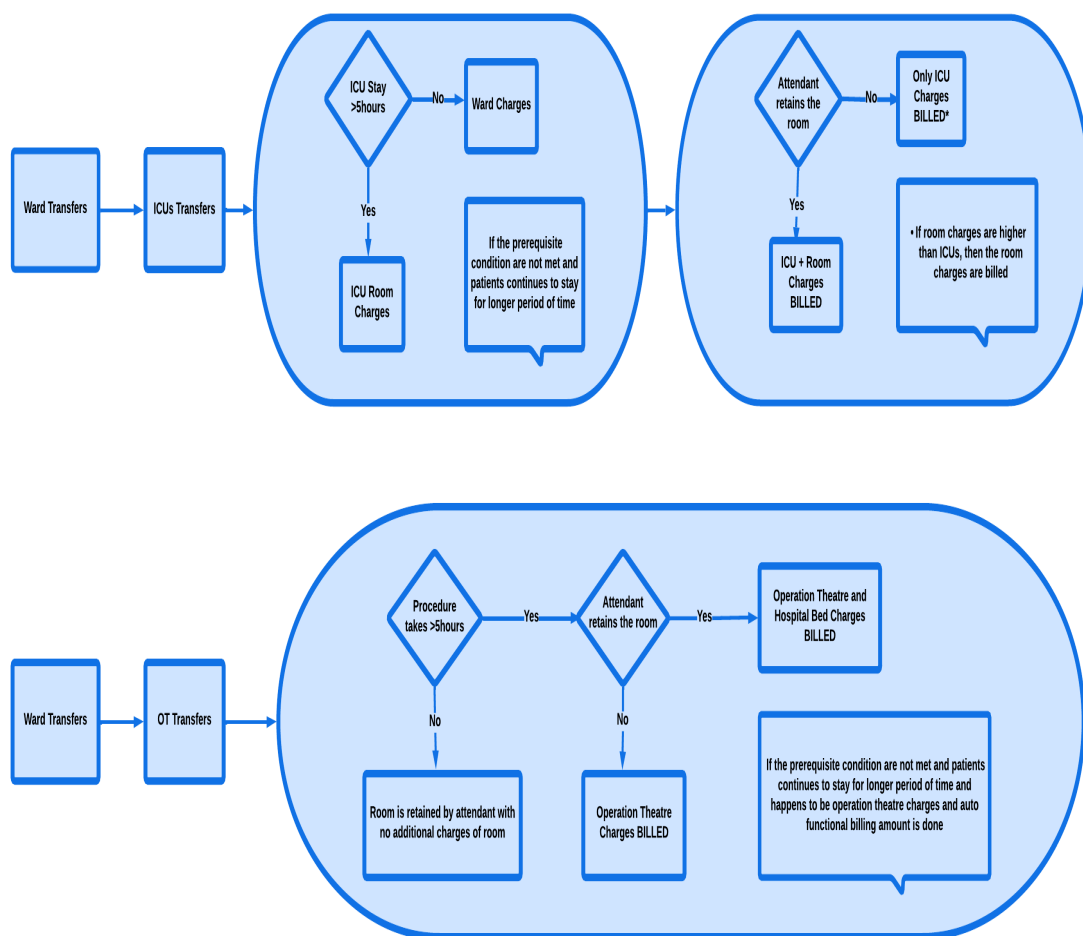


Figure 7: Represents Process flow of ICU, OT, and room allocation procedure.

Indication: This picture shows the flow chart of the bed allocation in hospital rooms, operation theatre rooms and ICUs with their Billing Process.

- Here, if patient is transferred from ward to ICU room the billing process is done by certain conditions. If patient stays in ICU for more than 5 hours, ICU charges are counted and if not, only ward charges are counted.

- If patient is in ICU and attender wants to retain the room, ICU charges and ward charges will be counted.
- If patient is transferred from ward to operation theatre for surgery or procedure the billing is done by certain conditions. If patient takes more than 5 hours and attender wants to retain the room OT and Room charges are counted and if not, only OT Charges are considered. If OT takes less than 5 hours, room is retained by attendant with no additional charges of room.

Desired Room Non-Availability

Scenario	Action
Desired room not available at the time of admission.	Patient counselled to stay in one category higher room for 24 hours.
Desired room not available at the time of admission-patient unwilling to pay higher room tariff.	Patient stays in upgraded room until desired room is available and shifted immediately once available.
Desired Room becomes available after 24 hours-patient wants to be shifted.	Patient shifted to desired room.
Desired Room becomes available but patient wants to retain room.	Patient continues to stay in the upgraded room-subject to availability.
Desired room not available after 24 Hours.	Patient continues to stay in the upgraded room until desired. room becomes available.

Patients can be upgraded (in case of non-availability) only to a room one step higher than the desired room category. Beyond one step, upgrading shall be at the discretion of the Unit Head (documentary evidence) of signature of COO on counselling forms.
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Table 1: Represents the scenarios for desired room non-availability.

CHAPTER 2: REVIEW OF LITERATURE

S.N O.	AUTHOR NAME	TITLE	OBJECTIVE	METHODOLOGY	RESULT
1.	Ravinder Reddy Adudodlander, Sanjeev Kumar, G. Ravindra Babu, S.D. Sharma	Bed Allocation in Hospital Case Study	Due to a surge in sheer number of patients and the wide range of medical services. The hospital management is challenged with the difficulty of allocating beds for various medical services in a hospital as they are frequently demanded. The goal of this research was to allocate hospital ward beds to correspond with the intended service levels by the management of the hospital.	This case study was undertaken by the government. Hyderabad-based hospital has 59. 5 beds and a number of divisions. The arrival of the patients the length of the stay were determined from relevant data for each ward under study and arranged to yield and. It was discovered that the average number of patients coming each day (1) in the intensive care unit came to 0.43. For various values, the values of P_o , L_q , L_s , W_q , and W_s were calculated.	In the current research, the number of beds in hospital wards were allocated using a queuing model to correspond with the level of service that the hospital administration required

2.	Robert Schmidt, Sandra Geisler, and Cord Spreckelsen	Adaptable individual length of stay estimations and pooled resources are used as decision assistance for managing hospital beds.	The practical use of computer is the subject of this. Research paper. contributed to bed management. using individually attainable LoS estimates and pooled bed capacity during the course of the patients' care and treatment.	Based on each individual's estimated length of stay, the anticipated free ward capacity is calculated introduced. For predicting the probability densities and the ward occupation states, Bernoulli distributed random variables are used. A binary integer algorithm is used to illustrate the assignment problem. Three heuristic strategies—the longest expected processing time, lowest expected processing time, and random choice—as well as a precise approach employing the mixed integer programming solver SCIP are used to solve the problem.	The heuristic technique, RAND is the preferred method for bed assign in the event of shared resources in terms of performance and the quality of its solution. Future studies required to determine whether an equally significant improvement is possible. ideally one that includes all the departments involved in admission and assignment planning, obtained in a large-scale clinical application
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					study.
3.	A.G. Nicholls and F.R. Young	Innovative Hospital Bed Management Using Spatial Technology.	In order to fulfil the patient management standards used by the healthcare sector and to address community issues, eBeds, an effective bed allocation management GIS-based system tool, is being created within a medical facility.	In the hospital in Brisbane, this study was carried out. The many existing, mostly ineffective hospital collection, collation, and display methods are. crystallised in eBeds. Information on patients that are. presented in a geographical manner shows the precise locations of each bed inside a room, ward, or floor in real time.	Health care workers may now make more informed and precise decisions for patient administration thanks to eBeds' integration of the existing information systems and formats and level of visualisation. Efficiency in bed distribution offers more affordable, suitable, and useful patient care as well as a crucial service to

					the emergency services.
4.	Tejaswi Subhash Gunjal, Sakshi Pravin Patil, Poonam Yuvraj Patil, Kalyani Bhatu Patil	Hospital Bed Management System	The primary objective of the project is to create an android-based application that allows patients to make appointments online from the comfort of their home and receive all available information about the hospital and doctor. The patient will log into the application and make an appointment there.	Models offer a standard that can serve as an interface for hospital bed management information system data collecting. Hospital bed data can be transferred using a protocol. All hospital bed status logs are kept in the data warehouse. Additionally, provide a web application for reporting hospital bed availability and analysing bed status logs. These details include information about the locations of the hospitals, the sorts of beds that are available in each ward as well as the final state of each	In this study, the system's overall architecture and function flow are analysed and described in depth utilising the system architecture diagram and the bed centre function flow chart. They also go into detail about the three-tier structure of the data layer, the business logic layer,

				bed, such as whether it is occupied or vacant.	and the display layer, respectively
5.	Ruth Boaden, Nathan Proudlove and Melanie Wilson	An Exploratory Study of Bed Management system	This essay examines the function of bed managers and the steps taken during patient admission, stay, transfer, and discharge in a hospital setting.	In 14 hospital trusts in the Greater Manchester region, data were acquired using a combination of desk-based research, analysis of documentation, and semi-structured interviews with bed managers (or comparable nominees) as subjects.	The conceptual frameworks offered are indicative of bed managers' usual practices and the typical methods through which they gather, store, and use bed data. However, The diversity found was one of the research's most intriguing aspects. The data amply demonstrate

					the complexity and diversity of bed management practices.
6.	Joaquim Matos and Pedro Pereira Rodrigues	Modelling Decisions For Hospital Bed Management	Use of mathematical models and tools for effective hospital bed management	In order to find research evaluating the utility of decision support systems when applied to hospital inpatient bed management, a literature search was carried out in December 2009. A base data set of 65 studies was found through the search on ISI Web of Knowledge and PubMed. The total number of studies included in the data collection was ultimately 14. In order to support theoretical and practical notions around the bed management	The systems under analysis rely far too heavily on timely entered data to accurately manage hospital or department bed status—the present bed status might not be the actual bed status. In order to minimise human interaction, it is advised that these

				problem, one literature source with a publication date in the most recent decade (National Audit Office, 2000) was hand-selected and contributed to the entire data collection.	systems be integrated with the hospital's ADT (Admission or Discharge or Transfer) information system. The time desynchronization between the manual recording of the information in the ADT system and the patient department discharge would still be a difficulty in the patient discharge process even after completing this type of
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					integration. The recommend ed RFID strategy might offer a straightforward answer to this issue.
7.	S. Abedian, H. Kazemi, H. Riazi, and E. Bitarf	Cross Hospital Bed Management System	The lack of adequate numbers of hospital beds to accommodate the injured patients and for controlling the occupancy of bed and designing a dynamic system that announce status of bed with patients' admission and discharge.	Hospital bed data can be transferred using the specific protocol. Every hospital's bed status log is kept in the data warehouse. Additionally, provide a web application for reporting hospital bed availability and analysing bed status logs. These details include information about the locations of the hospitals, the sorts of beds that are available in each	The main axis of our data model design is the hospital bed. The main benefit of the bed-centric method is that it allows them to send just one bed's worth of data in a single SOAP transaction, using less bandwidth

				ward as well as the final state of each bed, such as whether it is occupied or vacant. The Direct Sending from the HIS to SEPAS without user intervention is the system's major feature. Many hospital staff are reluctant to admit patients with acute diseases that need specific beds like ICU and ICCU due to the seriousness of accident patients. The online system, which updates the bed's condition to announce the new status to health care executives is very valuable	and reducing SOAP message processing time. SEPAS Infrastructure has created a website service. SEPAS Infrastructure is the nation's electronic health record infrastructure for integrated care. SEPAS includes ESB, a crucial part of the SOA architecture . Bed Web service Standard Tutorial A
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					written document was sent to a private company that creates hospital information systems (HIS). The bed data must be transferred from the HIS to the bed management dashboard by calling the bed web service. HIS software is updated by the developer.
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CHAPTER 3: METHODOLOGY

Key Research Question, Research Design, Study Setting, Study Population, Research Approach, (Study Approach: Sample Size Calculation, Sampling Techniques, Study Instruments, Operational Definitions, Statistical or Qualitative Methods)

RESEARCH QUESTIONS:

- What is the current duration of the hospital bed assignment process for patients?
- What is the effect of delayed bed allocation on the flow of patients in the hospital?
- In what ways does delay bed allocation affect the efficiency of hospital?
- What factors contribute to longer bed allotment turnaround times in hospitals?
- What strategies can hospitals implement to reduce bed allotment turnaround times?
- How can predictive analytics be used to improve bed allotment turnaround times in hospitals?

MATERIALS AND METHODS:

Study Design:

This Survey is broadly based on expectedly descriptive research which was collected in KIMS Hospitals Secunderabad. This study will usually undergo cross sectional research design, which includes before and after intercession measures of patient satisfaction. The methodology of this study is cross sectional observation design.

Section 1: Planning and Preparation

In this section, we plan the basic flow and prepare for the study process. Then, we had to identify the research questions, select basic study design, and emerge with a particular research plan. Then we also had to obtain necessary approvals from the Hospital's Operation Head, approval for accessing the HIMS software and obtained informed consent from study participants.

Section 2: Data Collection

In this section, we had to collect data from HIMS Software i.e., Medineed for Bed allotment which involve conducting observations of the bed allocation procedure, interviewing staff, and patients, and reviewing software records for time delayed in process. The data collected was used to navigate process flow that layout the steps in admission process, patient care process, bed allocation process.

Section 3: Process Mapping

In this section, we basically use the data collected in Section 2 to create process flow that layout the steps in the bed allocation procedure. The process flow identifies the areas of ineffectiveness in the procedure and helped us to develop potential improvements.

Section 4: Analysis and Interpretation of Data

In this section, we examine and evaluate the data collected in Section 2 and Section 3. This basically involve identifying road maps and flow chart in the data, and by using statistical methods to examine quantitative data. The examination and evaluation of data helped us to identify the key problems and required areas for improvement.

Section 5: Recommendations Based on Analysis of Data

In this section, we used the findings from Section 3 and 4 to promote some recommendations for improving the Bed Allocation procedure in the IP Operations Department. This guidance was purely based on evidence on that data we collected through observations, HIMS software, interviews with staff in Bed Allocation department, Financial Counselling Department, different Relationship Manager and were designed to enhance patient satisfaction.

Section 6: Implementation of Recommendations

In this final section, we worked with the Bed Board Management and Financial Counselling staff to implement the suggestions emerged. This basically involve better training of new staff on the procedure, monitoring the implementation of the procedural changes, and again collecting data to assess the efficiency of the new adjustments. We can evaluate the impact of the procedural development on patient satisfaction.

Method:

This qualitative research was assisted from Feb 28th to May 28th, to examine the feedbacks of the patients, attenders, and healthcare services staff about improving quality of process in Bed Board Management.

The study was conducted in KIMS Hospital in Secunderabad which provides Hospital Beds and desired Rooms to patients within specific turnaround time of 15 minutes.

The study was approved by the General Manager, Operations Head, Bed Board Manager, and all participants that provided informed consent prior to participating in the study.

Participants were directly selected through convenience sampling, with a focus on selecting individuals who manages and allocates the hospital rooms. This included patients who had received hospital beds in IP Operations, attenders who had accompanied patients during admission, and healthcare providers who worked in the different departments.

A total of 240 samples were selected from HIMS software that were getting delay in bed allocation procedure.

Data collection involves conducting in-depth analysis of the data from HIMS Software. Feedbacks were also taken during the interviews to record non-verbal communication and observations.

The data were collected under the supervision of our mentor who is highly qualified Operations Head at KIMS Hospital Secunderabad and Senior Bed Board Manager.

Illustrative Data analysis was conducted using a cross-sectional observation analysis approach, which involves locating process flow and road maps in the data related to improving the quality of process in the Bed Board Management.

The analysis was conducted using MS Excel and Tableau which examined the details of every procedure including root cause analyses that was recorded between Feb 28th to May 28th.

The results from the analysed data were used to develop process flow that demarcate the steps in the various process (admission process, patient care process, bed allocation process) in the Bed Board Management. The process flow identified areas of inefficiency in the procedure and helped in developing potential improvements that could be made to enhance patient satisfaction.

The results provide beneficial information into the viewpoints of patients, attenders, staffs, and healthcare providers about improving the quality of process in the Bed Board Management. The process flow developed in this study can be used to guide future quality improvement initiatives in bed allocation to enhance patient satisfaction.

Study Setting: The study approach was adopted to investigate the bed allocation process for Bed Board Management in KIMS Hospital Secunderabad. The study will be carried out in hospital with multiple super speciality departments located in metropolitan area.

Study Population: The study population will include all attendants and patients receiving hospital beds in turnaround time in various department. No exclusion criteria will be employed, and the study will encompass all patients who require hospital admission.

Inclusion criteria: Attendants and patients coming planned surgeries, after doctor's consultation and any emergency admission in the various department during the study period. Every patient regardless of age, gender, previous complications were taken into consideration. Both male and female were included.

Exclusion criteria: No exclusion criteria will be employed, and the study will encompass all patients who require hospital admission.

Sample Size: 240 including patients and their length of stay in hospital. All patients who require hospital admission during the study period will be included in the sample size for the study.

Sampling Technique: Non-probability convenience sampling will be used to collect the patient data for the study. Non-probability convenience sampling will be employed to select patients who fulfil the inclusion criteria.

Data Collection Procedure: This study will collect data using two methods: observations and record reviews. Observations will be used to evaluate bed allotment TAT and patient flow in different hospital settings, while record reviews will be carried out to obtain information on hospital efficiency metrics such as length of stay and bed occupancy rates.

Duration of Study: This study will take place for a period of three months from March to May within the due of internship.

Study Tools: Data collection for the study will be carried out using HIMS software, Excel Files of Bed allotment for each day to gather information on bed allotment TAT, patient flow, and hospital efficiency.

OPERATIONAL DEFINITION:

Bed allotment turnaround time refers to the duration it takes for a hospital to assign a bed to a patient from the time they are admitted to the hospital. In order to examine patient flow and hospital efficiency, this study will examine wait times during emergency department visits as well as admissions. By measuring the lengths of stays alongside bed occupancy rates we hope to make opportunities for improvement within hospitals.

This makes a number of necessary steps including triage assessments followed by checks for given beds prior to their assigned to patients.

DATA ANALYSIS PROCEDURE :

In this study, descriptive statistics is to be used to provide an overall view of the bed allotment turnaround time, flow of the patient, and efficiency of the hospital data that have been collected. Inferential statistics will then be used to examine the results of delayed bed allotment on patient flow and hospital efficiency. Regression analysis is conducted to identify the elements that have a significant impact on bed allotment turnaround times. Time series analysis is used to identify trends in bed allotment turnaround times.

ETHICAL CONSIDERATIONS:

To ensure ethical standards are met, the study will be conducted in compliance with the principles stated in the Declaration of Helsinki. All participants will be required to provide informed consent, and patient privacy will be strictly maintained throughout the study. It is crucial to make sure ethical issues are considered, such as safeguarding patient privacy and gaining informed consent from patients who took part in surveys and focus groups, which was upheld throughout the study. Patients, staff members, and other study participants all gave their informed consent after being fully informed about the study.

- **Privacy and Confidentiality:** During the course of the study, patient confidentiality and privacy were respected. Any private or health-related data gathered for the study was kept private and was only provided to authorised staff members. When not needed, data was securely held before being deleted or de-identified.
- **Respect for Participants:** All participants, including patients, staff, and others, were treated with dignity and autonomy throughout the process.
- **Use of Data:** The information gathered throughout the study was only utilised for the investigation; any additional uses were not permitted without the participants' express consent.
- **Institutional Review:** Before beginning the study, the Operations team's approval was requested to make sure it was carried out in compliance with ethical standards and legal requirements.

IMPLICATIONS OF RESEARCH:

The results of this study have the potential to uncover ways to enhance bed allotment TAT and patient flow, ultimately leading to better hospital efficiency and patient outcomes. The implications could have a major impact on healthcare policies and practices. The research on bed allotment TAT can have major implications for healthcare providers, policymakers, and patients, leading to better patient care, increased efficiency of the hospital, and lessen healthcare costs.

CHAPTER 4: RESULTS

The aim of the dissertation on hospital bed allocation was to assess and improve the bed distribution process in order to increase flow of the patient, reduction on wait times, and good healthcare in general. The findings of the research gives feedback for improving bed allocation and important perspective into how it can be managed.

Important trends and patterns were discovered by quantitative analysis of bed occupancy rates, patient entrance and discharge patterns, and duration of stay. The investigation revealed places where the bed allocation procedure may be simplified by pinpointing peak times of high bed occupancy and patient flow bottlenecks. The data also demonstrated differences in bed occupancy depending on elements including department, day of the week, and patient acuity levels.

Further investigation of the association between bed occupancy and various parameters was done using regression analysis. The findings emphasised the importance of patient acuity levels in driving bed utilisation and the necessity of distributing beds appropriately depending on patient requirements. Additionally, the study pinpointed particular departments or units that had high bed occupancy on a regular basis, highlighting the need for focused interventions in these areas.

The issues faced and potential solutions were clarified through qualitative analysis of interviews with healthcare professionals involved in bed management. The interviews highlighted a lack of real-time awareness into bed availability, ineffective discharge planning procedures, and communication gaps across healthcare providers. In order to speed care, these findings highlighted the significance of efficient communication channels, shortened discharge procedures, and increased coordination among healthcare personnel to expedite bed turnover and enhance bed allocation management.

A number of recommendations were developed to improve bed allocation management based on the research findings. The implementation of automated bed tracking systems to enable real-time monitoring of bed availability, the development of efficient communication protocols between healthcare teams, the improvement of discharge planning procedures to speed up patient discharge, and the promotion of a culture of cooperation and accountability among healthcare professionals involved in bed management are some of the recommendations made in this document.

It is significant to note that the findings and suggestions of this study are specific to the research environment and may need to be modified to accommodate the distinctive features of different healthcare institutions. Through pilot testing and continuing monitoring, the implementation and efficacy of the recommendations should be assessed.

The findings of this research, in summary, emphasize the significance of effective bed allocation management in boosting patient flow and healthcare delivery. A road map for improving the process is provided by the mix of quantitative analysis, qualitative insights, and recommendations, which offers insightful information about the state of bed allocation management at the moment. By putting the suggested techniques into practise, healthcare institutions can increase patient care quality overall, maximize bed utilization, and decrease waiting times.

Analysis and Interpretation:

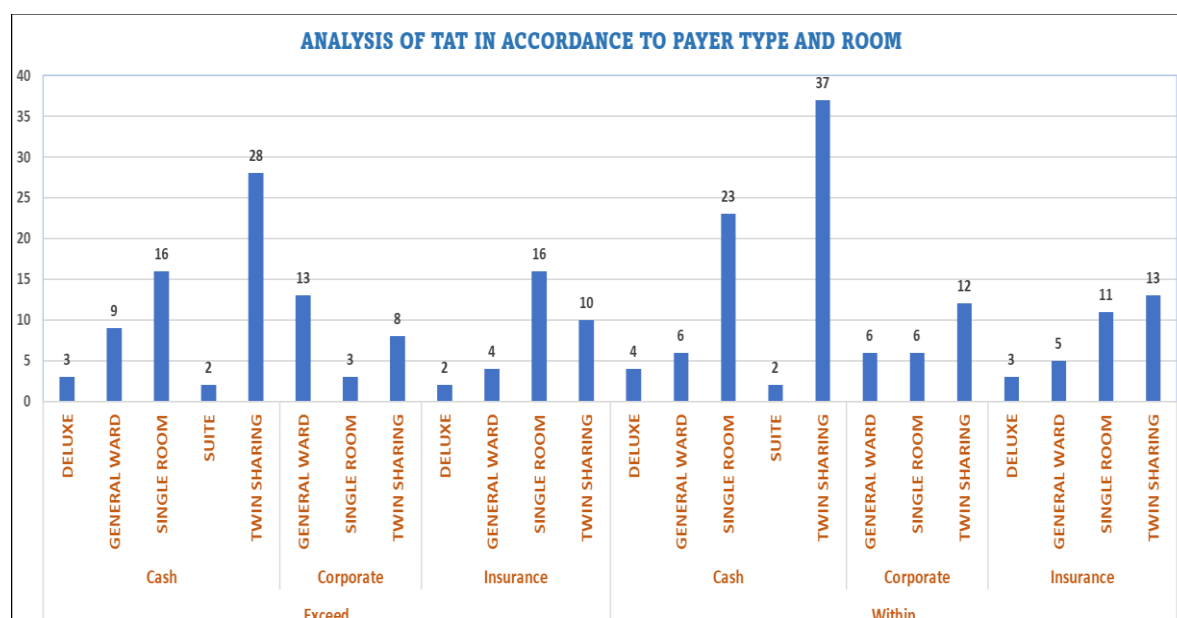


Figure 8: Turnaround Time based on Payer Type and Room

Indication: This picture shows the analysis and intervention of the bed allocation within turnaround time.

- This basically depicts that the demand for twin sharing room is more than other room even it is allotted within the TAT or exceed the given time.
- The allotment procedure for corporate patients generally exceeds the turnaround time as compared to other payer type.
- The Suite Room which is quite premium only allotted for cash patients.
- The demand for general ward is quite high but due to non-availability is upgraded to twin sharing and further to single room which creates shortage.

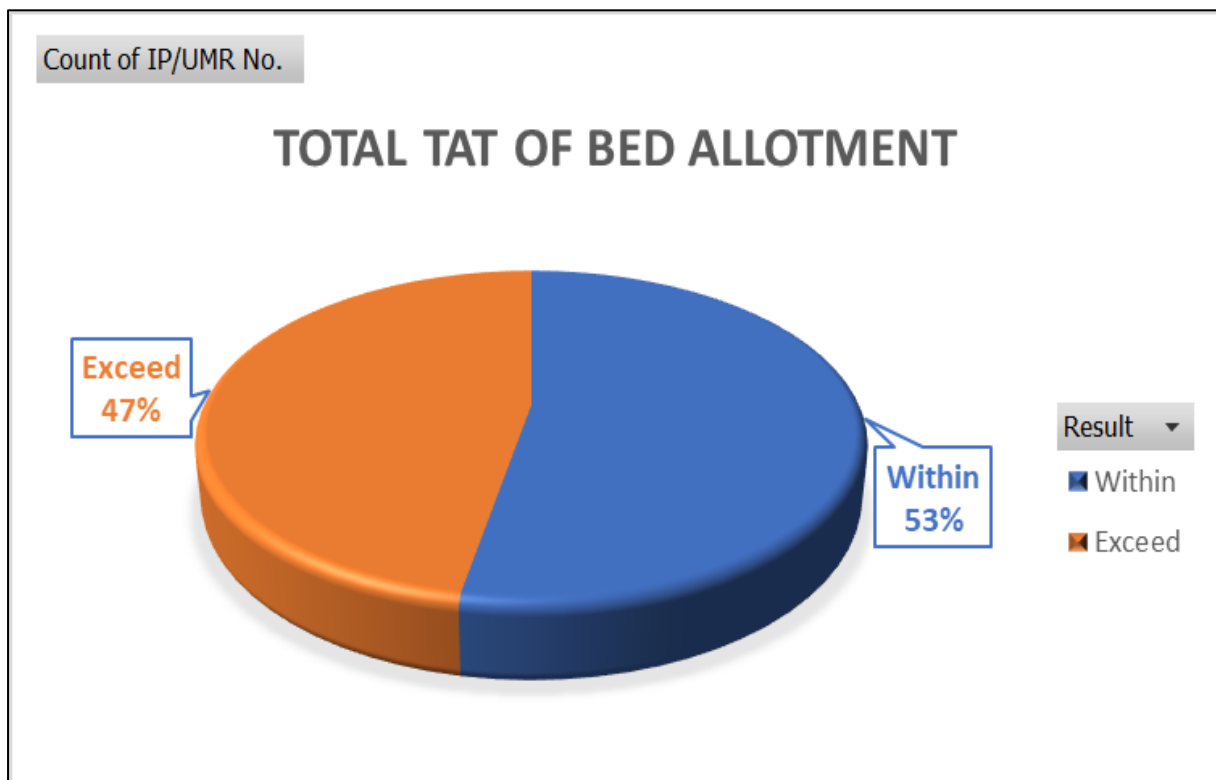


Figure 9: Represent the total turnaround time for allocation of beds.

Indication: This picture shows the analysis and intervention of the bed allocation within turnaround time.

- It usually depicts the total of 240 sample size, the 53% of total patients got allotted to hospital rooms within turnaround time and remaining 47% exceeds the total turnaround time and this can be by above 5 hours depending on the patient flow of hospital.
- This is very important aspect for patient care to get hospital beds within short span of time in order to have better health experience.

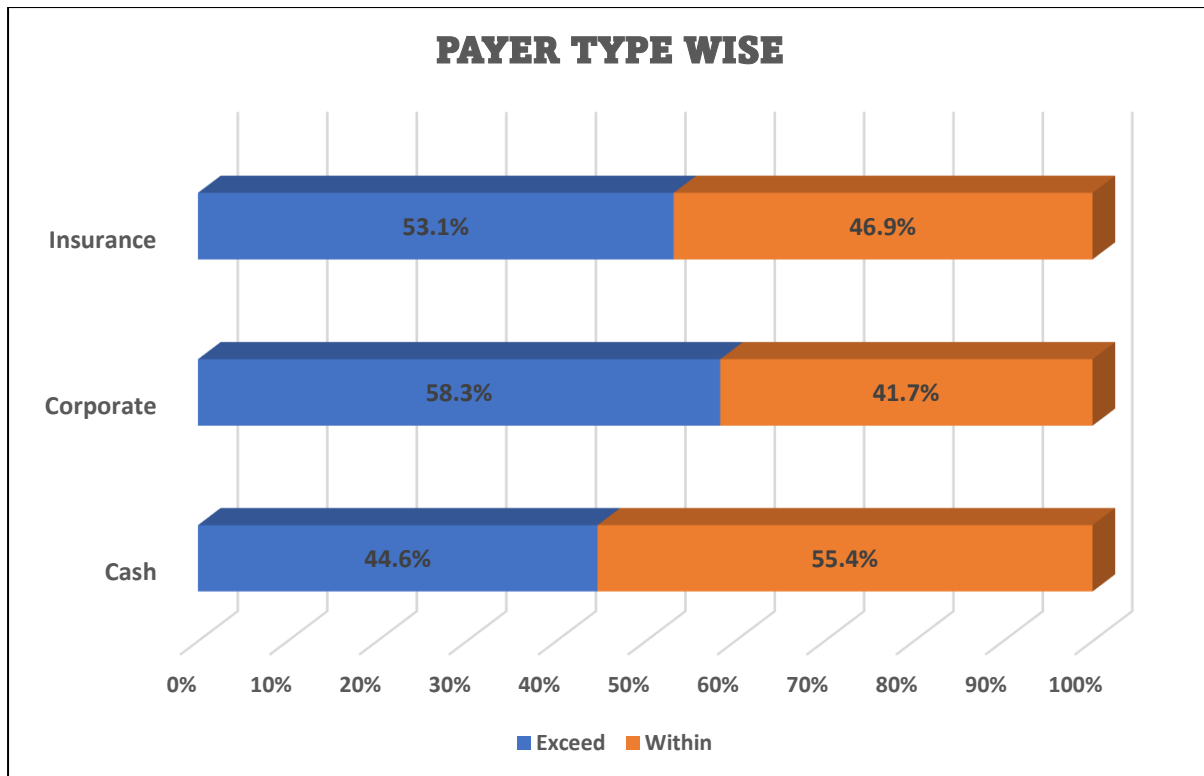


Figure 10: Represent the bed allocation TAT based on payer type.

Indication: This picture shows the analysis and intervention of the bed allocation within turnaround time.

- This basically depicts the corporate patients is having the exceeded turnaround time with 58.3% and about 41.7% allotted hospital beds within time.
- It also shows that the insurance patients are having exceeded turnaround time with 53.1% and about 46.9% of patients within time due to delay in preauthorization approval of insurance companies.
- This also gives basic information on cash patients for having more within time of about 55.4% and exceeds about 44.6% due to advance collected from patients in advance.

Some basic information on the bed allotment TAT procedure analysis and its interpretation:

- Turnaround Time generally exceeds for Single Room and Twin Sharing in Payer Type like Cash and Insurance Patients.
- Due to low count of General Ward Beds, the demand for Twin Sharing and Single Room rises dramatically.
- The Bed Allotment Turnaround Time exceeds in maximum cases regardless of room type and department wise.

- As per the payer type, Turnaround time increases in Corporate Patients and totally increase the overall TAT of Bed Allotment in Hospital.

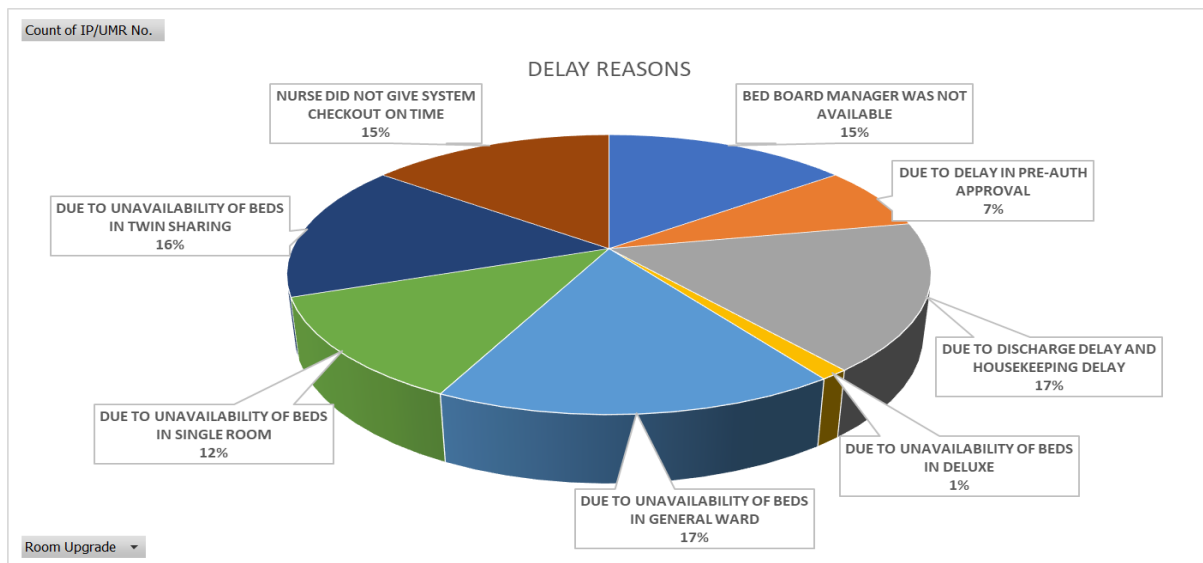


Figure 11: Represent the delay reason during bed allotment with percentage.

Indication: This picture shows the analysis and intervention of the bed allocation within turnaround time.

- This basically shows that due to non-availability of beds in General Ward, Twin Sharing Room, Single Room, Deluxe Room is about 17%, 16%, 12%, 1% respectively.
- The other reasons for delays are due to preauthorization approval of insurance which is about 7% and also the Bed Board Manager was not available during the allocation.
- Delay in bed allocation is also due to the discharge delay and housekeeping delay which is about 17% and nurses not giving physical checkout which is about 15%.

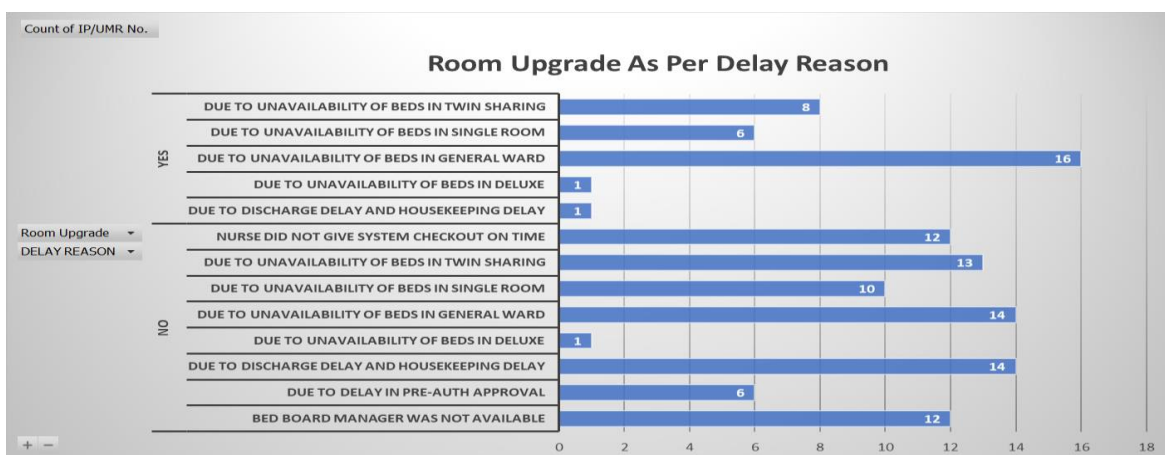


Figure 12: Represents the room upgrade happens as per delay reasons.

Indication: This picture shows the analysis and intervention of the bed allocation within turnaround time.

- This basically shows that the room upgrade is happening for general ward due to non-availability and high demand within patients.
- Room Upgrade also happens due to delay in housekeeping procedures by staffs.
- No room upgradation happens and delayed due to absence of Bed Board Manager and nursing station is not giving physical checkout in system and vacant beds are not shown.

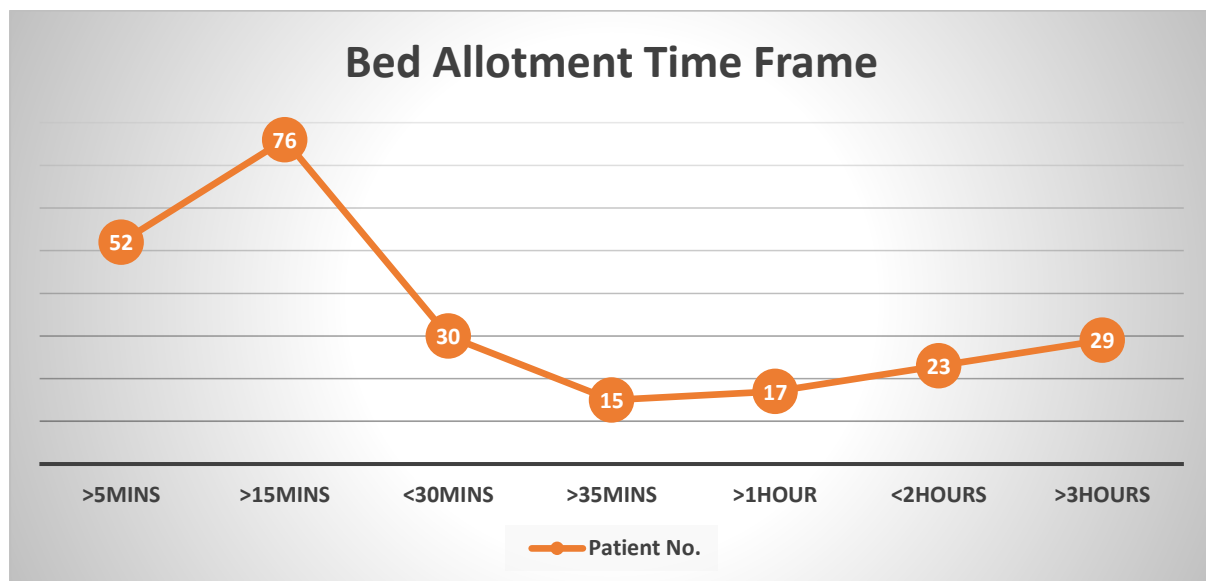


Figure 1: Represents the bed allotment time frame and no. patients within waiting time.

Indication: This picture shows the analysis and intervention of the bed allocation within turnaround time.

- This picture shows that the 76 patients within 15 minutes turnaround time and also 52 patients were allotted beds within 5 minutes.
- This also depicts that from time exceeding 15 minutes till 3 hours about 85 patients were waiting for their beds to be allotted.
- This also shows that the 29 patients waiting time exceeds beyond 3 hours which can create negative patient experience in hospital.

Patient satisfaction is a critical component of healthcare delivery since it represents both the standard of care and the patient experience as a whole. Healthcare organisations must comprehend and address patient satisfaction if they are to consistently enhance their services and fulfil patient expectations.

CHAPTER 5: DISCUSSION

Observations:

- Bed Variance Occurs Frequently like moving patients directly to beds without prior notice. This means without notifying the Bed Board Manager the bed is allotted at department and when another patient reaches the bed allotted to him another patient is resting there which causes patient dissatisfaction and during the discharge process the system cannot identify the patient in the bed actually due to exchange of patients in bed.
- Information on gender does not present especially for Gynecology Ward Twin Sharing Room for bed allocation. This signifies that the attender is basically unsatisfied in bed allocation in twin sharing rooms where female patient from gynecology ward to share room with male patients from internal medicine ward which creates issues.
- After discharges, attender waiting in room for discharge summary or to meet Doctor or for transportation arrangements. The attender basically retains the room till any transportation is arranged for patients, wait for any relatives or to meet doctor.
- Although bed allotment is based on payer type but still cash patient is waiting for their allocation of beds. Hospital basically priorities cash patients but if corporate patients is allotted a room their discharges get late due to which cash patient have to wait for several hours before their beds are allotted to them.
- Nursing station raising bed transfer request to transfer patients to different ward without notification. Bed transfer requests are made from ICU and nursing station by asking bed board manager for information on any vacant beds and unnecessary requests generally increases the turnaround time and this happens quite often.
- IT issues are frequent as system slowdown and sometimes the approve button is not saving transfer request. The bed allotment is entirely dependent on HIMS software called MEDINEED and due to heavy data flow seizes the system from further allotment and this creates late in allocation procedure and during busy hours the IT team launches update.
- During Shift change in evening, lack of personnel leads to physical checkout delay from nursing station. The bed board manager has to go to each room to check the available beds and this delays the allocation process as maximum patients get physical checkout after evening and this delays the beds allocation for no information on vacant beds.

- In floors, sometime manual checkout is given due to which no information on room is available in system. Manual checkout is given to patients when there are some discounts in billing charges due to system does not accept the discharge of patients and system checkout is not given. For this reason, the system is showing the bed is occupied by the patient but in actual vacant beds were available due to information gap.
- Shortage of General Ward leads to upgradation of rooms which fills up upper rooms much quicker. There is severe shortage of general ward beds and due to being premium hospitals the room upgradation happens quite often which leads to allocation of twin sharing room, single room and deluxe room which delays the allocation of beds to patients in time and have negative patient feedback.
- Patients, Floor Manager, financial counsellor, security, doctor, doctor secretary are directly coming to bed board room. Bed Board Room is known to every staff which hinders the process of bed allocation if Doctor brings the request of allotting the beds to corporate patients although cash patients are waiting in admission for long time.

Healthcare organisations can prioritise process changes and put plans in place to close identified gaps by identifying these observations. These could involve putting in place a hospital bed management system (HBMS), switching to electronic bed tracking systems (RFID), strengthening the communication among floors to get more info, streamlining discharge process, improving infrastructure, and coming up with ways to better time management of hospital staffs. The Bed Board Management helps in increasing patient satisfaction, boost operational effectiveness, and guarantee a better overall experience for patients by concentrating on these areas.

Suggestions:

- There can be a better communication between bed board manager and every floor manager and nursing station to reduce information gap. This gap can be reduced by creating the employee application in order to communicate and provide information faster and update the system on time for better engagement of work.
- Proper information can be present in system and floor manager to confirm the gender of patient present in room before bed transfer for shared accommodation. The system should provide accurate information on patient in case of bed variance and system is showing female patients but in actual male patient is present.

- Discharge Lounge must be present for non-critical patient and attender using the room after system checkout is given to patient. This can help in vacating the rooms faster as the patient gets checkout and housekeeping is done on time and beds can be allotted.
- During busy hours, certain beds can be kept based on payer type for allotting the beds without delays. These beds can be allotted to patients waiting for long periods and can be provided to them for having better health experience and this can be done especially for cash and insurance patients who pays more for services but gets a little.
- Some personnel may be present in evening to give system checkout and to provide correct information on vacant beds on floors. Personnels like interns, change in duty time of nurses can provide smooth and easy work experience and can help in checkouts.
- IT issues may be resolved in weekend and allot beds more efficiently and some IT changes can be made in Software to fasten process of allotment. IT issues in the busy hours where patient flow is high can create hindrances in bed allocation and approval of beds can be late and cloud-based platform must be used to handle the HIMS.
- Security can be provided with digital device to update the information on physical checkout directly to system for smoothening the process of allocation. Security is present in every floor and patient from each floor passes informing them when they leave the hospital. So, information update can be sent to bed board manager on any patient's getting physical checkout from hospital which can help in allocation of vacant beds.
- More infrastructure needed for general ward, to lower the upgradation rate slow down the filling up of upper room faster. The general ward rooms must be increased for better allotment of beds and without upgrading the patients to Twin Sharing Room, Single Room and Deluxe Room which can be beneficial to hospital as room tariffs vary greatly and upgrade of rooms creates financial loss for hospital.

The Bed Board Management can improve patient satisfaction, optimise resource use, and raise operational effectiveness by putting these suggestions for process improvement into practise. Each recommendation should be evaluated for viability and impact, then tailored to the department's unique requirements and available resources. Ensuring the success of these enhancements and discovering more areas for development will depend heavily on regular feedback and ongoing monitoring.

CHAPTER 6: CONCLUSION

Enhancing Hospital Bed Allocation Turnaround Time

A crucial part of healthcare operations is hospital bed management allocation turnaround, which has a direct bearing on patient flow, resource use, and overall treatment quality. In this paper, the subject of bed management turnaround was assessed, and important findings and feedback for enhancing these important procedures were provided.

In order to fulfil patient demand, reduction on wait times, and guaranteed optimal resource allocation, it has become clear from a thorough assessment of the literature and case studies that hospitals should implement effective bed management. The methodology applied in this study focused on finding the factors that affect bed management and making suggestions for its improvement.

The research consists of a cross-sectional study approach that sequenced quantitative analysis with qualitative examination. This approach allowed for a full understanding of bed occupancy rates, patient admission, and discharge trends, as well as the perspectives of the medical staff. In order to give a thorough understanding of the difficulties and complexity in bed allocation turnaround time, these strategies were combined.

The study was conducted in a hospital in different departments and important care areas. This made it a lot simpler to gain understanding into the process of bed management allocation in several therapeutic areas. Data sources such as digital records, databases, and direct observations allowed for a complete analysis of occupancy rates, patterns of patient flows, and utilisation of the resources.

Quantitative research was effective in identifying inefficiencies in resource allocation, trends in bed occupancy, and patient flow limitations. Key areas for improvement were found by looking at bed occupancy rates, admission and discharge trends, and duration of stay. The study made clear the necessity of real-time bed availability monitoring, effective channels of communication among healthcare teams, and shortened discharge procedures to hasten bed turnover.

The knowledge of the difficulties encountered in bed management allocation turnaround was further enhanced by qualitative study based on interviews with healthcare experts. Administrators', doctors', nurses', and bed coordinators' points of view provided vital insights on the challenges, communication chasms, and potential solutions for improving bed

management turnaround. This qualitative data was extremely important in guiding the creation of useful suggestions.

The results led to the identification of a number of solutions for improving bed management allocation turnaround. Implementing automated bed tracking technologies, creating efficient communication procedures amongst healthcare teams, streamlining the discharge planning procedure, and encouraging a collaborative and accountable culture are a few of these. When put into practise, these solutions have the potential to improve overall healthcare delivery, decrease patient wait times, and streamline bed management allocation.

It is advised that these tactics be validated through pilot testing and evaluation in actual healthcare settings in order to determine their viability and efficacy. Further investigation is also necessary to examine the potential role that technological developments like machine learning and predictive analytics may play in improving the turnaround time for bed management allocation.

Throughout this investigation, ethical considerations were of the utmost importance. The preservation of patient confidentiality and privacy was ensured by receiving approval from the institutional review board. Participants' informed consent was obtained, and steps were taken to anonymize and securely preserve data.

By offering a thorough approach and useful suggestions for boosting the efficacy of bed allocation processes, this dissertation has contributed to the field of hospital bed management allocation turnaround. This research provides helpful tools and tactics for hospitals to optimise bed utilization, increase patient flow, and improve the overall quality of treatment by fusing quantitative data, qualitative insights, and recommendations.

In order to improve patient outcomes and operational effectiveness, it is intended that the results of this study would lay the groundwork for future investigation and the application of evidence-based practices in hospital bed management allocation turnaround.

The accomplishment of this project is evidence of the worth of initiatives for ongoing improvement and the significance of actively soliciting input from patients and employees. It demonstrates KIMS Hospital Secunderabad dedication to provide top-notch medical care and guaranteeing patient happiness.

The knowledge gained from this research will be put to use in the future to improve the procedures used in the dialysis unit and lay the groundwork for on-going quality and operational improvement initiatives. KIMS Hospital Secunderabad can continue to provide

high-quality care and uphold patient satisfaction in the long run by developing a culture of process evaluation and adaptation.

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