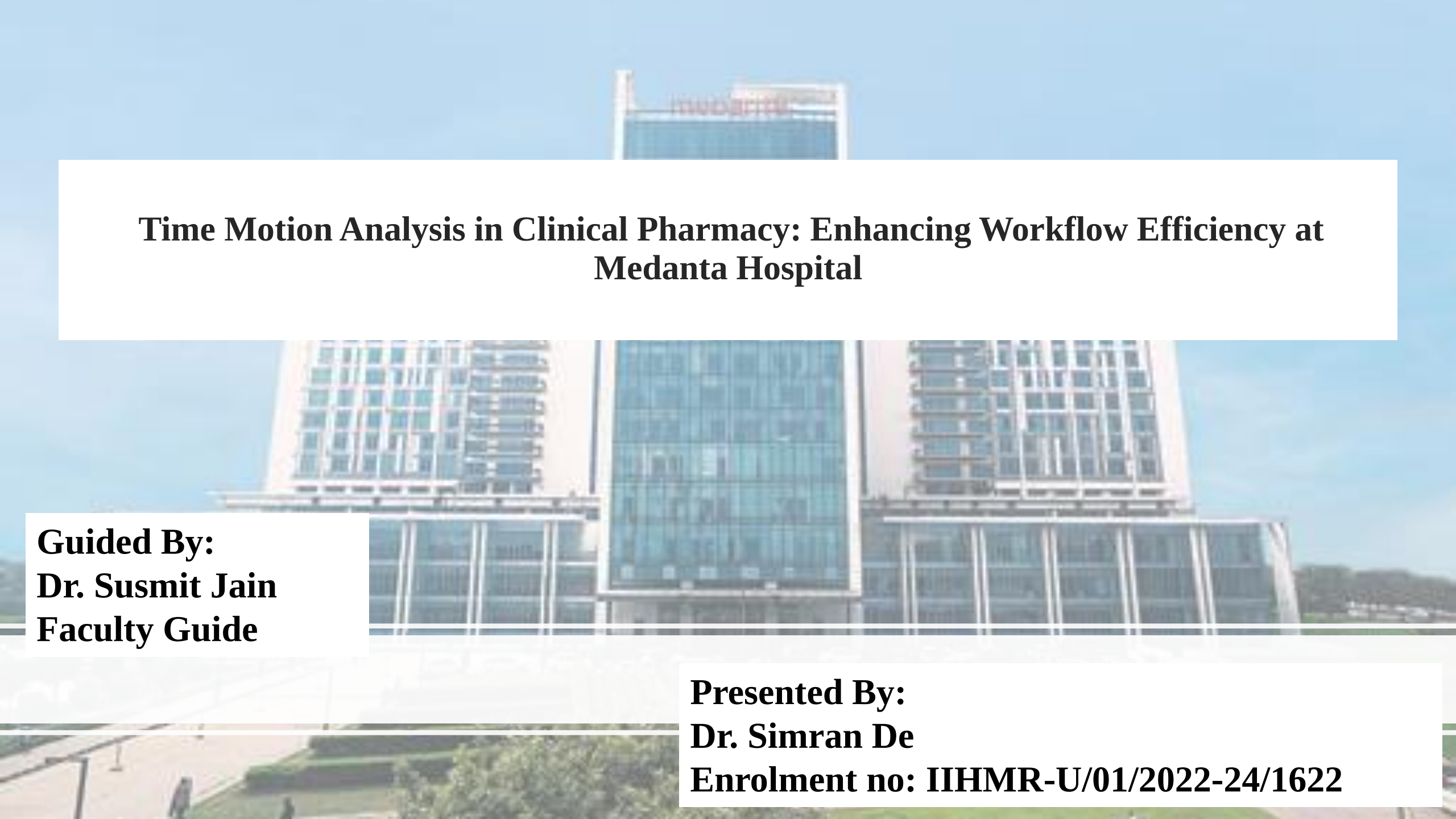


The background of the slide is a photograph of the Medanta Hospital building. It is a tall, modern structure with a central glass-fronted section and two side wings with a grid-like facade. The sky is clear and blue.

Time Motion Analysis in Clinical Pharmacy: Enhancing Workflow Efficiency at Medanta Hospital

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Enrolment no: IIHMR-U/01/2022-24/1622**

Introduction

Medanta - The Medicity Hospital Network

Overview:

Global Health Limited, d/b/a Medanta: An Indian for-profit private hospital network. Medanta one of the country's largest multi-speciality tertiary care provider is founded by Dr. Naresh Trehan in 2009, a world-renowned cardiovascular and cardiothoracic surgeon, with the mission to deliver advanced but affordable medical services to patients. For four years in a row, Medanta Gurugram ranked the best private hospital in India in 2020, 2021, 2022 and 2023. It also featured in the list of top 250 global hospitals in 2023 by Newsweek.

The hospital is equipped to make quality healthcare a reality for countless patients with an infrastructure built according to the guidelines for healthcare facilities by the American Institute of Architects. To ensure quality healthcare we have:

- 43-acre campus
- 30+ medical specialities
- 900+ doctors
- 40 operation theatres
- 1,391 operational beds
- 270+ ICU beds
- JCI and NABH accreditation
- NABL accreditation

Our mission:

Our mission is to deliver world class, patient centric, integrated and affordable healthcare through a dynamic institution that focuses on the development of people and knowledge.

Locations:

- Medanta – The Medicity Multi-Speciality Hospital, Gurugram
- Medanta Super Speciality Hospital, Lucknow
- Jay Prabha Medanta Super Specialty Hospital, Patna
- Medanta Super Speciality Hospital, Indore
- Medanta Abdur Razzaque Ansari Memorial Weavers' Hospital, Ranchi

Clinical Pharmacy Department at Medanta Hospital

Overview:

- **Role:** Ensures safe and effective use of medications, provides medication therapy management, and collaborates with healthcare professionals.
- **Focus:** Direct patient care, medication optimization, and improving patient outcomes.
- **Staff:** Highly trained clinical pharmacists integral to the healthcare team.

Working of the Clinical Pharmacy Department:

- **Medication Review and Reconciliation:**
 - Review medications upon admission, transfer, and discharge to ensure continuity of care and prevent errors.
 - Reconcile medications to confirm appropriateness for clinical conditions.
- **Patient Counselling and Education:**
 - Counsel patients and families on medication use, side effects, and adherence strategies.
 - Educate on the importance of medication compliance.
- **Medication Therapy Management (MTM):**
 - Assess appropriateness, effectiveness, and safety of medication regimens.
 - Recommend adjustments, discontinuations, or additions to physicians.
- **Clinical Interventions:**
 - Identify and resolve medication-related problems like drug interactions and adverse reactions.
 - Participate in multidisciplinary rounds, making pharmacotherapy recommendations.
- **Preparation and Dispensing:**
 - Ensure accurate preparation and dispensing of medications, including IV admixtures and chemotherapy.



Clinical Pharmacy Department (Qualifications and Roles)

- **Job Role of Clinical Pharmacists:**
- **Direct Patient Care:**
 - Assess health problems and medication needs.
 - Develop and implement medication therapy plans.
- **Interdisciplinary Collaboration:**
 - Collaborate with physicians, nurses, and other providers.
 - Participate in clinical rounds, offering medication-related expertise.
- **Medication Safety and Quality Assurance:**
 - Monitor patient responses and adjust therapy for optimal outcomes.
 - Ensure compliance with hospital policies and best practices.
- **Education and Training:**
 - Educate patients on medication regimens and disease management.
 - Mentor pharmacy students, interns, and residents.
- **Research and Professional Development:**
 - Conduct and participate in clinical research.
 - Publish findings and present at conferences.
- **Administrative Responsibilities:**
 - Develop and update clinical guidelines and protocols.
 - Participate in pharmacy and therapeutics committee meetings to manage the formulary.



Purpose of Research

Conduct detailed time motion analysis at Medanta Hospital's clinical pharmacy department.

Identify inefficiencies and delays in medication administration.

Improve operational efficiency and patient care outcomes.

Research Problem

Challenges in medication regimen complexity and high patient volumes.

Impact of inefficiencies on patient outcomes and satisfaction.

Limited research on clinical pharmacists' workflow and time management.

Aim

- Enhance efficiency and effectiveness of Medanta's clinical pharmacy department.
- Address workflow inefficiencies and delays.

Objectives

1. Analyse the Workflow and Time Management of Clinical Pharmacists:

- Conduct detailed time motion analysis.
- Understand task allocation and time spent on activities.
- Identify workflow bottlenecks.

2. Identify Challenges and Reasons for Delays:

- Determine main operational challenges.
- Analyze internal and external factors contributing to delays.
- Investigate communication and coordination issues.

3. Provide Recommendations for Improvement:

- Develop actionable strategies based on analysis.
- Propose workflow optimization measures.
- Address identified challenges effectively.

4. Enhance Patient Care and Safety:

- Implement changes to improve medication administration.
- Monitor impact on patient care outcomes.
- Ensure medication safety and efficacy.



Methodology

Research Design

Prospective Observational Research Design:

- Real-time observation and analysis of clinical pharmacy processes.
- Suitable for identifying workflow patterns, delays, and inefficiencies.

Study Setting: Clinical Pharmacy Department at Medanta Hospital

- Multi-specialty medical institute in Gurugram, India.
- Known for advanced medical facilities and high patient volumes.

Study Population

Inclusion Criteria:

- Patients admitted to inpatient wards (IPD) with urgent or new medication orders.
- Clinical pharmacists responsible for medication verification, preparation, and administration in IPD.

Exclusion Criteria:

- Outpatient department (OPD) patients.
- Patients with routine medication orders.
- Participants unwilling to participate.

Research Procedures



Quantitative Assessment



Time Motion Analysis



Direct observation of medication administration process.



Use of electronic time tracking tools for accurate data collection.



Qualitative Assessment



Semi-structured Interviews:



Insights into challenges and reasons for delays.



Focus groups to identify common issues and potential solutions.

Sample Size Calculation

Estimated Sample Size: Based on daily medication orders and pharmacist availability. 124 new or stat medication orders.

Sampling Techniques: Purposive Sampling

Selection based on relevance to study objectives (urgent/new medication orders).

Study Instruments:

Tools Used: Observation checklists, interview guides, questionnaires.

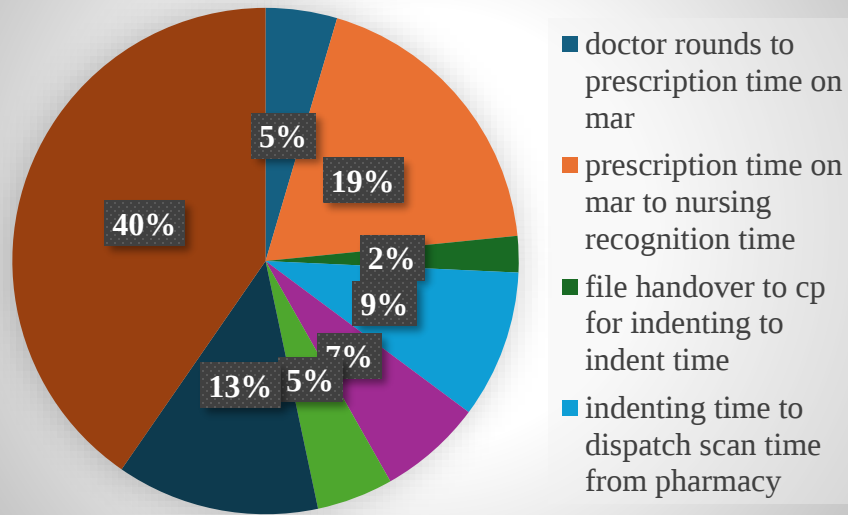
Statistical Methods:

Quantitative Data Analysis: Descriptive statistics (mean, median, standard deviation).

Qualitative Data Analysis: Thematic analysis for identifying common themes. Google forms for questionnaires

Results

Mean Time(in hh:min:ss)



Interpretations and Recommendations

- **Key Bottleneck Identified:** The segment “Medicine Pickup by Nurse to Time of Administration” is the largest, indicating significant delays in the final step of the medication process.
- This suggests that the administration phase is a critical area for intervention.
- **Communication and Coordination:** The segments covering “Prescription Time on MAR to Nursing Recognition Time” and “Indenting Time to Dispatch Scan Time from Pharmacy” show moderate time consumption, indicating potential delays in communication and coordination. Improving electronic communication systems or protocols could help.
- **Efficiency in Handover Processes:** The segments for “File Handover to CP for Indenting to Indent Time,” “GDA Pickup Scan to CP Receiving,” and “CP Receiving to Medicine Pickup by Nurse” are relatively small, indicating that these handover processes are fairly efficient but could still benefit from fine-tuning.

Recommendations for Improvement

Streamline Medication Administration:

Implementing better scheduling and reminders for nurses to administer medications on time.

Using technology such as automated reminders or alerts to ensure timely medication administration.

Enhance Communication Systems:

Utilizing electronic health records (EHRs) more effectively to reduce the recognition time by nursing staff.

Implementing standardized communication protocols between clinical pharmacists and nurses.

Optimize Handover Processes:

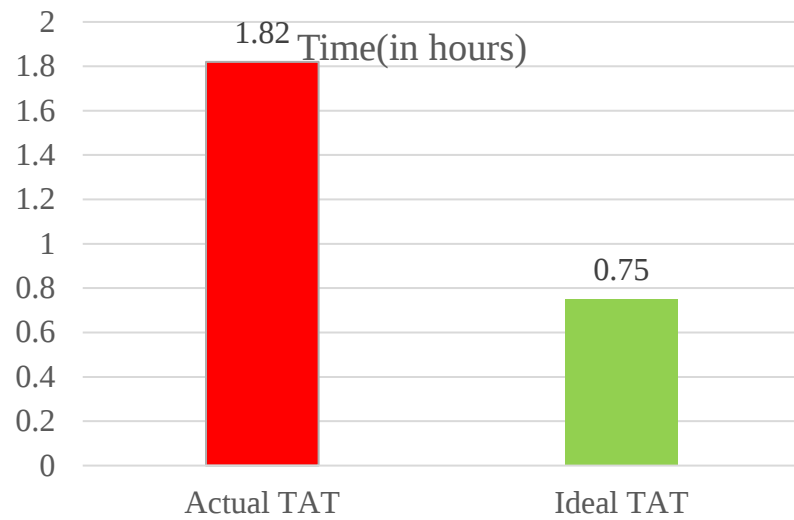
Continuously monitor and evaluate the handover processes to identify any potential inefficiencies.

Provide training and resources to ensure smooth transitions between each stage of the medication process.

Address Nursing Workload:

Assess the nursing staff’s workload and consider redistributing tasks or hiring additional staff to ensure timely medication administration.

Implement measures to reduce non-clinical duties for nurses, allowing them to focus more on patient care and medication administration.



Analysis:

- **Discrepancy Between Actual and Ideal TAT:**
 - The Actual TAT is significantly higher than the Ideal TAT.
 - There is a gap of 1.07 hours between the Actual and Ideal TAT, indicating a substantial difference.
- **Efficiency Implications:**
 - The higher Actual TAT suggests inefficiencies in the current medication administration process.
 - This discrepancy points to potential delays and bottlenecks that need to be addressed to achieve the Ideal TAT.

Interpretations:

Need for Process Improvement:

- The important difference between real and ideal TAT emphasizes the need for optimization.
- Streamlining the workflow and addressing identified problems can help reduce the actual TAT close to the optimal TAT.

Impact on Patient Care:

- Long turnaround times can negatively impact patient care, delaying medication delivery.
- Reducing TAT can improve patient outcomes by ensuring timely administration of medications.

Resource Utilization:

- Inefficiencies reflected in high actual TAT may indicate poor resource utilization.
- Process efficiencies can lead to better resource utilization, reduced operating costs, and improved employee satisfaction.

Recommendations:

Technology Integration:

- Implement electronic health records (EHRs) and automated delivery systems to streamline processes and CPOE for streamlining operations.
- Utilize mobile health technologies to enhance communication and coordination among healthcare providers.

Staff Training and Allocation:

- Provide continuous training for staff to improve efficiency and reduce errors.
- Ensure adequate staffing levels to manage high patient volumes without compromising on service quality.

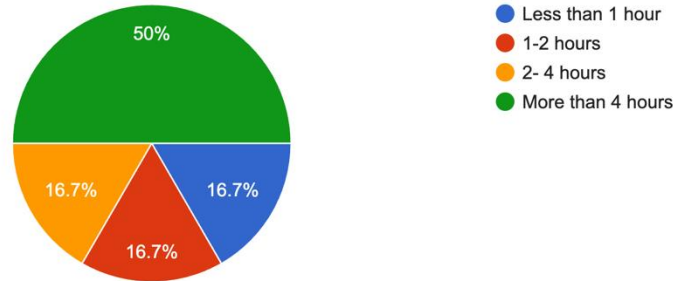
Process Optimization:

- Redesign workflow processes to eliminate unnecessary steps and reduce waiting times.
- Establish clear protocols and standardized procedures to enhance consistency and reduce turnaround times.

Qualitative Results

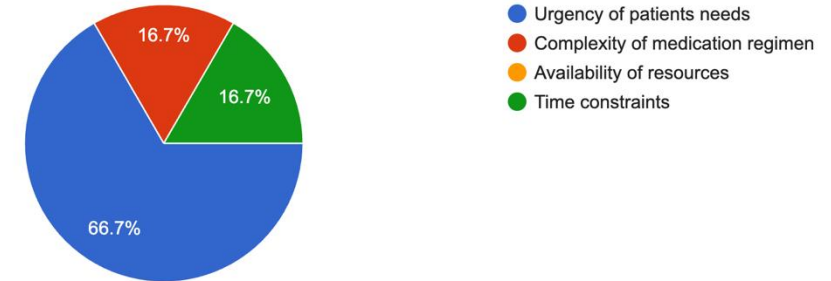
On average, how many hours do you spend on direct patient care activities per shift?

6 responses



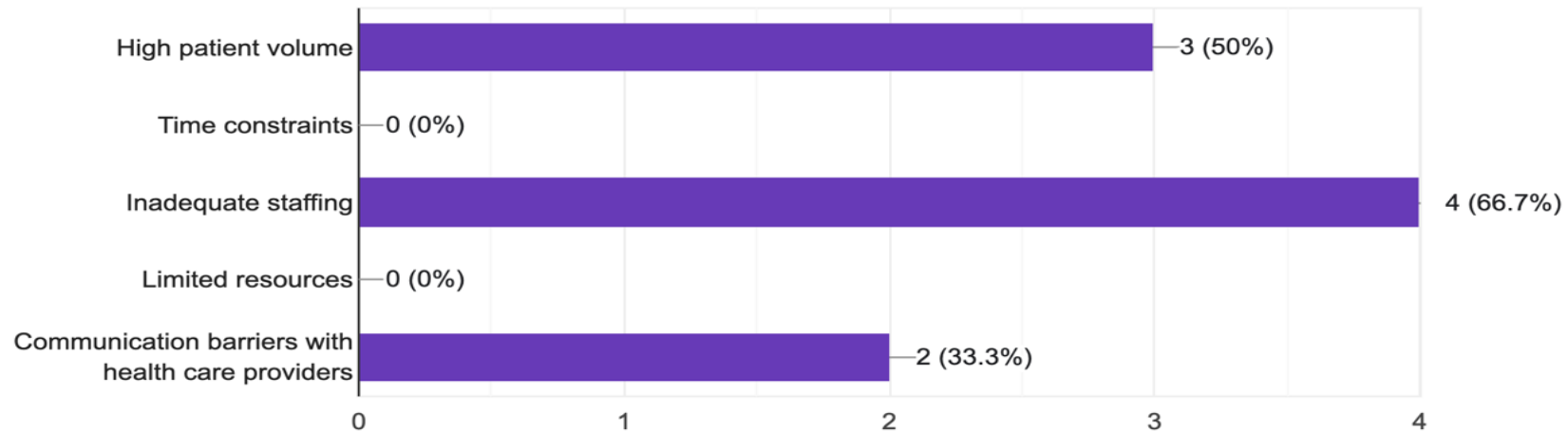
How do you prioritise your tasks when faced with multiple demands on your time?

6 responses



What challenges do you encounter your daily workflow ?

6 responses



Analysis

Bottlenecks

- Inadequate Staffing (66.7%):The most significant challenge reported, with 66.7% (4 out of 6) of respondents indicating inadequate staffing as a major issue.
- High Patient Volume (50%):Half of the respondents (3 out of 6) cite high patient volume as a challenge in their daily workflow.
- Communication Barriers with Health Care Providers (33.3%):A third of the respondents (2 out of 6) face challenges related to communication barriers with other healthcare providers.
- Time Constraints and Limited Resources (0%):Interestingly, none of the respondents identified time constraints or limited resources as challenges, suggesting these are not primary issues in their workflow.

Suggestions for Improvement

1.Address Inadequate Staffing:

- i. Increase Hiring: Consider hiring additional staff to meet the demands of the patient load. This could involve full-time, part-time, or temporary staff depending on the need.
- ii. Optimize Scheduling: Implement more efficient scheduling practices to ensure optimal coverage during peak times.
- iii. Leverage Technology: Utilize technology solutions like electronic health records (EHR) and automated administrative systems to reduce the workload on current staff.

2.Manage High Patient Volume:

- i. Streamline Processes: Review and streamline patient intake and discharge processes to handle high volumes more efficiently.
- ii. Triage System: Implement a robust triage system to prioritize patients based on urgency, ensuring those with the most critical needs are attended to promptly.
- iii. Patient Education: Educate patients on off-peak hours and alternative care options (like telemedicine) to spread out the demand more evenly.

3.Improve Communication with Healthcare Providers:

- i. Communication Training: Provide training programs focused on effective communication techniques for healthcare providers.
- ii. Standardize Protocols: Establish and enforce standardized communication protocols to ensure clarity and consistency in information sharing.
- iii. Collaborative Tools: Utilize collaborative tools and platforms that facilitate better communication among healthcare teams, such as secure messaging apps or integrated communication systems within the EMR.

Discussion

Strategies to Address Bottlenecks

- **Improving Communication Systems**

- Implemented improved communication channels such as dedicated messaging systems to immediately alert nurses to new prescriptions.
- Implement integrated real-time information systems and EHRs to ensure rapid dissemination of information.

- **Streamlining Documentation Processes**

- Transition to automated integrated document systems to reduce automated errors and speed up the documentation process.
- Regular audits and training to ensure accuracy and completeness of documentation.

- **Enhancing EHR Systems**

- Updating EHR systems to reduce system downtime and ensure faster uptime.
- Provide ongoing support and maintenance to ensure the system is working properly.

- **Optimizing Nurse Workload**

- Ensuring adequate staffing to ensure workload is handled efficiently and delays are minimised.
- Implement project planning to help prioritize and manage projects.

- **Prioritizing Prescription Recognition**

- Establishing protocols to prioritize the recognition of new prescriptions.
- Minimizing interruptions and distractions by creating dedicated time slots for checking and recognizing prescriptions.

- **Training and Awareness Programs**

- Regular training to ensure nurses are competent in using the MAR system and are aware of best practices.
- Implement awareness systems to ensure early adoption and response to new regulations.

Recommendations

Based on the findings of this study, the following recommendations are proposed:

1. **Automate Medication Preparation:** Invest in automated dispensing systems to streamline pharmaceutical manufacturing and reduce shelf-life variability.
2. **Improving Communication Tools:** Develop and implement effective communication tools and policies to enhance communication between health professionals.
3. **Optimize Staffing Levels:** Staffing should be regularly analysed during peak periods to reduce workload and improve efficiency.
4. **Upgrade Technology:** Invest in modern pharmacy systems and ensure regular maintenance and updating to minimize technological barriers.
5. **Enhance Training Programs:** Continuous training and professional development programs will be implemented to provide clinical pharmacists with the latest clinical practices and technologies..
6. **Computerized physician order entry (CPOE)**, also known as computerized provider order entry or computerized provider order management (CPOM), involves electronically entering medical practitioner instructions for patient treatment, particularly in hospital settings. These orders are transmitted via computer networks to relevant medical departments such as pharmacy, laboratory, or radiology for execution. CPOE aims to streamline order distribution, enhance efficiency by minimizing transcription errors and duplicate entries, and simplify tasks like inventory management and billing. It serves as a type of patient management software designed to improve healthcare delivery processes.

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