PRESCRIPTION COVERAGE IMPROVEMENT STRATEGY FOR PHARMACY OUTPATIENT INSTALLATION AT PREMIER JATINEGARA HOSPITAL

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Abstract

This study examines operational inefficiencies within the outpatient pharmacy at Premier Jatinegara Hospital, focusing on declining prescription coverage and its impact on patient care and hospital revenue. Using the DMAIC (Define, Measure, Analyze, Improve, Control) framework, the research systematically identifies key problem areas and proposes targeted improvement strategies. Internal analysis revealed issues such as frequent stockouts, inadequate real-time inventory management, workflow inefficiencies, and staffing shortages during peak hours. External analysis highlighted patient dissatisfaction due to long waiting times and supply chain disruptions caused by unreliable suppliers. To address these challenges, the study proposes a comprehensive improvement strategy focusing on upgrading the hospital's data management system, implementing real-time inventory tracking, redesigning workflows, and enhancing staff training. The Plan-Do-Check-Act (PDCA) cycle forms the foundation of the implementation plan, ensuring the systematic execution and continuous monitoring of improvements. The recommended interventions aim to enhance patient safety, streamline inventory management, reduce waiting times, and improve overall service quality. Additionally, recommendations for future academic research include exploring the broader impact of technological integration on hospital efficiency and examining patient perceptions of pharmacy services. By addressing operational inefficiencies, this study provides valuable insights and practical solutions to enhance the efficiency and effectiveness of outpatient pharmacy services at Premier Jatinegara Hospital, ultimately supporting better patient outcomes and financial stability

INTRODUCTION

In recent years, Indonesia's healthcare system has seen significant reforms, particularly with the introduction of Jaminan Kesehatan Nasional (JKN), which

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has aimed to provide universal healthcare coverage to its citizens. While these reforms have expanded access to medical services, hospitals continue to face operational challenges related to efficiency, cost control, and quality of care. As one of the key players in Indonesia's healthcare system, hospitals are increasingly tasked with improving both inpatient and outpatient services to meet growing patient demands and ensure financial sustainability.

Premier Jatinegara Hospital, located in Jakarta, plays a critical role in providing healthcare services to the surrounding community. One of the hospital's essential service units is its outpatient department, which caters to a large volume of patients. Outpatient services allow patients to access treatments, diagnostic services, and medications without the need for hospitalization, thereby reducing the burden on inpatient care and supporting operational efficiency. Among these services, the outpatient pharmacy is crucial, as it provides the necessary medications for patients to adhere to their prescribed treatments. The pharmacy's role is not only fundamental to patient care but also represents a significant source of revenue for the hospital, contributing between 30-40% of the hospital's total income (Premier Jatinegara Hospital Data, 2023).

However, despite its importance, Premier Jatinegara Hospital's outpatient pharmacy has been facing significant operational challenges. Chief among these issues is a decline in prescription coverage—the percentage of patients who fulfill their prescriptions at the hospital pharmacy. This decline has become a critical issue as prescription coverage is a key indicator of both patient satisfaction and operational performance. Data shows that prescription coverage dropped sharply from mid-2021, reaching a low of 73% by mid-2023, well below the hospital's target of 95% (Premier Jatinegara Hospital Data, 2023). This decline has impacted not only patient adherence to treatment plans but also the hospital's financial performance.

To address the ongoing challenges, this study proposes a strategic improvement plan focused on enhancing operational efficiency, optimizing inventory management, and improving the overall service experience. The improvement framework will draw on the Lean and **Six** Sigma methodologies, which are widely used in healthcare to streamline processes, reduce inefficiencies,

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and improve service quality (McLaughlin & Hays, 2012). Lean methodology focuses on eliminating non-value-added activities in workflows, while Six Sigma aims to reduce variation and errors through a structured, data-driven approach. Together, these methodologies provide a robust framework for addressing the pharmacy's operational challenges, particularly in areas such as workflow optimization, prescription accuracy, and inventory management.

Furthermore, this study is necessary because it addresses a critical gap in the hospital's operations that affects both patient care and financial stability. By systematically analyzing the current issues and proposing strategic improvements, this study will provide valuable insights that can lead to enhanced prescription coverage, improved operational efficiency, and increased patient satisfaction. These improvements are essential for ensuring that Premier Jatinegara Hospital continues to provide high-quality care while maintaining its financial health in a competitive healthcare environment.

METHODOLOGY

The research design outlines a systematic approach to addressing operational challenges within the outpatient pharmacy. It begins with Problem Identification, where the main issues are identified, followed by Problem Formulation, establishing a clear framework to guide the research. This leads to defining Research Questions & Objectives, aimed at addressing specific concerns in the pharmacy's processes. During Data Collection, primary data from semi-structured interviews and secondary data from literature and internal company records are gathered. The Data Analysis phase employs the DMAIC (Define, Measure, Analyze, Improve, Control) methodology, a key aspect of Six Sigma, to structure the analysis. Finally, the workflow concludes with Conclusion and Recommendation, synthesizing findings and proposing strategic actions to enhance outpatient pharmacy operations. This structured approach ensures a thorough, data-driven examination of pharmacy operations, aligned with the goals of improving efficiency and service quality. The study employed qualitative methods to assess both internal and external situation.

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RESULT AND DISCUSSION

Situation in the Pharmacy Outpatient

Define

The Define phase of the DMAIC framework focuses on clearly identifying the problem areas within the outpatient pharmacy at Premier Jatinegara Hospital. The decline in prescription coverage—from 95% in early 2023 to 73% by mid-2024—has significantly impacted operational performance and revenue. The target of 95% was set based on internal performance benchmarks and historical patient adherence levels. Additionally, operational inefficiencies such as long waiting times, poor inventory management, and inadequate staffing during peak hours have exacerbated these issues.

The objective of the Define phase is to establish a clear understanding of the key operational challenges that need to be addressed to improve prescription coverage and enhance overall service delivery in the pharmacy. In the context of improving prescription coverage at the outpatient pharmacy of Premier Jatinegara Hospital, a comprehensive stakeholder analysis is essential to identify key individuals and groups affected by or involved in the process. This analysis will help ensure that all stakeholders' interests are considered during the development and implementation of the improvement strategy.

Interviews were conducted with key internal and external stakeholders to gather insights into the current operational challenges of the outpatient pharmacy at Premier Jatinegara Hospital. These interviews provided critical feedback, allowing the identification of key interests, concerns, and potential influences of each stakeholder group. This analysis is essential for understanding the roles of different stakeholders in the improvement strategy and ensuring that their interests are aligned with the proposed solutions.

a. Internal stakeholder

Table 1. The role, interest, and influence of internal stakeholders

Role	Interest	Influence
Pharmacy Staff 3 persons	Pharmacy staff will directly benefit from streamlined processes that reduce workload,	High. They are essential to the successful day-to-day operations of the pharmacy and are

Responsible for dispensing medications, managing inventory, and interacting with patients.	decrease waiting times, and improve operational efficiency. They are also key players in ensuring the successful implementation of new systems, such as real-time inventory management and improved workflows.	directly involved in the improvement efforts.
Procurement Staff 2 persons In charge of ordering and managing the pharmacy's inventory of medications and supplies.	Improved inventory management systems will enable more efficient tracking and restocking of medications, reducing stockouts and improving the availability of essential drugs.	Medium. They play a vital role in maintaining the supply chain but are not directly involved in patient care.
Hospital Management (Administrators and Financial Officers) 4 persons Oversee the overall operations of the hospital, including financial performance and patient satisfaction.	The hospital management is highly invested in improving the pharmacy's efficiency to restore prescription coverage and increase revenue, as the pharmacy contributes a significant portion of the hospital's income.	High. Management approval is crucial for the allocation of resources and the implementation of improvement strategies.
IT Department 1 person Provides support for implementing and maintaining technology-based solutions	The IT department is responsible for ensuring that the new systems function smoothly and integrate well with existing hospital systems.	Medium. While they are essential for implementing the technological components, their involvement is more supportive than directive.

b. External stakeholder

Table 2. The role, interest, and influence of external stakeholders

Role	Interest	Influence

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| Patients

14 persons

The end-users of the pharmacy services, including those who receive medications after consultations or treatment at the hospital.	Patients have a vested interest in shorter waiting times and an overall improved pharmacy experience. They are likely to seek care elsewhere if these improvements are not made.	High. Patient satisfaction is critical to the success of the pharmacy. If patient needs are not met, they may choose external pharmacies, which directly affects the hospital's revenue.
Medical Staff

8 persons

Prescribers of medications, relying on the pharmacy to ensure timely and accurate dispensation of medications for their patients. | Doctors want to ensure that their patients receive prescribed medications without delays or issues related to stockouts. An efficient pharmacy contributes to better patient outcomes and smoother medical treatment plans. | Medium. While not directly involved in the pharmacy's operations, their ability to provide quality care is affected by the pharmacy's performance. |
| Suppliers

2 persons

Provide the medications and supplies that the pharmacy stocks. | Suppliers benefit from efficient inventory management and timely payment for goods. They are interested in maintaining a stable and collaborative relationship with the hospital. | Medium. Suppliers influence the availability of medications, but their role is primarily external and related to the supply chain. |

Based on the finding the power-interest grid is developed as visual representation, that able to simplify the analysis and make it easier to understand at a glance (Figure 1). This framework, derived from Mendelow's Stakeholder Matrix (1991), is crucial in prioritizing efforts to manage different stakeholders effectively, ensuring resources are allocated where they have the most impact on project outcomes.
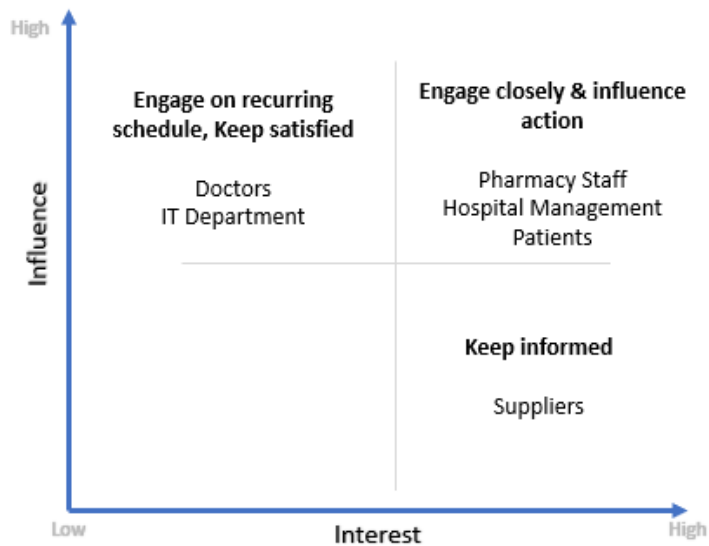
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Figure 1. The power-interest grid (*based on Author's analysis*)

Stakeholders like Pharmacy Staff, Hospital Management, and Patients are placed in the high power-high interest quadrant, requiring close engagement as they are critical to the project's success. The IT Department and Doctors, while influential, have moderate interest and should be kept satisfied with periodic updates to maintain their support. Suppliers, with low influence but high interest, need to be regularly informed, as they play a key role in ensuring medication availability. Engaging stakeholders according to their power and interest helps align their expectations with the project's goals, facilitating smoother implementation and collaboration.

In summary, the define stage exposed various operational inefficiencies, such as, poor workflow, frequent medication error, and long waiting times. Through interviews with internal stakeholders—including pharmacy staff, procurement teams, and hospital management—and external stakeholders like patients and suppliers, the analysis revealed critical issues. Internal stakeholders emphasized the impact of workflow bottlenecks. External stakeholders, particularly patients, expressed dissatisfaction with long waiting times. A power-interest grid was developed to categorize stakeholders based on their influence and interest, indicating the need for active engagement with high-priority groups such as pharmacy staff, hospital management, and patients, while maintaining adequate communication with suppliers and the IT team. This structured

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engagement and the targeted improvement efforts are aimed at restoring prescription coverage and enhancing the overall efficiency of outpatient pharmacy services at Premier Jatinegara Hospital.

Measure

The Measure phase in the DMAIC framework focuses on identifying the most impactful actions and processes that require improvement. The data used in this phase were drawn from internal documents at Premier Jatinegara Hospital, particularly the Standard Operating Procedure Number PK/E-VI/01.04 on Outpatient Prescription Services (Premier Jatinegara Hospital, 2022). This SOP outlines a detailed workflow for managing outpatient pharmaceutical supplies and drug delivery services (Figure 2).
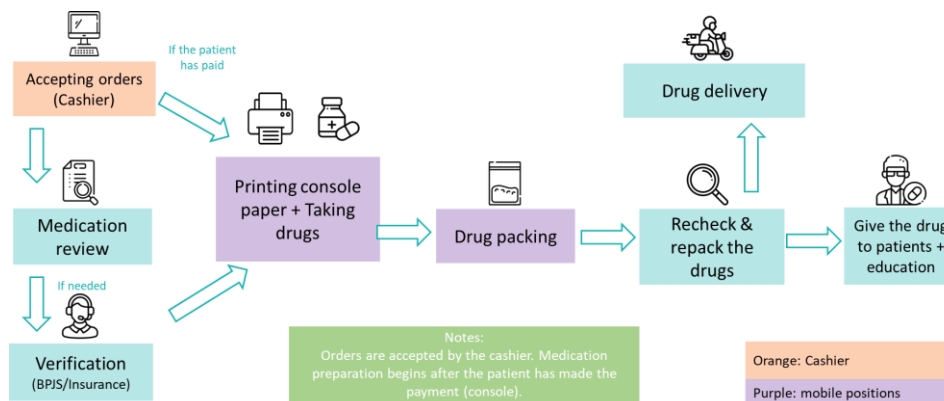
Existing Flowchart

Figure 2. the flowchart of outpatient pharmacy

The outpatient pharmacy workflow, as illustrated in Figure IV.2, starts with the cashier processing payments and accepting orders, which is essential to initiate medication preparation. However, interviews with pharmacy staff and management highlighted that this initial step frequently causes delays, particularly during peak hours, as patients often queue at the cashier. The pharmacy team emphasized the importance of streamlining this stage, as it directly impacts the timeliness of subsequent steps in medication preparation and dispensing. Pharmacy staff noted that once the payment is processed, the workflow moves to

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the "Medication Review" stage, where pharmacists assess the prescription for potential issues such as drug interactions or dosage concerns. This stage is crucial for ensuring prescription accuracy and patient safety.

The workflow then continues to "Printing Console Paper + Taking Drugs," a step that involves printing necessary documentation and retrieving medications from the inventory. However, the process is burdened by the need for manual verification between printed console papers and patient data. Pharmacy staff explained that this manual matching is both time-consuming and prone to errors, especially under high patient volumes. A pharmacy assistant noted, *"The lack of automatic data synchronization between the console printout and patient information slows us down and increases the likelihood of discrepancies."* Automating this step to ensure accurate, real-time printing of patient-specific information could streamline operations and reduce the manual workload. Once medications are collected, they are moved to "Drug Packing" and then "Recheck & Repack the Drugs," where additional verification is conducted to ensure accuracy. Medical staff emphasized the importance of this recheck phase, highlighting that accuracy at this point is critical for patient safety and that any discrepancies found at this stage must be corrected to prevent adverse outcomes. Finally, the medications are delivered to the patient with comprehensive usage instructions, promoting adherence and understanding.

The findings from this study, which highlight significant delays at the cashier and during the console paper printing and medication retrieval stages, align with existing literature that emphasizes the benefits of automation in pharmacy operations. Specifically, Basile et al. (2024) demonstrated that the implementation of automation and robotic dispensing systems significantly enhances operational efficiency by reducing the time needed for medication dispensing, stock management, and order processing. These automated systems minimize human errors and streamline various manual processes, directly contributing to higher prescription coverage by ensuring that medications are dispensed accurately and promptly. This aligns with the observed inefficiencies at Premier Jatinegara Hospital's outpatient pharmacy, where manual processes at the cashier and during the console printing phase lead to considerable delays.

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Table 3. Prescription processing time performance

No.	Indicator	Target	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23
1.	Prescription completion time non-compounded <20 minutes	95%	34%	31%	39%	32%	34%	74%
2.	Prescription completion time compounded <60 minutes	95%	64%	51%	60%	54%	47%	60%

Data from Premier Jatinegara Hospital's outpatient pharmacy further illustrate these inefficiencies. As shown in Table 3, the hospital consistently failed to meet the target prescription completion times for both compounded and non-compounded medications. For non-compounded prescriptions, where the target completion time is under 20 minutes with a 95% success rate, performance was below standard throughout 2023, reaching only 34% in July, dropping to 31% in August, and fluctuating around similar percentages until December when it improved to 74%. Similarly, for compounded prescriptions, with a target completion time of under 60 minutes, performance consistently fell short, starting at 64% in July and varying between 47% and 60% across the following months. This data underscores the pressing need for automation to streamline these manual processes, reduce prescription processing times, and enhance overall efficiency in line with the findings of Basile et al. (2024).

Proposed Flowchart

In an effort to enhance operational efficiency and address observed workflow challenges, this study proposes a revised outpatient pharmacy flowchart. This adjustment, developed through comprehensive interviews with pharmacy staff and management discussions, targets key process stages to mitigate delays and reduce manual errors. The revised flowchart, as presented in Figure 3, incorporates strategic modifications that streamline operations, improve accuracy, and utilize technological upgrades.
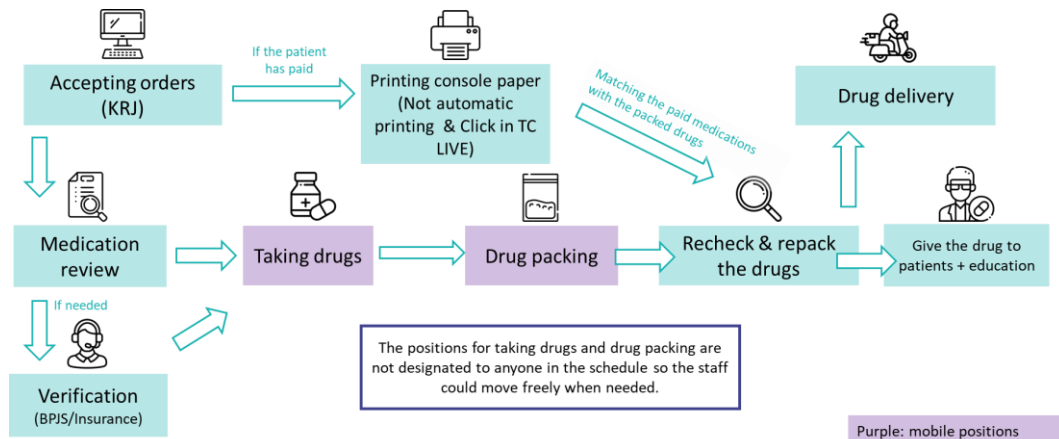
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Figure 3. the proposed flowchart of outpatient pharmacy (*based on author's analysis*)

A notable improvement in the updated workflow is the integration of TC Live, the hospital's information system, at the "Printing Console Paper + Taking Drugs" stage. In contrast to the previous process, which relied on manual initiation and verification, TC Live enables automated data synchronization, ensuring real-time updates for patient and prescription information. This automation reduces processing time and minimizes discrepancies. Furthermore, the roles involved in "Taking Drugs" and "Drug Packing" have been designated as mobile positions, allowing staff to adapt dynamically to workflow demands, especially during peak hours. These enhancements are expected to increase the accuracy and speed of prescription fulfilment, ultimately elevating patient satisfaction and aligning with best practices in healthcare process optimization.

In summary, the Measure phase of the DMAIC framework identified key areas in the outpatient pharmacy workflow at Premier Jatinegara Hospital that require improvement to enhance operational efficiency. Analysis of the Standard Operating Procedure (SOP) and interviews with pharmacy staff highlighted significant delays at the cashier and during the console paper printing and medication retrieval stages, which are primarily due to manual processes. Therefore, the proposed changes in the workflow, including automated console printing through TC Live and introducing mobile roles in medication handling, are expected to streamline processes, reduce delays, and ultimately improve patient satisfaction.

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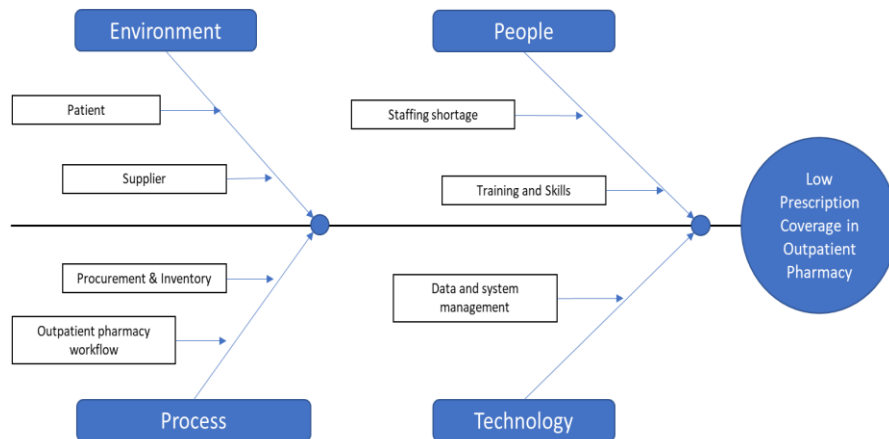
Analyze

Figure 4. The root cause analysis

In the People category, two critical factors—Staffing shortages and Training and Skills—have been identified as primary contributors to operational inefficiencies in the outpatient pharmacy. Staffing shortages, particularly during peak times, were frequently mentioned by pharmacy staff during interviews, who noted that the lack of personnel leads to delays in processing prescriptions and increases their workload. This finding aligns with the observations of Rattanachotphanit et al. (2008), who stated that insufficient staffing levels can directly impact the speed and quality of service in pharmacies. Addressing this issue through increased staffing during high-demand periods is crucial for reducing waiting times and improving prescription coverage.

Furthermore, the gap in Training and Skills among pharmacy staff was recognized as another significant contributor to inefficiencies. Without adequate training, staff may struggle to manage patient volume efficiently or navigate new technologies aimed at streamlining processes. The need for continuous professional development in pharmacy settings is well-documented in the literature. Sulistiyoningrum, Sriatmi, & Arso (2021) argue that training is essential for improving the accuracy of prescription fulfilment and maintaining high-quality service. Improving training programs for pharmacy staff would ensure that they are equipped to handle peak volumes while also utilizing technology effectively to improve workflow.

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The Process category of the cause-and-effect diagram identifies inefficiencies in the procurement cycle, inventory management, and outpatient pharmacy workflow as primary drivers of low prescription coverage. Internal stakeholders and suppliers highlighted that delays in the procurement process, such as late order placements and miscommunication, frequently led to stockouts, directly impacting the availability of medications. This finding supports Herjunianto et al. (2014), who found that inadequate procurement processes and unreliable supplier relationships are critical drivers of stockouts. However, in contrast to their study, our findings also highlight the absence of a real-time tracking system as a compounding factor. These stockouts force patients to seek medications externally, reducing the overall prescription coverage at the pharmacy. This finding aligns with Basile et al. (2024), which underscores that streamlined procurement processes and strong supplier relationships are crucial for maintaining sufficient stock levels and ensuring a high rate of prescription fulfilment.

Additionally, the workflow of the outpatient pharmacy emerged as a key factor affecting performance. Existing gaps in the workflow, such as unclear protocols during manual overrides or inconsistencies in documentation practices, contributed to delays in prescription processing. The absence of a real-time inventory tracking system further exacerbated these challenges, as inventory levels were not promptly updated, resulting in delays in restocking. The literature supports these observations, with Hakim (2021) emphasizing the importance of real-time inventory systems for accurate stock monitoring, timely procurement, and minimizing stockouts. Addressing these issues by redesigning the outpatient pharmacy workflow to enhance clarity, standardize protocols, and integrate advanced inventory management systems is essential for maintaining optimal stock levels and improving prescription coverage.

The inclusion of the Technology category in the revised cause-and-effect diagram underscores the significant impact of technological gaps on pharmacy operations. Data and system management emerged as a critical factor affecting inventory control, workflow efficiency, and prescription fulfilment. The lack of integrated, real-time data systems for inventory management has led to inefficiencies in monitoring stock levels and predicting future demand.

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Stakeholders from both the IT department and pharmacy staff expressed concerns about the absence of automated systems, which hindered the pharmacy's ability to respond to supply shortages and manage high patient volumes. Basile et al. (2024) found that the implementation of automated systems and real-time tracking can drastically improve operational efficiency, reduce human error, and ensure timely medication dispensing. Introducing automated systems to manage inventory and streamline the prescription process would address one of the primary technological gaps identified by stakeholders. This would not only increase prescription coverage but also improve overall patient satisfaction by reducing wait times and ensuring medication availability.

In summary, study found that the Environment**,** People**,** Process, and Technology—as the primary contributors to declining prescription coverage. High patient volume and supplier reliability were identified as significant external pressures, with patients facing long wait times and stockouts due to inefficiencies in the procurement cycle. In the People category**,** staffing shortages during peak hours and inadequate training and skills further hindered operational efficiency, contributing to delays in prescription processing. Process inefficiencies in the procurement and inventory management as well as the workflow were identified as key drivers of stockouts, with the absence of real-time inventory systems exacerbating the problem. Finally, the Technology category revealed a significant gap in data and system management, with stakeholders emphasizing the need for automated systems to enhance workflow efficiency and reduce human error.

Business Solution

The Business Solution section focuses on the final two stages of the DMAIC methodology: Improve and Control. These stages are essential for implementing and sustaining the proposed solutions that address the root causes identified in earlier phases. The Improve stage emphasizes the implementation of actionable solutions aimed at enhancing the operational efficiency of the outpatient pharmacy, particularly in areas such as inventory management, staffing, and technology integration. In the Control stage, the focus shifts to ensuring that these improvements are maintained over time. By introducing systems such as the

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Plan-Do-Check-Act (PDCA) cycle, the control phase ensures that the pharmacy's operations continue to meet performance standards, enabling sustained prescription coverage improvement and long-term operational success. In this section, we will explore the detailed steps taken to implement these improvements and the mechanisms put in place to ensure their effectiveness over time.

Improve

Table 4. Proposal for Improvement of the Major Issues

Current Condition	Root Cause	Proposal for improvement
Frequent stockouts and delayed restocking	Environment: Supplier reliability and procurement delays Technology: Lack of real-time inventory system	1. **Upgrade the hospital's data management system** to enable cross-departmental data flow, ensuring streamlined decision-making and forecasting. 2. **Implement** a **real-time inventory management system** to track stock levels, automate restocking, and avoid stockouts.
Long patient wait times during peak hours	Process: Inefficient workflow People: Insufficient personnel during peak hours and lack of skill with machine Technology: Lack of real-time systems for workflow integration	3. **Redesign workflow** to provide clearer step-by-step procedure and avoid error. 4. **Recruit additional pharmacy staff** and cross-train employees to handle peak hours more efficiently. 5. **Launch Ongoing training programs** for pharmacy staff, focusing on inventory management, prescription accuracy, and technological tools.

In summary, the Improve phase focuses on implementing targeted strategies based on the identified root causes in the Analyze phase. This involves upgrading the hospital's data management system and introducing real-time inventory management to streamline inventory tracking and restocking. Additionally, workflow redesign aims to address inefficiencies and establish clear procedures, while staff recruitment and training programs help handle peak demand periods and improve service quality. These proposed improvements directly address major issues such as frequent stockouts, long patient wait times,

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and inadequate staffing.

Control

a. Upgrade the Hospital's Data Management System

Period: Medium Term

PDCA Cycle	Details
Plan	Assess current data management gaps, consult with IT and relevant departments, and identify required upgrades (e.g., software, infrastructure, integration tools). Create a detailed project plan with timelines and resources.
Do	Implement the system upgrades in phases, starting with the most critical areas (pharmacy, procurement, patient records). Conduct staff training on system usage.
Check	Monitor data flow across departments, ensuring seamless integration and improved decision-making. Gather feedback from staff regarding system usability and issues.
Act	Based on feedback, make adjustments to the system as needed. Standardize the upgraded system and roll it out hospital-wide, ensuring ongoing support and maintenance.

b. Implement a Real-Time Inventory Management System

Period: Medium Term

PDCA Cycle	Details
Plan	Identify and evaluate potential real-time inventory management solutions, considering cost, scalability, and integration with existing systems. Draft an implementation roadmap.
Do	Set up and install the chosen inventory management system, conduct trials with small batches of medication to ensure system functionality. Provide staff training.
Check	Regularly review inventory levels, stockouts, and restocking efficiency. Gather data to evaluate system performance and compare against pre-implementation benchmarks.
Act	Fine-tune the system to address any operational issues. Once validated, fully integrate the system into the pharmacy's workflow and standardize usage procedures.

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c.   Redesign Workflow

Period: Short Term

PDCA Cycle	Details
Plan	Conduct a comprehensive assessment of current workflow and engage key stakeholders to gain insights. Develop a revised workflow design that addresses identified issues, incorporating additional features such as improved medication review protocols, time-stamping, and enhanced verification steps. Create a project implementation plan with a detailed timeline, resource allocation, and training requirements.
Do	Implement the revised workflow in a pilot phase, focusing on one or two key sections (e.g., medication review and dispensing). Conduct staff training sessions on the new workflow processes.
Check	Evaluate the effectiveness of the revised workflow by gathering data on key performance indicators, such as prescription coverage rates, waiting times, and medication error frequency. Obtain feedback and perform regular audits on adherence to new protocols and review data from the workflow changes.
Act	Refine the revised workflow to resolve remaining issues, standardize it across all outpatient pharmacy sections, and establish regular review guidelines. Communicate changes hospital-wide and ensure ongoing support, training, and monitoring to maintain efficiency and high standards.

d.   Recruit Additional Pharmacy Staff and Cross-Train Employees

Period: Long Term

PDCA Cycle	Details
Plan	Conduct a workforce needs analysis to determine the number of additional pharmacy staff required. Identify areas where cross-training will benefit the workflow.
Do	Start recruitment for additional staff and initiate cross-training programs for existing employees, focusing on critical areas like inventory management and prescription fulfilment.
Check	Evaluate staff performance, workload distribution, and operational efficiency after recruitment and training. Gather feedback from both staff and patients.
Act	Based on performance reviews, make necessary adjustments to staffing levels or training programs. Continue to cross-train staff to ensure flexibility during peak hours.

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e.   Ongoing Training Programs for Pharmacy Staff

Period: Short Term

PDCA Cycle	Details
Plan	Identify key areas for training (inventory management, prescription accuracy, technology use) and create training materials. Develop a schedule for regular training sessions.
Do	Implement the training programs, ensuring that all pharmacy staff participate. Use both in-person workshops and e-learning modules for flexibility and depth.
Check	Measure training effectiveness by tracking error rates, prescription accuracy, and employee confidence in using new systems. Gather feedback from staff on training quality.
Act	Adjust the training programs based on feedback and performance metrics. Make the training sessions a regular part of onboarding and ongoing professional development.

To summarize, the Control phase applies the PDCA cycle to effectively monitor and sustain the improvements implemented in the Improve phase. This structured approach emphasizes careful planning, phased execution, regular evaluations, and systematic adjustments based on ongoing feedback. The PDCA framework encompasses key initiatives such as upgrading data management systems, redesigning workflows, implementing real-time inventory tracking, and enhancing staffing and training practices. Through this method, the outpatient pharmacy can standardize the proposed solutions, maintain operational efficiency, and consistently refine processes to ensure high-quality patient care and long-term stability.

CONCLUSION AND SUGGESTION

The internal situation in the study revealed several critical operational inefficiencies within the outpatient pharmacy. Declines in prescription coverage were linked to multiple factors, including frequent stockouts, inadequate real-time inventory management systems, and ineffective workflow processes. Furthermore, staffing shortages during peak hours and insufficient training among pharmacy

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personnel were identified as primary contributors to the observed inefficiencies. The external situation in the study emphasized the significant impact of stakeholder concerns on the pharmacy's performance. Patients expressed dissatisfaction with prolonged waiting times and frequent stockouts, often opting to fulfill their prescriptions externally, which contributed to declining prescription coverage. Suppliers, on the other hand, raised concerns about communication gaps and procurement delays, which exacerbated supply chain disruptions and negatively affected stock availability.

The study developed an improvement strategy focusing on key areas such as inventory management, workflow optimization, staffing augmentation, and technology integration. Upgrading the hospital's data management system and implementing a real-time inventory system were recommended to streamline cross-departmental data flow, track stock levels, and automate restocking. The workflow redesign aimed to establish clear protocols to prevent errors, while staff recruitment and training programs targeted increased efficiency during high-demand periods.

The study also proposed an implementation plan grounded in the PDCA cycle, encompassing phased activities over a 12-month timeline. This plan aimed to facilitate systematic improvements, ensuring effective execution and sustained success. The plan included concrete milestones, clear timelines, and assigned roles for each action to enhance accountability and collaboration among key departments.

Based on the findings and limitations of this study, the following recommendations for future academic research are proposed future studies should investigate the effectiveness of integrated technological solutions, such as Hospital Information Systems (HIS) and automated inventory tracking, on improving operational efficiency in hospital settings. Research on patient perceptions of service quality and their influence on pharmacy utilization can provide valuable insights into customer-centric improvements. Further studies could focus on assessing the long-term effects of proposed interventions on hospital revenue and operational stability, exploring potential correlations between improved prescription coverage and financial outcomes. Future research could explore the broader application of Lean Six Sigma methodologies across

different hospital departments, comparing the effectiveness of these strategies in diverse healthcare contexts.

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