

# Analysis of the National Formulary Drug Supply Chain with Its Availability in the Pharmacy Installation of the Government General Hospital (RSUD) Dr. Sitanala Tangerang City

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## Analysis of the National Formulary Drug Supply Chain with Its Availability in the Pharmacy Installation of the Government General Hospital (RSUD) Dr. Sitanala Tangerang City

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**Abstract.** This study explores the pharmaceutical supply chain management of the National Formulary at RSUP Dr. Sitanala in Tangerang City, aiming to identify obstacles to drug availability and formulate effective and efficient solutions. Acknowledging quality healthcare as a fundamental human right and a critical investment for a nation's future, this research emphasizes the importance of high-quality healthcare services. These services encompass not only treatment but also health promotion and disease prevention through the adoption of clean and healthy living habits. Drug availability is a major pillar in the provision of quality healthcare services. Effective and efficient management of the pharmaceutical supply chain, particularly regarding National Formulary drugs, is crucial in ensuring the availability of medications at healthcare facilities. This research employs a comprehensive analysis of the supply chain processes at RSUP Dr. Sitanala, examining stages such as drug selection, demand planning, procurement, receipt, storage, distribution, drug control, therapy monitoring, prescription preparation, drug dispensation, and medication administration. The study's methodology involves a case study approach, integrating theoretical management principles and interdisciplinary pharmacy management with compliance to regulations, as outlined in Permenkes No. 76 of 2016. Findings from RSUP Dr. Sitanala indicate that the hospital's pharmaceutical management practices align with contemporary health and pharmacy management theories, emphasizing structured systems, stringent verification, and effective interprofessional communication to ensure medication safety and efficacy. The study identifies challenges in information technology and interdisciplinary coordination as areas needing improvement. Nonetheless, a commitment to continuous improvement and adherence to regulatory standards reflects RSUP Dr. Sitanala's dedication to enhancing the quality of pharmaceutical management and healthcare services. The implications of this research extend beyond RSUP Dr. Sitanala, offering valuable recommendations for improving drug supply chain management in other healthcare institutions in Indonesia. By enhancing access to and the quality of healthcare services, this study contributes to the broader goal of achieving the highest possible level of health for individuals, reflecting the perspective of human rights and investment in the nation's future health.

**Keywords:** Pharmacy Management, Medicine Availability, Health Management, Supply Chain

### 1. INTRODUCTION

In the context of sustainable health development, high-quality healthcare services become a fundamental need for every individual. This reflects not only a human right but also a crucial investment for the future of a nation. As articulated by Arpan (2022), the primary goal of health development is to enhance awareness, willingness, and the capability to live healthily for everyone, thereby achieving the highest possible level of health. This effort encompasses not merely treatment when sick but also health promotion and disease prevention through the adoption of clean and healthy living patterns.

According to Mailoor et al. (2017), healthcare services encompass various efforts that can be undertaken individually or collectively within an organization. Its goals are not limited to maintaining and improving health but also preventing diseases, as well as

restoring health conditions for individuals, families, groups, and the broader community. In achieving these goals, the role of logistics management in healthcare, especially in drug management, becomes highly significant.

The availability of effective and efficient drugs is one of the main pillars in providing quality healthcare services. Nesi & Kristin (2018) emphasize the importance of ensuring the availability of drugs in the right types and quantities as per the needs, to avoid shortages and excesses that can affect healthcare services. Furthermore, Septi (2022) underscores that access to medication is a human right, where the availability of drugs at healthcare facilities becomes a primary determinant in quality health access.

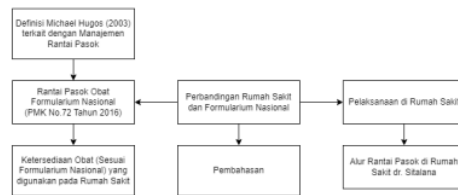
Amid global challenges, the pharmaceutical industry plays a crucial role in supporting drug availability. Significant dynamics within the pharmaceutical industry, as revealed by Kusumo et al. (2022), impose new demands on payers, providers, and manufacturers. In the context of Indonesia, challenges become increasingly complex given the relatively low drug consumption per capita compared to other ASEAN countries, indicating a significant potential for improving access to affordable and quality drugs (Kemenperin, 2021).

In line with this, effectiveness and efficiency in drug supply chain management, especially for National Formulary drugs, are key in ensuring drug availability at healthcare facilities. This research takes the Public General Hospital Dr. Sitanala in Tangerang City as a case study to delve deeper into the National Formulary drug supply chain process and its impact on drug availability in the hospital's Pharmacy Installation.

The focus of this research is on the case study of the Public General Hospital Dr. Sitanala in Tangerang City, which faces specific challenges in procuring National Formulary drugs. The issue of drug shortages, both in the formulary and in the e-Catalogue, often becomes a major obstacle, directly impacting the quality of service to patients. This situation indicates the need for an in-depth analysis of the drug supply chain system to identify barriers and formulate effective and efficient solutions.

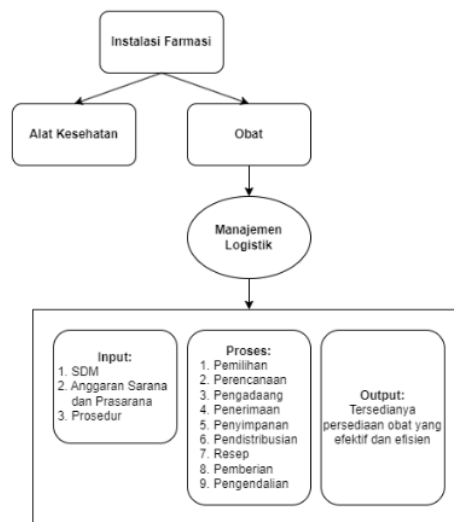
Through this comprehensive analysis, the research aims to provide deep insights into every aspect of the National Formulary drug supply chain and its impact on drug availability at RSUP Dr. Sitanala, Tangerang City. The findings are expected to offer valuable recommendations for improving drug supply chain management, not only for RSUP Dr. Sitanala but also for other healthcare institutions in Indonesia, to enhance access and the quality of healthcare services to the community.

## 2. CONCEPTUAL FRAMEWORK AND THINKING FRAMEWORK



**Picture 1.** The conceptual framework

The conceptual framework described above serves as a structural guide for research on the management of the National Formulary drug supply chain at Dr. Sitatana Public General Hospital in Tangerang City. This framework is based on the supply chain management definition by Michael Hugos (2003), which he defines as **the coordination of production, inventory, location, and transportation among the parties involved in the supply chain to achieve the best balance of responsiveness and efficiency for the market.** Utilizing this framework, researchers can identify critical areas requiring attention and improvement to enhance the effectiveness and efficiency of drug provision, in alignment with the National Formulary standards and the specific needs of the hospital.



**Picture 2.** The conceptual framework

The conceptual framework presented summarizes the logistics management system within the Pharmacy Installation, which is essential in the management of drugs and medical devices in healthcare institutions. This system begins with inputs that include trained human resources, adequate budgeting for facilities and infrastructure, and standard operational procedures. The logistics management process encompasses a series of stages from selection, planning, procurement, reception, storage, distribution, to prescription management and medication administration, concluded with control measures to ensure effective and efficient use. The output from this entire process is expected to be the effective and efficient availability of drugs and medical devices, supporting the improvement of healthcare service quality and patient satisfaction in treatment.

### 3. RESEARCH METHOD

This research was conducted at the Pharmacy Installation of Dr. Sitanala Public General Hospital in Tangerang City, with the research process commencing in July 2023. A qualitative approach was chosen based on the principles of appropriateness and sufficiency of information obtained from purposively selected informants. These informants comprise individuals directly involved in the management of drug administration at the hospital, including the Head of the Pharmacy Installation, the Person in Charge of the Pharmacy Warehouse, Pharmacy Staff, Drug Budgeting, and the Drug Logistics Division, each holding a crucial role in the drug management process.

To collect data, techniques such as in-depth interviews, observation, and documentation were applied to extract detailed information on practices and challenges within the national Formulary drug supply chain and its relation to availability at the pharmacy installation. Primary data were collected directly from interactions with informants, while secondary data were obtained from documents related to drug management and availability.

Data analysis was performed using the Miles and Huberman model, which includes data reduction, data display, and the drawing of conclusions and verification. Data validity was tested through various strategies such as extended observation, increased research precision, triangulation of sources and techniques, and the use of references. Credibility, transferability, dependability, and confirmability are the primary criteria in assessing the validity of data for this qualitative research, ensuring that the research findings are trustworthy and relevant to the actual conditions on the ground.

#### 4. RESULTS AND DISCUSSIONS

##### Determination of Informants

In this study, the expert judgment technique was utilized as a method to identify and evaluate risks in the drug supply chain management at a pharmacy installation. This method involves identifying experts with in-depth knowledge of operations and management in the pharmacy installation, particularly concerning drug distribution and management in the hospital pharmacy warehouse. These experts were selected based on their expertise to provide assessments of potential risks in the project.

The process began with the selection of appropriate experts, followed by the preparation and execution of structured interviews to gather detailed information on potential risks, including those related to schedule, cost, performance, and collaboration with other institutions or organizations. Interviews focused on each individual's area of expertise to verify and deepen the information on identified risks. The outcomes of the expert judgment technique were then integrated into a research instrument that encompasses all aspects of the drug supply chain, from selection to administration, to ensure that the study covers all relevant risk areas in drug supply chain management. The interviewed informants have characteristics as follows:

**Table 1.** Information on identified risks

No.	Informant Name	Occupation	Characteristics
1.	Ella	Head of Pharmacy Installation	Has responsibility for the management and operations of the Pharmacy Installation
2.	Arnia	Pharmacist in Charge of the Pharmacy Warehouse	Play a role in pharmaceutical aspects, including drug management and distribution
3.	Ethel	Companion Pharmacist	Involved in pharmacy tasks, such as drug monitoring and distribution
4.	Tuti	Administration	Involved in preparing the drug budget
5.	A. Riska D. Sari	Pharmaceutical Technical Personnel Responsible for Warehouse	Responsible for activities related to drug management in the hospital pharmacy warehouse
6.	Rian	Head of Logistics	Involved in shipping and receiving medicines at the Pharmacy Warehouse



### Question Formulation

After determining the appropriate experts, the next step involves selecting informants who meet the criteria of experts for this research. The results can be observed in the determination of informant characteristics at Dr. Sitanala Hospital. Below is the agreement on questions that have been acknowledged by several expert judgments as follows:

**Table 2.** Question Formulation

No	Questions
1	Drug Selection: How do you determine which drugs to include on a hospital formulary? b. What are the main criteria you consider in selecting drugs for hospital use?
2	Planning: How do you plan medication needs for a certain period?
3	Procurement: What is your strategy for drug procurement, including price negotiations and collaboration with suppliers?
4.	Reception: How is the drug receipt process organized to ensure quality and safety?
5.	Storage: How do you maintain compliance with proper medication storage standards in a pharmacy setting?
6	Distribution: How is the drug distribution system organized to ensure speed and accuracy? b. Do you have an automated system to support medication distribution throughout the hospital?
7.	Recipe: How is the process for recording and verifying prescriptions carried out in pharmacy installations?
8.	Giving: What steps are taken to ensure medication is administered by health workers as prescribed?
9.	Drug Therapy Control and Monitoring: How is the drug therapy monitoring system organized in the hospital? b. How is the drug control system organized in the hospital?
10	Administration: How do you organize the medication administration process to ensure efficiency and safety?

### Results

#### 1) Medicine Selection

The drug selection process at the hospital under study shows a close collaboration between the Head of the Pharmacy Installation, doctors, and nurses as key in choosing effective medications for patients. Initially, doctors fill out a new

drug request form, which is then evaluated by the Head of the Medical and Facilities Subdivision based on accurate information. The final decision is made during the Pharmacy and Therapeutics Committee (PTC) meetings, taking into consideration medical and therapeutic aspects. However, there are challenges in this process, including changes in doctors' decisions after a drug is approved, difficulties in coordinating PTC meetings due to members' busy schedules, and challenges in choosing between brand name and generic drugs.

The entire process of drug selection and management reflects the importance of interprofessional collaboration in healthcare and compliance with the Ministry of Health Regulation No. 76 of 2016. The challenges encountered indicate areas that require improvement to enhance the quality of pharmaceutical services in accordance with established standards.

## 2) Medicine Planning

The drug requirement planning process at Dr. Sitanala Public Hospital underscores the importance of coordination among various hospital parties, including the Head of the Pharmacy Installation, doctors, and nurses. The structured drug planning procedure involves evaluating needs based on usage trends and historical data, as well as consultations with the medical team. Meetings of the Pharmacy and Therapeutics Committee (PTC) are a key step in this process, where decisions are made based on accurate medical and therapeutic considerations.

However, there are obstacles such as changes in doctors' decisions and difficulties in coordinating PTC meetings that impede the drug selection process. Despite these challenges, collaboration among staff and effective communication are emphasized as solutions to navigate these issues and achieve optimal drug planning. This process, in alignment with Ministry of Health Regulation No. 76 of 2016, reflects Dr. Sitanala Public Hospital's efforts to ensure that the drug supply not only meets medical needs but also complies with safety and quality standards.

## 3) Procurement

The drug procurement strategy at Dr. Sitanala Public Hospital begins with budget planning by the pharmacy installation, detailing the types and quantities of drugs needed as well as cost estimates. This budget subsequently requires approval from various levels of hospital management and coordination with the Budget



Authority Holder (BAH) for endorsement. This process determines the allocation of funds for drug procurement, which must be adjusted if there is a discrepancy between the proposed budget and the approved one.

In procurement, setting the Own Estimate Price (OEP) in line with market prices is crucial to attract vendor participation in the tender. Challenges arise when the OEP is set too low, making vendors uninterested in participating. The use of an e-catalog as a reference for drug prices and specifications is prioritized over non-e-catalog sources to simplify the procurement process. Warehouse management is well-prepared to accommodate the storage of drugs, including large tonnage drugs and heavy liquids, to ensure the efficiency and effectiveness of drug availability. The overall drug procurement process reflects Dr. Sitanala Public Hospital's commitment to implementing well-considered strategies in line with health policies, despite facing procurement and warehouse management challenges.

#### 4) Reception

Dr. Sitanala Public Hospital implements a detailed and systematic drug reception system to ensure the quality and safety of medications to be dispensed to patients. A thorough verification process of critical documents such as invoices and purchase orders marks the initial step in the reception procedure, followed by a physical inspection of the drugs, which includes checking expiration dates and packaging integrity. Drug storage is conducted in compliance with temperature standards and appropriate environmental conditions to maintain drug quality. These preventive actions aim to prevent the entry of counterfeit or expired drugs that could harm the healthcare system. Adherence to applicable pharmacy warehouse guidelines and principles of modern pharmaceutical research underscores the importance of rigorous verification and control processes in the drug reception at the hospital.

#### 5) Storage

The drug storage procedure in the pharmacy warehouse at Dr. Sitanala Public Hospital is managed with a priority on maintaining appropriate temperature standards for various types of medications. Sari emphasizes the importance of keeping room temperatures below 25 degrees Celsius and adjusting refrigerator temperatures for certain medications, with monitoring conducted twice daily.

Additionally, constraints such as limited space are overcome through good coordination with manufacturers or suppliers, demonstrating adaptability in drug ordering based on space capacity, cycles, and usage needs. Riska adds that the system for monitoring drug expiration dates is a critical part of warehouse management, ensuring that medications nearing or past their expiration dates are handled correctly, maintaining safety and quality of drugs for patients. This overall approach demonstrates the hospital's commitment to adhering to health standards and adaptability in drug stock management.

#### 6) Distribution

The drug distribution process in the researched hospital involves steps from drug procurement through e-catalogs to reception and verification in the pharmacy warehouse. Major challenges faced include a lack of information from suppliers and difficulties in stock control, especially for drugs that are out of stock or nearing their expiration date. Stock control and evaluation are conducted through manual recording and reporting, with the inventory pharmacist playing a crucial role in addressing stock shortages. The transition to a new administration system poses challenges, particularly when the system encounters technical issues that do not allow for extensions, thus requiring adjustments and more frequent stocktaking. Despite efforts toward modernizing the drug administration system, the hospital still relies on manual recording methods and faces challenges in adapting a more automated and efficient system for drug distribution management.

#### 7) Prescription

The prescription management process <sup>33</sup> at the Pharmacy Installation of Dr. Sitanala Public Hospital in Tangerang City implements a series of strict verification steps, effective communication with medical staff, patient education, as well as monitoring and reporting of drug side effects. It begins with the verification of the authenticity and completeness of the prescription issued by the doctor, including checking signatures and medication usage instructions. Any ambiguity in prescription information is followed up with direct communication with the doctor to obtain confirmation or clarification. Prescription information is then entered into the pharmacy information system, followed by conveying important information to patients regarding medication usage, potential side effects, and the importance of

medication adherence. This process also includes monitoring drug inventory to ensure adequate availability, as well as the collection and reporting of drug side effects as mandated by policies and regulations. Through this systematic process, the Pharmacy Installation of Dr. Sitanala Public Hospital in Tangerang City demonstrates its strong commitment to enhancing medication safety and effectiveness for patients.

#### 8) Giving

The medication administration process at Dr. Sitanala Public Hospital in Tangerang City is carried out with high precision and caution, underscoring the crucial role of this procedure in patient care. The stages of this process begin with the preparation and packaging of medications by pharmacy personnel, followed by controlled delivery to the relevant units. The primary focus during the delivery and receipt of medications is to ensure the integrity and safety of the drugs. Verification of patient identity, checking of dosages, and instructions for medication use are thoroughly conducted by healthcare personnel before administering medications to patients. Detailed education about medication use, the correct dosage, and information about potential side effects are also provided to patients. In the face of challenges such as patient non-compliance, drug interactions, or side effects, the health team at Dr. Sitanala Public Hospital is prepared to offer further education, adjust dosages, or consult with doctors again. Through the implementation of this structured and systematic medication administration process, Dr. Sitanala Public Hospital is committed to ensuring safety, effectiveness, and adherence to medical care standards in patient treatment.

#### 9) Drug Therapy Control and Monitoring

Drug therapy management at Dr. Sitanala Public Hospital is conducted through a holistic approach that emphasizes the pharmacist's role in ensuring the safety and effectiveness of medication use. The implemented procedures include prescription verification, checking drug availability, and providing counseling to patients regarding side effects and the correct way of using medications. Monitoring side effects and reporting are integral aspects of this process, in line with the standards of Ministry of Health Regulation No. 76 of 2016. Pharmacists are responsible for meticulously reviewing patient data and medical history before

medication administration, as well as providing education on the importance of adherence to medication use. The comprehensive steps of prescription verification and counseling by pharmacists affirm the hospital's commitment to responsible medication use management, highlighting the significance of interprofessional collaboration in patient care and patient education as keys to enhancing safety and effectiveness in drug therapy.

#### 10) Administration

The medication administration process at Dr. Sitanala Public Hospital is conducted through a series of structured procedures that emphasize collaboration between the pharmacy team and service units in determining and planning medication needs. Accurate record-keeping and reporting are key to maintaining administration accuracy, with the use of invoice copies as proof of receipt and medication stock monitoring through stock cards and information systems for real-time tracking. Emphasis on reporting drug side effects supports the evaluation of medication use and patient safety. Challenges such as transitioning to a new administration system and difficulties in conducting quarterly stocktaking highlight the importance of flexibility and adaptation in medication management. The medication administration at Dr. Sitanala Public Hospital, in compliance with Ministry of Health Regulation No. 76 of 2016, reflects the hospital's dedication to medication management efficiency and enhancing patient safety, despite facing various operational and technical challenges.

#### **Discussion**

Throughout the process, it is crucial to maintain the availability of medications according to patient needs, ensure the quality and safety of the medications, and conduct ongoing evaluations of medication use.

**Table 3.** Drug Supply Solutions or Mitigation Strategies

No	Aspects of Constraints in the Drug Supply Process	Mitigation Solutions or Strategies
1	Changes in Physician Practices Regarding Drug Selection	Develop active communication strategies with physicians to understand and address changing preferences. Careful stock management.
2	Obstacles in PFT Meeting Coordination	Use technology or online tools to facilitate meetings, create meeting schedules that are accessible to all members, and prioritize meeting agendas.
3	Brand Name vs. Brand Preference Generic	Make decisions based on generic drug principles, but consider availability and patient needs. Effective communication with physicians to understand preferences.
4	Changes in Drug Procurement Budget Planning	Adjust the drug procurement process to the approved budget, involving the pharmaceutical installation and related parties in budget adjustments if necessary.
5	Errors in Self Estimate Pricing (HPS)	Involves the technical team and users in determining accurate and reasonable HPS, taking into account appropriate market prices. Evaluate related regulations and policies.
6	Limited Medicine Storage Process and Space Constraints	Active communication with manufacturers or suppliers to store some drugs, monitoring stock regularly, and evaluating additional storage needs.
7	Control and Evaluation of Drug Availability	Monitoring and reporting through detailed documents such as defect books and stock cards, as well as using alternative systems when problems occur.
8	New Administration System Migration	Collaborating with IT and management to complete system migration, as well as adjusting and reporting data in stages.
9	Temperature Monitoring and Storage Constraints	Regular temperature monitoring, involvement of inventory pharmacists in stock recording, and active communication with factories or suppliers.



In observing the drug procurement and management processes at Dr. Sitanala Public Hospital in Tangerang, several aspects can be identified that align with the principles found in <sup>13</sup> the Regulation of the Minister of Health of the Republic of Indonesia No. 76 of 2016 on <sup>17</sup> Pharmaceutical Services Standards in Hospitals. The budget planning process for drug expenditures starts from the pharmacy installation as the primary user. This plan involves considerations of patient needs and approval stages from various management levels, in accordance with the requirements of the regulation. The approved expenditure budget <sup>17</sup> plays a crucial role in ensuring the availability of drugs according to needs.

In the context of pricing, determining the Own Estimate Price (OEP) at Dr. Sitanala Public Hospital in Tangerang is recognized as an essential element. Errors in setting the OEP can become obstacles in the drug procurement tender process, in line with the regulation's provisions that emphasize the importance of OEP accuracy. The drug selection process at Dr. Sitanala Public Hospital in Tangerang involves doctors, medical considerations, and internal meetings of the Pharmacy and Therapeutics Committee (PTC). Drug selection is conducted with reference to the National Formulary and Hospital Formulary, <sup>5</sup> in line with the principles of the regulation.

Regarding <sup>53</sup> the monitoring of temperature and drug storage, Dr. Sitanala Public Hospital in Tangerang maintains the storage layout according to established standards. Temperature monitoring is conducted regularly to ensure <sup>53</sup> the quality and safety of medications. <sup>53</sup> The administration and evaluation of drugs involve meticulous recording and reporting through various documents, including defect books and stock cards. Despite challenges, such as migrating to a new administration system, efforts are made to ensure drug availability and maintain administrative quality.

Overall, the practices described in the drug procurement and management processes at Dr. Sitanala Public Hospital in Tangerang reflect efforts to comply with the provisions of Regulation No. 76 of 2016. It is <sup>50</sup> important to note that the implementation of this regulation may vary among hospitals, and further evaluation can be conducted by detailing internal policies and procedures at the hospital level.

In summary, the drug procurement and management processes at Dr. Sitanala Public Hospital in Tangerang emphasize the central role of the pharmacy installation, coordination among related units, and ongoing evaluation to ensure the availability of drugs according to patient needs. In the context of regulations, the implementation of these



practices complies with the principles regulated by Regulation No. 76 of 2016, which emphasizes pharmaceutical service standards in hospitals.

### Conformity to Theory and Regulations

#### 1) Medicine Selection

The drug selection practices at Dr. Sitanala Public Hospital in Tangerang City demonstrate the effective application of health management and interdisciplinary pharmacy theory through collaboration between the Head of the Pharmacy Installation, doctors, and nurses. This approach aligns with the findings of research by Manojlovich et al. (2016) and Mekonnen et al. (2016), which highlight the importance of interprofessional communication in enhancing medication safety and reducing medication errors. These practices are also in accordance with the principles outlined in Regulation of the Minister of Health No. 76 of 2016, emphasizing the importance of comprehensive and effective drug management in healthcare facilities. Thus, Dr. Sitanala Public Hospital not only adopts best practices based on the latest theories and research in the field of pharmacy and health management but also complies with government regulations to ensure the provision of effective, efficient, and safe services to patients, in accordance with applicable health policy standards.

#### 2) Medicine Planning

The drug needs planning process at Dr. Sitanala Public Hospital demonstrates the application of a structured and effective pharmacy management model, aligned with pharmacy management theory and the standards of Regulation of the Minister of Health No. 76 of 2016. The interdisciplinary collaboration involving the Head of the Pharmacy Installation, doctors, and nurses underscores the importance of team cooperation and effective communication, supporting theories presented by McLaughlin & Kaluzny (2017) and research findings by Pedersen et al. (2016). This practice illustrates how the integration of pharmacy services with healthcare services can create an evidence-based and efficient service provision system. Despite facing challenges such as changes in doctors' decisions and difficulties in coordinating Pharmacy and Therapeutics Committee (PTC) meetings, this indicates room for improvement in risk management and quality control aspects, referring to the principles outlined in the Regulation of the Minister of Health. This

reaffirms the importance of ongoing evaluation and adjustment in the pharmacy management system to achieve optimal and safe service standards for patients.

### 3) Procurement

The drug procurement strategy at Dr. Sitanala Public Hospital reflects the application of supply chain management and effective pharmacy management principles, in line with existing theories and the regulations of Ministry of Health Regulation No. 76 of 2016. The process includes structured budget planning, setting realistic Own Estimate Prices (OEP), using e-catalogs, and efficient warehouse management, following principles described by Schneller and Smeltzer (2006). The approach emphasizes the importance of interdepartmental coordination, planning based on accurate data, and fair pricing to ensure efficiency in drug procurement. Moreover, the drug procurement strategy at Dr. Sitanala Public Hospital also adheres to Ministry of Health Regulation No. 76 of 2016, highlighting the importance of transparent procurement, drug quality monitoring, and the utilization of information technology to improve the quality and safety of medication use. These practices demonstrate Dr. Sitanala Public Hospital's commitment to implementing efficient pharmacy management in compliance with health standards, ensuring that patient needs are met in a responsible and sustainable manner.

### 4) Reception

The drug reception procedure implemented by Dr. Sitanala Public Hospital underscores the importance of strict and structured procedures to ensure the quality and safety of medications. Steps that include document verification, physical checking of medications, and storage that meets temperature requirements and environmental conditions reflect the application of effective pharmacy management and quality control theories. This approach is supported by research in the field of pharmacy, as outlined by Niazi (2019), which emphasizes the necessity of accurate drug reception processes to eliminate the risk of counterfeit or expired drugs. Furthermore, this practice aligns with Ministry of Health Regulation No. 76 of 2016, which demands rigor in the reception and management of drugs in healthcare facilities. Thus, Dr. Sitanala Public Hospital demonstrates the integration between good pharmacy management principles, recent research, and adherence to national

regulations in its drug reception procedures, showing their commitment to providing safe and quality healthcare services.

#### 5) Storage

The drug storage management in the pharmacy warehouse at Dr. Sitanala Public Hospital reflects the application of efficient pharmacy management principles, aligned with pharmacy theories related to drug stability and efficacy, and complies with the standards of Ministry of Health Regulation No. 76 of 2016. Practices such as appropriate temperature regulation and strict monitoring of medication expiration dates emphasize the importance of maintaining storage conditions to ensure drug safety and quality, in accordance with research by Khan & Khan (2016). Ministry of Health Regulation No. 76 of 2016, which stresses the maintenance of proper storage conditions and adaptive stock management, serves as a crucial reference in the operations of the pharmacy warehouse at Dr. Sitanala Public Hospital. Adherence to these standards demonstrates the hospital's commitment to meeting drug safety and quality standards, highlighting the importance of implementing good and adaptive pharmacy management practices to enhance quality healthcare services.

#### 6) Distribution

The drug distribution process at Dr. Sitanala Public Hospital demonstrates alignment with pharmacy management and health logistics theories, as well as compliance with Ministry of Health Regulation No. 76 of 2016. Drug procurement through e-catalogs and meticulous inspection in the pharmacy warehouse underline the importance of an organized procurement system, accurate stock control, and the implementation of information technology to achieve efficiency and accuracy in pharmacy management. Support for the transition to a more automated and modern administration system is crucial, in line with research by Leape et al. (2012) that highlights the limitations of manual recording methods in effective drug stock management. This practice is consistent with Ministry of Health Regulation No. 76 of 2016, which emphasizes the importance of accurate procurement, reception, recording, and reporting, as well as the use of information technology. Challenges in adapting new technology reflect obstacles in following regulations and standards,

underlining the need for systematic improvements in pharmacy management at Dr. Sitanala Public Hospital.

7) Prescription

The prescription formulation process at Dr. Sitanala Public Hospital in Tangerang City implements principles of prescription management and clinical pharmacy, aligned with national health regulations. Strict prescription verification steps, effective communication between pharmacy staff and medical personnel, and patient education on medication use and side effects, are efforts to ensure safe and effective treatment. This approach is supported by clinical pharmacy research by Bates et al. (2018), demonstrating the importance of prescription verification and interprofessional communication in reducing medication errors and enhancing patient safety. The entire procedure also reflects compliance with Ministry of Health Regulation No. 76 of 2016, which emphasizes the importance of disciplined prescription management, patient education, and monitoring of side effects as crucial aspects of hospital pharmacy practice. The practices at Dr. Sitanala Public Hospital illustrate the application of current theories and regulations in clinical pharmacy management to improve healthcare service quality.

8) Giving

The medication administration process at Dr. Sitanala Public Hospital in Tangerang City is carried out by adopting strict and organized procedures, reflecting the application of pharmacy management theory and clinical medication administration practices, as well as complying with the standards of Ministry of Health Regulation No. 76 of 2016. The procedural stages, which include preparation, packaging, and delivery of medications, are executed with detailed checks to ensure the safety and effectiveness of treatment. Patient education on how to use medications and information about potential side effects emphasizes the importance of the educational aspect in clinical pharmacy. Research by Bates et al. (2009) supports this practice, indicating the significance of meticulous verification procedures and patient education as key factors in reducing medication errors and enhancing therapy success. The approach taken by Dr. Sitanala Public Hospital in medication administration demonstrates a clear priority towards patient safety and

treatment success, in line with current principles in pharmacy management and medication administration.

9) Drug Therapy Control and Monitoring

The drug control and therapy monitoring system implemented at Dr. Sitanala Public Hospital demonstrates a comprehensive practice, in accordance with principles of pharmacy management and quality control. This process involves regular monitoring of drug stock, verification of physical conditions, as well as monitoring expiration dates and side effects, supporting the principles of medication safety and quality as emphasized by O'Leary et al. (2012) and Flynn et al. (2012). An integrated reporting system supports continuous improvement initiatives in drug management, reflecting compliance with national pharmacy management standards as set out in Ministry of Health Regulation No. 76 of 2016. Although these practices show a commitment to medication safety and quality, challenges such as policy inconsistencies and limitations of information technology indicate a need for improvement, especially in staff training and technology integration aspects.

10) Administration

The medication administration process at Dr. Sitanala Public Hospital in Tangerang City implements principles of pharmacy management and health logistics efficiency, in line with existing theoretical frameworks and Ministry of Health Regulation No. 76 of 2016. The structured steps undertaken, from ordering to information management, demonstrate the application of good pharmacy management principles. The integration of information technology in the medication administration process underscores Dr. Sitanala Public Hospital's efforts to enhance efficiency and safety in drug management, supporting the findings of Poudel & Nissen (2016) on the benefits of information technology in pharmacy management. The consistency of these practices with pharmacy management theory and national health regulations indicates the hospital's commitment to improving the quality and safety of healthcare services.



## 5. CONCLUSIONS

### Conclusions

The research conducted at Dr. Sitanala Public Hospital in Tangerang City has demonstrated that the pharmacy management practices at this hospital are overall in alignment with the principles of health management and interdisciplinary pharmacy theory, as well as compliance with the regulations set forth in Ministry of Health Regulation No. 76 of 2016. From the process of drug selection to administration, all stages emphasize the importance of a structured system, strict verification, and effective interprofessional communication to ensure the safety and effectiveness of treatment.

Specifically, the processes of drug selection, needs planning, procurement, reception, storage, distribution, drug control, and therapy monitoring, prescription formulation, medication administration, and drug administration have been designed to ensure the quality and safety of medications provided to patients, in line with the principles of patient education and side effect monitoring. The alignment with pharmacy management and quality control theories, as well as the application of information technology, indicates efforts to enhance efficiency and accuracy in pharmacy management.

Challenges such as those in information technology and interdisciplinary coordination indicate areas requiring improvement. However, the commitment to continuous improvement and adherence to the standards of Ministry of Health Regulation No. 76 of 2016 reflects Dr. Sitanala Public Hospital's dedication to enhancing the quality of pharmacy management and providing better healthcare services.

In conclusion, Dr. Sitanala Public Hospital in Tangerang City has implemented a comprehensive and efficient pharmacy management system that supports patient safety and treatment effectiveness, in accordance with current principles in pharmacy and health management, as well as applicable national health regulations.

### Implications

This study makes a significant contribution to the development of drug supply chain management theory in the hospital context, highlighting the importance of integrating the National Formulary, the drug procurement process, availability in e-catalogs, and the analysis of price and quality in optimizing drug management. Furthermore, these findings shed light on how the local context affects the implementation of national policies such as the National Formulary (FORNAS) and other health



regulations, inviting a deeper perspective on the adaptation of drug supply chain strategies by hospitals according to their unique needs and characteristics.

From a managerial standpoint, the results of this study offer valuable guidance in the aspect of drug management, emphasizing the need for efficient drug inventory management. This includes considerations for drug availability in e-catalogs, affordability, handling shortages of generic drugs, and adapting to local disease patterns. These implications suggest the importance of tailoring the Hospital Formulary with considerations for local disease patterns, patient economic levels, and hospital specifications. The adoption of modern technology such as e-catalog and e-purchasing systems is highlighted as a key factor in enhancing efficiency and transparency in drug procurement. In addressing financial constraints, particularly related to drug pricing, a collaborative strategy between managers and the quality and cost control team is recommended to ensure effective and efficient drug purchasing.

### Suggestions

Based on the analysis and findings from this study, several strategic recommendations and future research directions for Dr. Sitanala Public Hospital in Tangerang City and other healthcare institutions are identified. First, enhancing collaboration with health associations at various levels can enrich knowledge and practices in health management, facilitating the exchange of resources that can improve service quality. Second, continuous investment in health information technology, such as advanced patient data management systems, electronic medical records, and telemedicine platforms, is necessary to enhance service efficiency and accessibility. Third, the development of human resources through ongoing training and education for both medical and non-medical staff is crucial to ensuring high-quality healthcare services.

Furthermore, future research could focus on analyzing the impact of the Hospital Formulary on patient outcomes, treatment costs, and drug procurement efficiency. Comparative studies of Formularies in hospitals with different characteristics could provide deeper insights into the influence of disease patterns and economic levels on drug selection. Additionally, analyzing the role of technology in the drug and medical equipment procurement process, such as the effectiveness of e-catalogs and e-purchasing, will offer further understanding of how to improve procurement processes to achieve better efficiency, transparency, and cost control.

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