

# **Application of Pharmaceutical Care Standards in the Drug Storage Phase at Pharmacy X Lingsar, West Lombok Regency, in Accordance with the Indonesian Ministry of Health Regulation Number 17 of 2024**

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## **ABSTRACT**

Pharmacies, according to regulations, are vital locations within the healthcare service system. The aim of this research is to determine the implementation of pharmaceutical service standards at Pharmacy X Lingsar, West Lombok Regency, specifically during the drug storage phase. This study employs a descriptive observational method, involving direct observation of the storage system using a checklist at Pharmacy X Lingsar, located in Lingsar District, West Lombok Regency. The research findings indicate the following compliance rates: Spatial Arrangement 83.33%, Drug Organization 83.33%, Stock Card Recording 100%, and Drug Quality Monitoring 100%. These results suggest that drug storage practices at Pharmacy X Lingsar do not fully meet the standards outlined in the Ministry of Health Regulation of the Republic of Indonesia No. 17 of 2024 and the National Agency of Drug and Food Control of the Republic of Indonesia (BPOM RI) of 2018.

Keywords: Storage, Drugs, Pharmacy

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## **INTRODUCTION**

A pharmacy, according to statutory regulations, is a vital component of the healthcare service system. It is in this setting that pharmacists, as pharmaceutical professionals, carry out their professional practice to provide comprehensive pharmaceutical services. These services encompass two main aspects: first, the managerial aspect, which focuses on the efficient and responsible management of medicines and pharmaceutical supplies. This includes drug requirement planning, procurement, receiving and proper storage according to standards, disposal of unqualified drugs, stock control, as well as accurate recording and reporting. Proper

drug storage, in accordance with applicable standards, is key to maintaining drug quality until it reaches the patient (Ministry of Health Regulation, 2016).

In the field of pharmacy, proper drug storage is not merely about placing medications on shelves. More than that, it involves a series of measures aimed at protecting and preserving drug quality. These measures include placing medications in secure locations protected from theft, direct sunlight, extreme temperatures, and excessive humidity. By doing so, the quality of drugs can be maintained until they are used by patients.

It is important to understand that drugs, as defined by legislation, are substances or mixtures that have significant effects on the human body. Drugs can be used for various purposes, including diagnosing diseases, preventing the onset of illnesses, treating existing conditions, restoring health, promoting general wellness, and supporting family planning programs through contraceptives. Therefore, proper handling of drugs, including their storage, is crucial to ensure their effectiveness and safety in use (Ministry of Health Regulation, 2016).

The availability of medications is the heart of a pharmacy. But what happens if those medications are damaged or rendered ineffective due to improper storage? Errors in storage procedures or poor storage conditions can have serious consequences. Patients may not receive the medications they need or may be given drugs that are no longer effective. This not only harms the patients but also negatively impacts the pharmacy's management, as adequate drug availability is critical in pharmaceutical services. Mistakes in storage can compromise the overall quality of service (Ardiningtyas et al., 2019).

Pharmacy X in Lingsar is a healthcare facility that plays a vital role in providing medications to the local community. However, an initial study indicates potential issues in drug management at this pharmacy. It is suspected that the current drug storage system does not fully comply with established standards, leading to suboptimal service. Patients may not receive the appropriate medications, or the quality of the medications dispensed may be inadequate. Realizing the crucial importance of proper drug storage, the researcher decided to conduct a thorough evaluation of the storage system at Pharmacy X in Lingsar.

### **Methodology**

This research employs a descriptive observational method, involving direct observation of the storage system using a checklist at Pharmacy X Lingsar, located in Lingsar District, West Lombok Regency. Data collection was conducted in November 2024, within a research period spanning from October to December 2024.

### **Population and Sample**

In this study, the population is the entire drug storage system at Pharmacy X Lingsar. Meanwhile, the sample examined in detail includes specific aspects of the

storage system, encompassing storage space layout, drug arrangement methods, drug stock records, and observation of drug quality at Pharmacy X Lingsar.

Data collection was conducted in two ways: interviews with the manager and person in charge of Pharmacy X Lingsar to obtain in-depth information, and direct observation of the drug storage system using a checklist as a guide. This checklist helps the researcher to ensure that all aspects of the sample to be studied are covered. The data collected from the checklist is then processed using scoring and percentage calculation methods. The results are presented in tabular form to facilitate interpretation. This data processing follows the method described by Asyikin (2018). The data is processed using the following formula:

$$\% \text{ Implementasi} = \frac{\text{skor empirik}}{\text{skor ideal}} \times 100\%$$

In this study, empirical scores were obtained by summing all scores derived from the observations. Meanwhile, the ideal score was calculated based on the total number of variables established (Asyikin, 2018). Scoring was performed by assigning a value of 1 for a "Yes" answer and a value of 0 for a "No" answer. Subsequently, the data were analyzed descriptively to determine the percentage of implementation of a good drug storage system, which was assessed based on 5 criteria (Asyikin, 2018).

- a. Excellent: 81% - 100%
- b. Good: 61% - 80%
- c. Fair: 41% - 60%
- d. Poor: 21% - 40%
- e. Very Poor: 0% - 20%

## Result and Discussion

### 1. Spatial Planning

**Table 1.1 Spatial Planning**

No.	Statement	Yes	No
1	There is ventilation and air circulation	√	
2	There is a medicine rack/cabinet	√	
3	There is a refrigerator	√	
4	There is a dedicated space for damaged and expired medications		√
5	There is a dedicated cabinet for narcotics and psychotropics	√	

6	There is a thermometer	√	
<b>Score Obtained</b>		5	1
<b>Average</b>		83,33%	16,66%

Based on the table above, the results of observations on the Spatial Planning Aspect that Meets Standards (83.33%) indicate: Presence of Ventilation and Air Circulation: Good ventilation and air circulation are essential for maintaining air quality in the pharmacy, preventing the accumulation of contaminants, and creating a comfortable working environment. Finding that adequate ventilation in pharmacies contributes to reducing exposure to airborne particles and improving overall air quality (Awad et al., 2021).

Presence of Medicine Racks/Cabinets: The availability of adequate medicine racks or cabinets is important for organized storage of medications. This facilitates quick identification and retrieval of medicines, as well as minimizing the risk of medication-related errors. Well-organized medication storage in pharmacies is correlated with a reduction in medication errors. Presence of a Refrigerator: A properly functioning refrigerator is critical for storing medications that require controlled temperature conditions. This includes medications that are susceptible to heat and humidity, such as vaccines, insulin, and other biological preparations (Otoo et al., 2022).

(Gogltay et al., 2023) emphasized the importance of strict temperature monitoring in pharmacy refrigerators to ensure drug efficacy and safety. Presence of a Dedicated Cabinet for Narcotics and Psychotropics: The existence of a dedicated cabinet for storing narcotics and psychotropics is a strict legal requirement. This helps prevent misuse, theft, and unauthorized access to controlled medications. (Al-Dhawayan et al., 2021) stated that compliance with regulations for the storage of narcotics and psychotropics in pharmacies is correlated with a reduced risk of abuse. Presence of a Thermometer: The use of a temperature measuring device (thermometer) is an indication that the pharmacy is actively monitoring and maintaining the environmental temperature for drug storage. This ensures the stability and potency of medications are maintained during storage, in accordance with manufacturer recommendations. The importance of continuous temperature monitoring in pharmacies to ensure optimal drug storage (Gupta et al., 2022).

In the next indicator stage, the availability of a dedicated space for damaged and expired medications has not met the standard, with a score of 16.66%. This non-compliance is due to the absence of a dedicated area for damaged and expired medications in the pharmacy. According to an interview with one of the pharmacy

staff, the storage space is limited, so damaged and expired medications are still stored in cardboard boxes. Medications that are no longer suitable for use must be identified and physically separated from those that are still fit for sale. This prevents the risk of administering the wrong medication to patients, reduces the potential for adverse side effects, and allows for safe disposal in accordance with environmental regulations. Improper storage of medications, including mixing expired drugs with those fit for sale, contributes to an increased risk of medication errors (Smith et al., 2021). Overall, the spatial arrangement in this pharmacy can be considered very good, with a score of 83.33%. However, significant improvement can be achieved by providing a dedicated space for damaged and expired medications. By prioritizing the addition of this facility, the pharmacy can enhance operational safety, ensure compliance with regulations, and provide better service to patients.

## 2. Medication Arrangement

**Table 1.2 Medication Arrangement**

No.	Statement	Yes	No
1	Medications are grouped alphabetically	√	
2	Medications are grouped by dosage form	√	
3	Medications are grouped by therapeutic class		√
4	Medications requiring cold storage are stored in the refrigerator		
5	Medications with shorter expiration dates are placed in front of medications with longer expiration dates (FEFO)	√	
6	For medications with the same expiration date, those that arrived earlier are dispensed first (FIFO)	√	
<b>Score Obtained</b>		5	1
<b>Average</b>		83,33%	16,66%

Based on Table 1.2 above, the research results on the medication arrangement stage based on the pharmacy's medication table were evaluated based on six criteria. The results show that the pharmacy has implemented most of the principles of good medication grouping, but there is one aspect that needs

improvement. Aspects of Medication Grouping that Meet Standards (83.33%): Medication Grouping Based on Alphabetical Order: Grouping medications alphabetically simplifies the search and retrieval of medications, reduces the time required to serve patients, and minimizes the risk of medication retrieval errors. The importance of a clear and easily understood drug storage and grouping system to reduce dispensing errors (Lesar et al., 2021).

Medication Grouping Based on Dosage Form: Grouping medications based on dosage form (tablets, capsules, syrups, etc.) helps optimize storage space, facilitates medication identification, and reduces the risk of drug damage due to inappropriate storage conditions. Logical arrangement and grouping of drugs based on dosage form facilitates the work of pharmacy staff and reduces the risk of errors (Karasu et al., 2022). Medications Requiring Cold Storage are Stored in the Refrigerator: Storing medications that require cold temperatures in the refrigerator is crucial to maintain drug stability and potency. The refrigerator must be well-managed to ensure the temperature remains within the recommended range. The importance of proper drug storage according to established temperature requirements to maintain drug quality and effectiveness (Gupta et al., 2023).

Medications with Shorter Expiration Dates are Placed in Front of Medications with Longer Expiration Dates (FEFO): The FEFO (First Expired, First Out) system ensures that medications with the closest expiration dates are dispensed first, minimizing the risk of unused expired medications, and reducing financial losses. The importance of implementing an effective FEFO system in pharmacies to minimize drug waste (Teye et al., 2021). Medications with the Same Expiration Date are Dispensed in the Order They Arrived (FIFO): The FIFO (First In, First Out) system ensures that medications that entered the pharmacy first are dispensed first, especially if medications have the same expiration date. This system helps maintain stock turnover and minimizes the risk of expired medications. The implementation of a good FIFO system is correlated with a reduction in the risk of expired medications in pharmacies (Erah et al., 2022).

The indicator that has not met the standard in the Therapeutic Class-Based Grouping stage is scored at 16.66%. According to an interview with one of the pharmacy staff members, the non-compliance in this stage is due to the pharmacy's preference for organizing medications alphabetically rather than grouping them by therapeutic class (e.g., antibiotics, analgesics, antihypertensives). Overall, the medication grouping in this pharmacy is commendable, with a score of 83.33%. However, it is recommended to implement grouping based on therapeutic classes. By doing so, the pharmacy can enhance efficiency, safety, and accuracy in medication services. Grouping medications by therapeutic class facilitates identification based on indications or pharmacological effects. The importance of such grouping lies in simplifying identification and reducing the risk of errors.

### 3. Stock Card Recording

**Table 1.3 Stock Card Recording**

No.	Statement	Yes	No
1	Stock cards are available	√	
2	Recording must be orderly and accurate	√	
3	The physical count of medications is reconciled with the stock card (stock opname) periodically, at least once every 6 months	√	
4	The stock card contains at least the following information: drug name, expiration date, quantity received, quantity dispensed, and remaining stock	√	
<b>Score Obtained</b>		4	
<b>Average</b>		100%	

Based on Table 1.3, the research results on medication stock card recording in the pharmacy are presented. This evaluation is based on four main criteria, which are important indicators of an effective and accurate stock recording system. The results show that the pharmacy has met all criteria, with a compliance rate of 100%. Analysis of Compliance with Stock Card Recording Criteria: Stock Cards are Available: The availability of stock cards for each medication is the foundation of an effective stock control system. Stock cards provide a detailed record of the movement of each medication in the pharmacy. (Sanches-Ferreiro et al., 2021) in their research emphasized that the use of a comprehensive stock recording system significantly reduces errors in drug inventory management.

Recording Must Be Orderly and Accurate: Orderly and accurate recording is crucial to ensure the reliability of stock information. Inaccuracies in recording can lead to stock shortages, overstocking, expired medications, and potential errors in dispensing. The implementation of an electronic recording system improves accuracy and efficiency in medication stock management. Reconciling the Physical Count of Medications with the Stock Card (Stock Opname) Periodically, at Least

Once Every 6 Months: Performing stock opname periodically (at least every 6 months) is important to validate the accuracy of the stock card and identify discrepancies between stock records and the physical count of medications. Stock opname helps detect potential problems such as loss, damage, or recording errors (Al-Shareef et al., 2022). (Hussein et al., 2023) argued that routine stock opname is essential to maintain the accuracy of stock data and prevent problems related to drug inventory.

The Stock Card Contains at Least the Following Information: Drug Name, Expiration Date, Quantity Received, Quantity Dispensed, and Remaining Stock: Complete information on the stock card facilitates effective stock management and ensures the ability to track the movement of drugs, manage expiration dates, and monitor stock levels. The importance of comprehensive information in the stock recording system to support appropriate decision-making in drug inventory management. Based on the research results, it can be concluded that Pharmacy X has implemented an excellent medication stock card recording system. The 100% compliance rate with all criteria demonstrates a strong commitment to effective, accurate, and safe medication stock management.

#### 4. Drug Quality Observation

**Table 1.4 Drug Quality Observation**

No.	Statement	Yes	No
1	Storage area is not used for storing other items	√	
2	A temperature recording sheet is present.	√	
3	Drugs are not in direct contact with the floor.	√	
4	Stored in original containers.	√	
Score obtained		4	
Average		100%	

Based on the table above, the results of research on drug storage in the pharmacy were evaluated based on four criteria. The results show that the pharmacy has met all criteria, with a compliance rate of 100%. Analysis of Compliance with Drug Storage Criteria: Storage Area Not Used for Storing Other

Items: Drug storage areas should be dedicated only to medications and related materials. Storing other items in this area can cause contamination, confusion, and difficulty in finding necessary medications. (Ayalew et al., 2021) emphasize the importance of separating drug storage areas from other items to prevent the risk of contamination and errors. Temperature Recording Sheet Present: Monitoring the temperature in the drug storage area is crucial to ensure the stability and quality of medications. A temperature recording sheet or other temperature monitoring devices help track temperature fluctuations and ensure the temperature remains within the recommended range. The importance of continuous temperature monitoring in pharmacies to ensure optimal drug storage) (Gupta et al., 2023).

Drugs Not in Direct Contact with the Floor: Drugs should not be stored directly on the floor because they can be exposed to moisture, dust, and pests, which can damage the quality of the drugs. Drugs should be stored on shelves, cabinets, or pallets raised from the floor. found that proper drug storage, including avoiding direct contact with the floor, correlates with a reduction in drug spoilage). Stored in Original Containers: Storing drugs in their original containers helps protect the drugs from exposure to light, moisture, and other contaminants. The original container also provides important information about the drug, such as the drug name, dosage, expiration date, and batch number. The importance of keeping drugs in their original packaging to protect them from environmental factors and ensure proper identification) (Al-Warorafi, 2023).

## CONCLUSION

Based on the results of the research conducted at Pharmacy X Lingsar, it shows that in general the drug storage system obtained an average value of (83.33%), which means that it still does not meet the standards set based on the Regulation of the Minister of Health of the Republic of Indonesia No. 17 of 2024 and BPOM RI in 2018.

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