

## **Evaluation of Drug Management Indicators in a Pharmacy**

### **Installation of Private Hospital Banyumas Regency**

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#### **ABSTRACT**

Drug management in hospitals is one of the important aspects of hospital management, especially at the planning and procurement stages. Inefficiency in this process can negatively impact on the hospital, both medically and economically. This research aims to determine the description of the planning and procurement stages of medicines at a private hospital in Banyumas district. Evaluation is carried out by measuring indicator values against applicable standards. The research uses non-experimental observational methods with a descriptive design. The data collected is in the form of data on drug planning and procurement, drug use, drug stock, stock taking reports. The results showed that the success rate of treatment planning was 107.50%, the frequency of purchasing drugs in the low, medium and high categories was 38.58%, 35.03% and 26.4% respectively, while the percentage of expired drugs and the percentage of stock dead were 1.25% and 2.16% respectively.

**Keywords:** Evaluation, drug management, drug procurement, hospital pharmacy installation.

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#### **1. Introduction**

Most health service funding is allocated to medicines, so medicines are one of the main components of the health care system. The government implements comprehensive health policies, including pharmaceutical policies, as an effort to guarantee the best health services to the community (Anggriani, 2020). Planning needs, purchasing or collecting, transferring, storing, and then distributing goods to supply to clients are steps in the logistics management process. The integration of many aspects and the need for strategic transportation and storage is an important aspect of logistics operations. Logistics management is one of the most important aspects of healthcare facilities such as hospitals because it is a necessity for them to provide high-quality services to their patients. This shows that hospitals must monitor and plan their logistics operations carefully to prevent damage to facilities or the surrounding environment (Syarif, 2023).

According to the Action Plan of the Director General of Pharmaceuticals and Medical Devices for 2020–2024, a system is needed to achieve the highest level of public health. The component

parts of the system come together to create subsystems that work together to manage health. To support pharmaceutical supplies, medical devices and food preparations, this subsystem includes medicines and health equipment. This subsystem contributes to protecting society from drug errors and misuse, rational use of drugs, and efforts for independence in the pharmaceutical sector through the use of domestic resources. This also contributes to the availability, distribution and affordability of medicines, especially essential medicines (Kemenkes RI, 2020).

Several studies explain that hospitals do not fully meet standards or indicators in drug management. Rumangkang (2023) explains that a drug management system that meets standards must allocate 30% of funds for pharmaceutical installations, experience payment delays of 1 to 2 times, have a drug availability level of 13 months, and require 2 drugs. items per recipe. The stages in managing drugs that do not meet standards are as follows: compliance with the National Formulary for medicinal products (85.23%).

Akbar (2022) in his research at hospitals in Central Kalimantan explained that dead stock of medicines (3.89%), expired/damaged medicines (2.17%), and physical suitability of medicines with stock cards (57.14%) were the criteria. insufficient research findings at the storage stage. At the drug use stage, there were 2.62 prescriptions for each drug item, 95.80% of the drugs that could be given, and 76.34% of the drugs prescribed according to the formulary. In this hospital, base on the monthly pharmaceutical report still shows dead stock and expired drugs. This is of course an internal problem because the logistics management process used to procure medicines is not in accordance with the protection provided by subsystems in the pharmaceutical and medical equipment sector according to the Action Plan of the Director General of Pharmaceuticals and Medical Devices 2020-2024. There is still a disparity between the reference or goal that has been set and the actual situation, if you see the problem above. Researchers are interested in the logistics management process of procuring medicines in hospitals.

## **2. Literature Review**

### *2.1 Medication Planning*

Planning is the process used to create a list of needs for pharmaceutical supplies related to a policy based on the idea of systematic actions carried out in a logical sequence to achieve the goals or targets that have been set. The planning process involves quantifying needs, identifying goals, and deciding on the approaches, roles, and resources needed to achieve the goals. The best planning is done by utilizing medical resources and pharmaceutical preparations effectively and efficiently (Kemenkes RI, 2016).

### *2.2 Drug Procurement*

The procurement process is a continuous process that begins with selection, includes determining the required quantity, changing requests and budgets, selecting procurement methods, selecting suppliers, selecting contract details, monitoring the procurement process, and ends with payment. If the procurement process is carried out by another department outside the pharmaceutical installation, it must involve pharmaceutical personnel to ensure that pharmaceutical supplies, medical devices and consumable medical materials meet the required quality and specifications (Kemenkes RI, 2016).

## **3. Research Methodology**

This research has a non-experimental observational design. Retrospective data was collected, then presented descriptively. Descriptive research is used to study the conditions and implementation of a program and then make modifications to the program (Notoatmodjo, 2012). Retrospective data collection was carried out from October 2022 to December 2022. During a three month period (October–December 2022), information was collected starting from drug planning and purchasing data, drug use data, expired drug lists, and dead stock drug data. The accuracy of drug planning and procurement, the frequency of drug purchases, the percentage value of expired and damaged drugs, and the percentage value of dead stock were all checked using this research data. Data collection findings were then compared with indicators of medication management in hospitals.

## 4. Results

### 4.1 Achievement of Planning Indicators

The results of the planning achievements in this research were obtained using the following formula:

$$X = A/B \times 100\%$$

Where:

A = Number of drug items in actual purchase

B = Number of drug items in the plan

The Head of the Hospital Pharmacy Installation supervises the treatment planning process at Hospital Medicines purchased by this hospital depend on the method of consumption used. To make plans for the next period, it is necessary to study consumption trends in the previous period.

Table 1. Achievements of Drug Procurement Planning

Month	Planning	Procurement	Difference	Percentage	Deviation Percentage
October	395	433	38	109.62%	9.62%
November	398	430	32	108.04%	8.04%
December	412	432	20	104.85%	4.85%
	1215	1295	80	322.51%	22.51%
Total Average				107.50%	7.50%

Based on the table above the percentage results are 107.50% when accessible drug items are compared with actual drug use. According to Pudjiansih (1996), the standard value of this indicator is 100%. The results obtained exceed the standard, which means that this indicator has not reached efficiency. Because there are more types of drugs proposed than consumed, the proportion exceeds the 100% threshold. The recommended data contains more drug item types than necessary because the supplier did not fulfill all requests made in the previous month, and as a result, those drug item types must be rescheduled. This error is the result of planning that does not take into account drug use. This condition can be caused by changes in certain diseases that require immediate treatment, necessitating a new purchase; this can also be caused by a shortage of certain medicines at the distributor, requiring re-planning; or due to changes in physicians' prescribing patterns, which can also result in inaccurate planning. As a result, a number of certain drugs that were originally thought to still be in use. The fact that pharmacy installation prepares for two months of consumption when planning is another factor that contributes to the suggestion of overutilization. The data above is greater than Pristiyantoro's (2020) research results of 61.52%. This shows that not all of the drugs in question are implemented, because there are certain drugs

in the list of developed pharmaceutical needs plans that are rarely or not used at all. Based on research findings by Ismedsyah and Rahayu (2019), the planned deviation is 4.7%. The quality of pharmaceutical services decreases as the proportion of planned deviations increases.

#### 4.2 *Frequency of Procurement of Each Medication Item*

Every month the hospital carries out procurement according to plan. Pharmaceutical installations make purchases directly from suppliers. Based on procurement frequency, the frequency of drug purchases over three months is divided into three categories: low frequency (3), medium (3-6), and high (>6) (Pudjaningsih, 1996). When buying drugs in large quantities the frequency is low, and when buying drugs in small quantities the frequency is high. The large number of medium and high frequency drug items shows the ability of hospital pharmacy installations to adapt to variations in drug demand by adjusting quantity requirements. Repeated drug purchases also show that the demand for drugs in hospital pharmacies is very high.

Table 2. Frequency of Medicine Procurement October-December 2022

Procurement Frequency	Number of Medication Items	Percentage	Status
<3	76	38.58	Low
3-6	69	35.03	Medium
>6	52	26.4	High
Total	197	100	

Based on the table above, it can be concluded that there are 76 items of medicine and the low purchasing frequency is 38.58 percent, which can cause slow turnover of medicines and the possibility of dead stock or even expired medicines if there is no supervision.

The results of calculating the percentage frequency of procurement of each drug item are obtained from the drug information entered at the pharmacy installation and then observing the number of times the drug item is ordered. The results of drug procurement for low frequency were 38.58%, medium frequency was 35.03%, and high frequency was 26.4%. Medium and high frequency findings were 61.43% according to drug purchase frequency data. Frequent drug purchases indicate that the flow of drugs in the hospital is efficient and can help keep drug supplies from running out. Medicines with a low purchasing frequency (up to 38.58%) must be closely monitored because it is possible that these medicines have a low turnover rate, resulting in expiration and dead stock.

#### 4.3 *Expired and Damaged Medication*

Storage of damaged medicines by looking at the storage conditions of damaged medicines in the hospital warehouse. Signs of damaged medicine include changes in quality such as changes in the smell, shape, color and taste of the medicine (Perumpu, 2022).

Table 3. Number of expired medicines

Medicine name	Dosage Form	Amount	Drug Prices	Value of Expired Medicines
Misoprostol 200mg	Tablet	12	Rp. 14,200	Rp. 170,400
Coxavit	Tablet	32	Rp. 5,500	Rp. 176,000
MgSO4	Fluid	4	Rp. 9,100	Rp. 36,000
Gentamicin	Injection	1	Rp. 20,000	Rp. 20,000
Vitamin K	Injection	15	Rp. 6,100	Rp. 91,500
KAEN 3A	Fluid	15	Rp. 22,000	Rp. 330,000
Fentanyl	Injection	10	Rp. 34,000	Rp. 340,000
Infatrim	Tablet	210	Rp. 310	Rp. 65100
NaCl 3%	Fluid	3	Rp. 44,250	Rp. 132,750
Allopurinol 100mg	Tablet	100	Rp. 350	Rp. 35,000
Metvell	Injection	5	Rp. 18,000	Rp. 90,000
Total				Rp. 1,354,000
Stock Taking Value				Rp. 108,314,000

Based on drug data in hospital pharmacies, calculating the percentage value of expired and damaged drugs, shows that there are still 1.25% of expired and damaged drugs worth Rp. 1,354,000 This proportion is calculated by dividing the total cost of used medicines by the value of inpatient stock, then multiplying the result by 100%. Even though the variation is only 1.25%, this is still considered inefficient because it harms hospital costs.

A small portion of medicines eventually expired due to carelessness in storage, which led to this incident. The availability of many doctor's prescriptions can lead to modifications in drug use, resulting in the accumulation and expiration of drugs that are not in circulation and are not used. The organization of storage as well as the ability and ability of pharmaceutical personnel to record medicines that are approaching their expiry date must be assessed so that expired stock does not occur. According to Satibi (2017), the high proportion of expired drug values is caused by inaccurate planning and monitoring of substandard drug quality during drug storage procedures. According to the Indonesian Ministry of Health (2010), the optimal percentage of damaged or expired medicines is zero percent.

**4.4 Percentage of Dead Stock (Dead Stock)**

According to Satibi (2017), drug stock that has not been used for 3 months or for 3 months without transactions is called dead stock.

Table 4. Percentage of Dead Stock

Number of medication items >3 months unused	Number of drug items in stock	Dead stock percentage
28	1295	2.16%

The proportion of dead stock—drugs that have not been used or no transactions have occurred for three months—determined through observation is 2.16%. Of the 1,295 types of medicine available, there are 28 dead stock medicine items or medicines for which there are no transactions. The circulation of money is slowed by hospital losses due to dead drug stocks, as well as the risk of drug expiration and the potential danger of drugs if stored too long.

## **5. Discussion**

Planning activities in the private hospital pharmacy warehouse refer to established procedures. Planning activities and determining drug needs in pharmaceutical installations use the consumption method. This result is in line with the research results of Pratiwi (2012) which states that the method used in the hospital pharmacy warehouse sub-unit is to use the consumption method which is the basis for planning through report data on the number of previous uses. The consumption method is only based on previous consumption data which does not take into account the epidemiology of the disease. So the advantages and disadvantages are difficult to determine. When using the consumption method, the use of the medicine that comes out cannot be confirmed, there must be changes in the medicines that come out. So there will be shortages of stock and excess stock.

Represents the planning process carried out outside practices that are considered normal based on the feasibility of the planning stage, which is equivalent to 107.50%. The hospital's planning process showed inconsistencies in the length of time it took to receive orders and produce plans. Order lead time, also known as hold time, is the amount of time required between an order being placed and the hospital receiving the medication. To be able to provide sufficient drug safety stock to prevent stagnation or running out of drug stock, the ability to determine the quantity of drug safety stock is required.

The hospital procurement procedure begins with the handover of the pharmaceutical warehouse to the head of the pharmaceutical installation based on anticipated demand. The head of the pharmaceutical installation then places an order, which is then sent to the distributor concerned. The implementation of rational drug use will be possible with the availability of financing for purchasing drugs according to needs, so that it will improve the quality of health services that require health services. Electronic catalogs are used as a reference for purchasing medicines because the medicines they contain are safe and the prices are in accordance with legal standards. Drug usage data in the hospital information system can be used as a reference for ordering at any time or at a certain time, can be used to determine the time for drug procurement at this hospital. Perform necessary budgeting for drug acquisition procedures after reviewing current drug or drug stock data. If emergency medical supplies are needed, hospitals also request Cito.

*Dead stock* caused by poor drug procurement planning and procedures. Based on the type, quantity, and cost of pharmaceutical supplies, drug planning and procurement are modified to meet current demand and budget (Razak et al., 2012). To identify medicines that are experiencing dead stock, medicine stocks must be monitored and supervised every month (Wati et al., 2013). This will help reduce the occurrence of dead stock.

## **6. Conclusion**

The success rate of drug planning for purchasing was 107.50%. The average frequency of drug purchases is divided into three categories: low (38.58%), medium (35.03%), and high (26.4%). Medicines whose stock is out of stock are 2.16%, while expired and damaged medicines are 1.25%. Solid demand planning coordination between the Pharmacy Installation and the hospital is recommended to overcome this problem and increase the accuracy of treatment planning. In addition, a strong drug acceptance Standard Operating Procedure is needed to predict drug acceptance with short expired Date. Increased collaboration between prescribers and pharmacists

regarding drug planning is needed considering the shift in prescribing patterns, in addition to maximizing the combination of drug planning techniques based on consumption and morbidity to increase the accuracy of drug planning. Hospitals show better drug management as seen from indications of dead stock of drugs and expired drugs.

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