Available online on 15.02.2020 at http://ajprd.com

Asian Journal of Pharmaceutical Research and Development

Open Access to Pharmaceutical and Medical Research

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Research Article

Evaluation of Drug Management Achievement in Pharmacy Installation of Langsa General Hospital

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ABSTRACT

Objective: to evaluate the achievements of drug management in Pharmacy Installation of Langsa General Hospital
Design: The study used descriptive designs for 2018 data which were retrospective and prospective. Data was collected in the form of quantitative and qualitative data from document observations and interviews with relevant Pharmacy Installation officers.
Interventions: the intervened variable were drug selection, planning and procurement, and distribution.
Main **outcome measures**: the main measurement in this study were suitability of drug items available with the National Formulary, frequency of procurement of each drug item per year, accuracy of data on the number of drugs on the stock card, percentage and value of expired and / or damaged drugs, percentage of dead stock and level of drug availability.
Results: drug management system that conformed to the following standards were the suitability of the available drug items with the National Formulary (88.37%); the accuracy of data on the number of drugs on the stock card (100%) and drug availability (13 months 14 days). Drug mangement which were not accordance with standard: the frequency of procurement of each drug item per year; percentage of expired and / damaged drug values (2.64%) and percentage of dead stock (3.24%).
Conclusion: it could be concluded that the management of drugs in Langsa General Hospital Pharmacy Installation had not been fully effective and efficient in accordance with established standards.

Keywords: Drug management, Pharmacy Installation, General Hospital, Langsa

ARTICLE INFO: Received 21Nov. 2019; Review Completed 11 Jan. 2020; Accepted 24 Jan. 2020; Available online 15 Feb. 2020

Cite this article as:

Mauliana M*, Wiryanto W, Urip H, Evaluation of Drug Management Achievement in Pharmacy Installation of Langsa General Hospital, Asian Journal of Pharmaceutical Research and Development. 2020; 8(1):05-10.

DOI: http://dx.doi.org/10.22270/ajprd.v8i1.648

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INTRODUCTION

Hospitals have duty to provide health services, one of the services is pharmaceutical services [1]. Pharmaceutical Services is a direct and responsible service to patients who are responsible for pharmaceutical assistance with a view to improving the quality of life of patients [2].

Standards for Pharmaceutical Services in hospitals contain standards for the management of pharmaceutical preparations, medical devices, consumable medical materials and clinical pharmaceutical services. Pharmaceutical services are activities that must be approved, overcoming and resolving drug-related problems [2].Pharmaceutical services are supporting services and also one of the main revenuecenters, considering that more than 90% of health services in hospitals use pharmaceutical supplies (medicines, chemicals, radiology materials, consumable medical materials, medical devices and medical gases) and 50% of all hospital revenue comes from the management of pharmaceutical supplies, so if pharmaceutical supply problems are not managed carefully and responsibly it can be predicted that hospital revenue will decrease [3].

One important source in patient care is medicine. Medicine is an essential component that must be available in health care facilities, drugs are part of the relationship between patients and health care facilities, because the availability or absence

of drugs in health care facilities will have a positive or negative impact on service quality [4].

Good drug management is one aspect that influences pharmaceutical services in hospitals [5] and is an important aspect to improve the quality of hospital pharmaceutical services [6]. The purpose of drug management is the availability of drugs at any time in terms of quantity, type or quality [5].

Drug management in hospitals includes the stages of selection, planning and procurement, distribution, and use, which are interrelated with each other, so it must be well coordinated so that each can function optimally. The interrelated stages in the drug management cycle require an organized supply system so that activities run well and support each other, so that the availability of drugs can be guaranteed that supports health services and a potential source of hospital revenue [7].

Disconnected between each stage will result in inefficient supply and use of existing drug systems, affect the performance of hospitals both medically, economically and socially and will reduce public confidence in hospital services [4].

Analysis of the drug management process must be carried out, because inefficiency and drug management will have a negative impact on pharmaceutical service activities in the provision of overall health services, both medically, socially and economically [8].

The results of research by Fakhriadi Akhmad [9] who analyzed the efficiency of drug management in one of the hospital pharmacy installations in Indonesia found that the management of drugs was not efficient. Wati's research was also carried out in one IFRS in Indonesia, there is still a drug management system that is not in accordance with the standards. Ihsan et al who evaluated the management of drugs in a pharmaceutical installation of a hospital in Indonesia still found a management system that was not in accordance with standards [10].

The Langsa Regional General Hospital is a non-educational hospital owned by the Langsa City Government which is a Class B hospital. The Langsa Regional General Hospital is supported by the Pharmacy Installation unit which is responsible for managing and organizing activities that support the availability of medicines and medical devices in Langsa Regional Hospital. As a hospital that has a mission to improve the quality of excellent individual services on an ongoing basis, Langsa Regional Hospital must be able to maintain the quality of its health services including the quality of pharmaceutical services.

Drug management in the Pharmacy Installation of General Hospital had an important role in the implementation of health services in hospitals, bearing in mind that inefficiencies and lack of management of these drugs can have a negative impact on hospitals and affect the overall role of hospitals. Based on this, the researcher wants to conduct research related to the evaluation of drug management in the Pharmacy Installation of Langsa Regional General Hospital.

MATERIALS AND METHODS

Research Design

This research was a type of descriptive research with retrospective and prospective data collection to evaluate drug management in the Pharmacy Installation of Langsa General Hospital. Research material includes primary and secondary data. Primary data was obtained from prospective data collection when the research was carried out by direct observation of drug storage arrangements, prescription service time, drug stock cards, and patient prescription sheets and conducting interviews with the Head of Hospital Pharmacy Installation, Pharmacists in the supply department and Pharmacists in the Department of Pharmacy service. Secondary data obtained from retrospective data collection by examining documents.

Research Location

This research was conducted at the Langsa Regional General Hospital in the Hospital Pharmacy Installation section. Research data collection was carried out in July-October 2019 for prospective and retrospective data.

Population

The target population was all data in the form of 2018 documents that observed and obtained at the time the study took place at the Pharmacy Installation of the Langsa Regional Hospital.

Data analysis

Document observation, direct observation and interview data were classified into two groups, namely quantitative data and qualitative data. Qualitative data were analyzed by identifying existing findings and the results were presented in textual form in the form of narration. Quantitative data is compared with the established standards, which are indicators of the Ministry of Health of the Republic of Indonesia [11], Pudjaningsih [12] and WHO indicators [13] and then presented in the form of tables or diagrams.

Parameter Analysis

The steps of the analysis of each parameter in this study were:

a. Selection

Suitability of drug items available with the National Formulary

Formula:

$$\frac{\text{number of drugs that are in accordance with the National formulary}}{\text{total amount of the drug}} \text{ X } 100\%$$

b. Planning and Procurement

Frequency of procurement of each drug item per year

The value of frequency of procurement of each drug item per year is obtained through retrospective data collection from the 2018 procurement report. Total drug items are randomly sampled at 30% of the total number of drugs administered [10].

Formula: Data is taken from the 2018 drug procurement report, based on the report it can be seen how many times the drug was ordered.

c. Distribution

1. The accuracy of the data on the number of drugs on the stock card

Data is collected prospectively by matching the number of preparations listed on the stock card with the actual physical amount of the drug. Drug stock cards taken as samples as much as 10% of the total drug stock cards available, matched with existing goods [14].

Formula: $\frac{X}{Y} X\ 100\%$

Note:

X: The number of drug items in accordance with the stock card

Y: Number of stock cards taken

2. Percentage and value of expired and / or damaged drugs

Data were taken retrospectively in the form of observing expired drug data during 2018 [15].

Formula: $\frac{\text{total value of the drug expires in a year}}{\text{Value of inventory stock}} X\ 100\%$

3. Percentage of dead stock

Data were taken retrospectively in the form of observations of drug expenditure data in pharmaceutical warehouses in 2018 (Djatmiko, 2008).

4. Level of drug availability

Data were taken retrospectively in the form of drug stock data as of December 2018 and data on drug use during 2018 (Satibi, 2014).

Formula: $\frac{X+Y}{Z} X$ 1 month

Note:
X: Amount of drug stock
Y: Total drug use for 1 year
Z: Average monthly use of medication

RESULT AND DISCUSSION

Selection

Selection was the process of selecting a number of drugs in a hospital with the aim to produce better supply / procurement, more rational use of drugs, and lower prices[14]. Determination of drug selection was an active role of the pharmacist in the Pharmacy and Therapeutic Team (PTT) to determine the quality and effectiveness and guarantee of good drugs. One of the functions of PTT was to develop hospital formularies and revise them, also to assist pharmaceutical installations in developing a review of policies and regulations regarding the use of drugs in hospitals according to regulations that apply locally and nationally [16].

Hospital Formulary was prepared referring to the National Formulary where this formulary is a list of drugs agreed upon by medical staff and compiled by the Pharmacy and Therapeutic Team (PTT) determined by the Hospital Management [17].

Based on the results of interviews with the pharmacy warehouse coordinator, known that the policy taken by Langsa Hospital in terms of drug selection, namely drug selection in the Langsa Regional General Hospital pharmaceutical installation is based on national formulary references, hospital formularies and submissions or proposals from specialist doctors. If there were drugs that were not included in the national formulary but the drug is needed in the process of healing the disease and is used by doctors for patients, the drug was chosen to be administered such as mecobalamin, piracetam, ambroxol and others.

Table 1: Suitability of drug items available with the National Formulary

Information	Value (item)	Standard value
The number of drug items in accordance with the National Formulary	585	-
Number of Formulary drug items in Langsa Regional Hospital	662	-
Suitability of available drug items with National Formulary (%)	88.37%	≥80%

Based on these results showed that the suitability of the drugs available at Langsa Regional Hospital with the National Formulary level II has met the standard of 88.37%. so that most of the drugs provided and given to patients were in accordance with the drugs contained in the National Formulary

The hospital formulary prepared refers to the national formulary as an effort to support rational drug used through increased access to essential medicines [18].
However, in the case of hospitals, the drugs needed were not listed in the National Formulary, other drugs may be used limitedly as long as they approved by the Head or Director of the local hospital [19].

On the basis of the use of drugs outside the National Formulary, the hospital then prepared a Hospital Formulary that cold be used as a reference for treatment by doctors to patients [20].

Planning and Procurement

The indicator used at the procurement stage was the frequency of item procurement per drug item per year [12]. The frequency of drug procurement is the number of drugs for each type of drug for one year. The value of the frequency of procurement of each drug item is obtained through retrospective data collection from drug procurement documents during 2018, which is counting the number of times one drug item is held / ordered during 2018. A total of 640 drug items are randomly sampled at 30% with a total sample of 192 drug items.

Table 2: Frequency of Drug Goods Procurement per Year

No	Procurement Frequency	Total drug item
1	One time	50
2	Two times	36
3	Three times	29
4	Four times	17
5	Five times	19
6	Six times	13
7	Seven times	4
8	Eight times	7
9	Nine times	3
10	Ten times	3
11	Eleven times	4
12	Twelve times	2
13	Fourteen times	3
14	Twenty times	1
15	Tweny four times	1

Table 2 showed that the highest frequency of drug procurement during 2018 at Langsa Regional Hospital, which was 24 (twenty four) times and the lowest is 1 (one) time. Drug filling is low if done under 12 times at a meeting, it is agreed to be done if done as many as 12 to 24 times in completion and it is agreed if the drug procurement is carried out above 24 times in a replacement. Based on these standard values, the frequency of drug procurement in Langsa Regional Hospital in 2018 on average is still low, where there are only 5 (one) items of medicine for which frequency was classified as moderate, carried out 3 items 14 times, 1 item 22 times and 1 item as many 24 times in amount.

One of the frequency of procurement is still relatively low, one of which caused by payment related to the distributor, as conveyed by informant 1. The low frequency of drug procurement has also been investigated by Mahdiyani et al in Muntilan where the average frequency of procurement of drug items in Muntilan District Hospital in 2015 was 4.16 times and 3.54 times in 2016 [18]. It was compared with the research, the frequency of procurement Medicine items per year in Langsa Regional Hospital were higher.

Distribution

Distribution of pharmaceutical preparations is one of the main tasks of pharmaceutical services in hospitals. Distribution plays an important role in the delivery of pharmaceutical preparations and medical devices needed to units in each section of hospital pharmacy including patients [21]. Inefficient drug distribution caused the level of drug availability to decrease, there is a vacancy of the drug, the number of drugs that accumulate due to inappropriate drug planning and the number of expired / damaged drugs caused by an inadequate distribution system so that it will have an impact oninefficient use of budget / drug costs [22].

Based on observations, the storage system of pharmaceutical preparations at Langsa Hospital Pharmacy Installation is based on alphabetical, drug dosage forms, first in first out (FIFO) and first expired first out (FEFO). These was like one of the points stated by Sheina et al that one indicator of drug storage is the pharmaceutical warehouse structuring system using standard warehouse structuring with FIFO and FEFO storage systems. Drugs stored in pharmaceutical warehouses are periodically inspected to maintain the quality of the drug and clearly labeled to avoid mistakes in taking drugs [23].

Table 3: Accuracy of the Amount of Drug on the Stock Card

No	Information	Value (item)	
		Outpatiet	Inpatient
1	Number of Samples	27	46
2	The number of drugs in accordance with the stock card	27	46
Accuracy of data on the number of drugs with card stock		100%	100%

Based on Table 3, it was known that the drug sample items taken are in accordance 100% between the data on the number of drugs in the stock card and the actual physical quantities of the drug. These results were in accordance with the standards according to Pudjaningsih which is 100% accuracy of the data on the number of drugs on the stock card with physical conditions [12], this indicates that the administration at the Langsa Regional Hospital pharmacy has been done well and optimally. This condition occured because there was a mechanism for every employee to control the suitability of drugs with stock cards every day or at least control every item coming and going out as stated by the informant.

Based on observations of the expired drug report documents Langsa Hospital Pharmacy Installation in 2018, there were 114 expired drugs available and no damaged drugs. The results of the percentage of expired drug values could be seen in Table 4.

Table 4: Percentage of expired drug values

No	Information	Value (Rp)
1	Total value of expired drug	83.793.366
2	Value of inventory stock per December 2018	3.172.427.510
Percentage of expired drug values		2.64%

Drug expiration at Langsa Regional Hospital caused by suboptimal use of expired drug items. One way to handle this event needs to be considered was the principle of drug distribution based on FIFO and FEFO, where the drugs that come in first and had an expiration date were first issued.

According to the established standards, the percentage of expired drugs was 0%, so the percentage value of expired drugs in Langsa Regional Hospital did not meet the established standards. Based on the statement of the head of the pharmaceutical installation warehouse, it was happened because expired drugs were drugs that are mostly derived from the purchase of a year where the stock of the drug was

partly not running, the drug was not prescribed again by a doctor and there was a human error at the time of procurement so that an excess stock occured cause the drug expire because so many drug were not used.

The results of the percentage of dead stock values at Langsa Hospital Pharmacy Installation could be seen in Table 5 as follows:

Table 5: Percentage of Dead Stock Pharmacy Installation Langsa Regional Hospital 2018

No	Information	Total (item)
1	Value of dead stock item	26
2	The number of available drug items	803
Percentage of Dead Stock (%)		3.24%

Based on Table 4 the percentage of dead stock in Langsa District Hospital was 3.24%, while according to the standard of dead stock is 0%. These results indicate the value did not meet existing standards. Related research results conducted by Dyahariesti et al [24] showed the percentage of dead stock was 2.27%, while the Oktaviani study showed the percentage of dead stock percentage was 4% [25]. Compared with research that has been done in several hospitals, it showed that the percentage of dead stock in Langsa Regional Hospital shows lower results, even though it did not meet the established standard of 0%.

Based on the results of an interview with the Pharmacy Coordinator of Langsa Hospital Hospital, there was a dead stock in the Langsa Hospital Pharmacy Installation because the doctor did not prescribe the drug again and there was a human error in procurement which caused a buildup of drug stock. Evaluation efforts made by hospitals for the existence of dead stock inform the doctor so that the drugs are prescribed first and also always evaluated the expiration date by being recorded on the drug stock card to facilitate checking [12].

The level of drug availability illustrates how many months of drug supply in the Pharmacy Installation to meet the adequacy of drug use [24]. The results of the level of availability of drugs in Langsa Hospital Pharmacy Installation could be seen in Table 6.

Table 6: Drug Availability Levels at Langsa Hospital Pharmacy Installation

No	Information	Total (Rp)
1	The amount of drug stock as of December 2018	Rp. 3.172.427.510
2	Average of Drug Use per Month	Rp. 2.411.520.901
3	Drug use per year	Rp. 28.938.250.810
Drug Availability Level		13.42 months ~ 13 months 12 days

Based on Table 6, the availability of drugs in the Pharmacy Installation of Langsa Regional Hospital is 13.42 months or around 13 months 12 days, in accordance with the standard level of drug availability, which is 12-18 months. This shows that the average level of availability of drugs in Langsa Regional Hospital is sufficient for hospital needs. The availability of drugs as a main element in health services in addition to affordability, safety, quality and benefits, the availability of drugs is closely related to funding. One important requirement for quality public health services is the availability of adequate drugs, both in type and quantity at any time required by the community and guaranteed quality. Drugs with insufficient levels will have an impact on patient care because the patient's drug needs are not met or are well served so rational treatment of drugs will not be achieved. The solution is to evaluate and conduct a drug planning and procurement system selectively tailored to the needs of the hospital and referring to the principles of effective, safe, economical and rational [26].

CONCLUSION

Based on the discussion and results of the study, it could be concluded that the selection of drugs in the Pharmacy Installation of Langsa Regional Hospital had fulfilled the standards for the suitability of the available drug items with the National Formulary that is equal to 88, 37%. Planning and procurement at Langsa Hospital Pharmacy Installation had not met the standard indicators for procurement of drug items per year which was still classified in the low category (<12 times / year), 5 items of medicine in the moderate category (12-24 times / year). The distribution of drugs in the Pharmacy Installation of Langsa Regional Hospital had not yet fully met the established indicator standards. Indicators that have met the standards are the accuracy of data on the number of drugs on the stock card (100%) and the level of drug availability that is for 13 months 14 days, while the indicators that have not met the standards are the percentage of expired drug value of 2.64% and the percentage of dead stock of 3.24%.

CONFLICT OF INTERESTS

All author have no to declare

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