

Drug Inventory Analyze in Pharmaceutical Warehouse at Parungpanjang's Public Health Centre in 2019

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ABSTRACT. This study aims to view the inventory drug in the pharmaceutical warehouse of Parungpanjang's Public Health Centre in accordance with the Management Guidelines from the Directorate General of Pharmaceutical and Medical Devices Development of the Indonesian Ministry of Health in 2010. This is a descriptive observational research and data collection has conducted by direct observation by filling out the online quistionaire in google form link and with in-depth interviews with Pharmacy Officers at the Parungpanjang's Public Health Centre. The results show that at the warehouse, requirements storage / the preparation of a drug and the drugs record system are in accordance with the requirements while the requirements of human resources have not yet met the requirements. Warehouse requirements of 100% are in accordance with standard operating procedures, storage requirements / preparation of drugs by 90% are in accordance with standard operating procedures and non-conformity reaches 10%, system requirements for recording drug stocks by 100% are in accordance with standard operating procedures, and source requirements human resources at the point of availability of human resources by 25% in accordance with the standard operating procedures and the mismatch reached 75%, for disciplinary points of the pharmacy warehouse staff Parungpanjang Health Centre has a result of 100% in accordance with standard operating procedures.

Keywords: Drug, Pharmaceutical, Public Health Centre.

1. INTRODUCTION

Public Health Centres is a basic health service facility that organizes health care efforts, health improvement (promotive), disease prevention (preventive), disease healing (curative), and health restoration (rehabilitative), which are carried out comprehensively, integratedly and continuously. Pharmaceutical services at Public health centre are an integral part of the implementation of health efforts, which play an important role in improving the quality of health services for the community [1].

Pharmaceutical service is a direct and responsible service to patients related to pharmaceutical preparations with the aim of achieving definite results to improve the quality of life of patients. Management of pharmaceutical preparations, medical devices and consumable medical materials is carried out in accordance with the provisions of the prevailing laws and regulations including planning, procurement, receiving, storing, destroying and controlling, recording and reporting [1]. One part of the drug management is warehousing [2].

Warehousing is an activity to maintain and store received pharmaceutical supplies in a considered safe place. The purpose of storage is to maintain the quality of drug preparations, avoid irresponsible use, maintain availability, facilitate search and control. The storage method can be done based on the class of therapy, according to dosage form and alphabetically by applying the principles of FEFO and FIFO [3].

Warehouse is a place of supporting the production activities of the pharmaceutical industry which functions to protect materials (raw and packaging) and finished drugs from external influences and rodents, insects, as well as to protect drugs from damage. In order to carry out this function, warehousing management must be carried out correctly or what is often called warehousing management [4].

Based on research conducted by Qiyaam et al, shows that the storage of drugs in the drugs warehouse of the Pharmacy Installation of the Regional General Hospital dr. R. Soedjono Selong is good and correct based on 5 indicators of drug management at the distribution stage, namely the accuracy of the data on the number of drugs on the stock card, the warehouse management system, the percentage of expired drug value, the percentage of dead stock and the level of drug availability, and based on the standard value of drugs storage has 3 categories, namely the category of stock management which is classified as "good" with a value of 14. The category of control stock is classified as "good" with a value of 16 and the category of storage conditions is classified as "good" with a value of 16 [5].

The same study conducted by Prihatiningsi, showed that drugs storage in the Pharmacy Warehouse of the Asri Hospital found that the drug storage system did not meet the indicators of efficient drug storage. This is reflected in the mismatch between drugs and stock cards, there are several expired drugs, the

warehouse management system is not yet in accordance with the standard [6].

Research on drug storage was also carried out by Somantri, at Dr. Moewardi Hospital, shows that the indicator of compatibility between goods and stock cards is 80.22%, the warehouse arrangement system indicator is 88.9%, the percentage for expired drugs indicator is 0.2% and the dead stock indicator is 10.9% [7]. The same research was also carried out by Rosanti, at Simpang Tiga Public Health Centre, in Marpoyan Damai Subdistrict, Pekanbaru City, shows that the warehouse requirements did not meet the requirements, while the preparation / storage of drug stocks and stock recording were in accordance with the requirements, warehouse requirements with a percentage of 45.5% (sufficient good), for the storage / preparation of drug stocks 100% (very good) and for the recording of drug stocks 87.5% (very good) [8].

Pharmacy warehouse at Public Health Centre of Parungpanjang is an integral part of health services at Public Health Centre Parungpanjang with purpose to provide pharmaceutical health services which include planning, supply, storage and distribution of all pharmaceutical supplies. However, in the management of the pharmacy warehouse, there are problems so that researchers are interested to know the Description of Drug Storage Management at the Parung Panjang Public Health Centre Pharmacy Warehouse in 2019 by referring to *Pedoman Direktorat Jenderal Bina Kefarmasian dan Alat Kesehatan Kementerian Kesehatan RI Tahun 2010* [9]

2. LITERATURE REVIEW

Storage is an activity and an effort to carry out the management and management of storage items in the storage room. Storage is undertaken to ensure the predetermined scheduling in the previous functions with agreed-exact fulfillment and at the lowest possible cost. However, all the algorithms proposed by the abovementioned papers are for deterministic and constant demand. In this paper, we consider the JRP under the multi-item probabilistic inventory problem. Demands are assumed to be normally distributed and

we will compare the direct and indirect grouping strategies in terms of their total inventory cost. This is the main contribution of this paper. The organization of the rest of this paper is as follows. In section 3, we propose our model under direct grouping and indirect grouping strategies along with our proposed algorithm to solve the JRP. Section 4 is devoted for numerical experiments to give illustration for our model and algorithm while conclusion and further research are relegated in the last section.[1]

Pratiwi and Sri Rezkiani (2018) entitled "Overview of Drug Storage Management in the Pharmacy Warehouse of the Bangkinang Regional General Hospital in 2017" from the observations of researchers showed that the warehouse requirements and stock recording were in accordance with the requirements while the storage / preparation of drugs did not meet the requirements. Drug warehouse requirements with a percentage of 90.91% (very good), requirements for storage / preparation of drugs with a percentage of 55.56% (good enough) and requirements for a drug stock recording system with a percentage of 87.5% (very good).[10]

3. THE MODEL

This research is descriptive. The object of this research was the Parung Panjang’s Public Health Centre Pharmacy Warehouse, while the subject of this study was the person in charge of the Parung Panjang Public Health Centre Pharmacy Warehouse. The sampling technique in this study is the nonprobability sampling technique with purposive sampling method. With the following inclusion and exclusion criteria: the inclusion criteria, namely the person in charge of the Parung Panjang Public Health Centre Pharmacy Warehouse using a checklist sheet via google form and an interview sheet by telephone, while the exclusion criteria were apart from the person in charge of the Parungpanjang’s Public Health Centre who was also involved in the implementation of storage management using an interview by phone.

4. NUMERICAL EXPERIMENTS

TABLE 1. Warehouse Requirement

No.	Item in observation	Result		Note
		accordance	Not accordance	
1.	Drugs storage	✓		
2.	Room with minimum of 3x4 sqm	✓		
3.	Drugs storage separate from service room or pharmacy	✓		
4.	Drugs storage room separate from medical devices	✓		

No.	Item in observation	Result		Note
		accordance	Not accordance	
5.	Dry room and moist	✓		
6.	Enough ventilation	✓		
7.	The windows of warehouse have protection for security purpose	✓		
8.	Windows equipped with curtain	✓		
9.	Good condition roof	✓		
10.	The availability of pallet	✓		
11.	The availability of closet	✓		
12.	Easy to move	✓		
13.	The availability of air conditioning	✓		
14.	The availability of thermometer and moisture meter	✓		
15.	The availability of light setting enters the room	✓		
16.	The availability of lockable closet for narcotic and psychotropic drugs	✓		
17.	The availability of fire hydrant	✓		
18.	The availability of separate closet for flammable drugs	✓		
19.	The availability of separate closet for dangerous drugs	✓		
20.	The availability of separate closet for document	✓		
21.	The warehouse have safety	✓		
22.	The warehouse have double lock for security purpose	✓		
Score obtained		22	0	
Maximun Score		22		
$P = \frac{\text{score obtained}}{\text{Maximum score}} \times 100\%$		$\frac{22}{22} \times 100\% = 100\%$		Accordance

The results showed that 100% of the requirements for the Pharmacy Warehouse at Parung Panjang Public Health Centre were appropriate. As a comparison of the results of other research conducted by Pratiwi and Sri Rezkiani (2018) regarding the Warehouse Requirements at the Bangkinang Regional General Hospital, the results obtained were 90.91% which were suitable and 9.09% were not suitable in the form of the absence of useful ventilation to provide air circulation and adequate lighting in the warehouse [10].

Based on *Direktorat Jenderal Bina Kesehatan dan Alat Kesehatan RI Tahun 2010*, it is known that the requirements for warehouses must have a dry and humid room, have ventilation so that the air flow is not hot, have windows with protection to avoid direct light and a barred to prevent theft from outside, floors are made of cement to make it easier to clean from dust or dirt, walls that are made slippery and avoid making sharp corners or walls, and have measuring and room temperature control devices [9].

Based on the results of research that has been carried out through checklist observations via *google form* and in-depth interviews for the requirements of the Parungpanjang Community Health Centre warehouse, there are arrangement of drug racks and drug storage cabinets arranged and adjusted to the spacious conditions of the room because the Public Health Centre always submits requests for drugs according to the needs in every 2 months which are adjusted to the capacity of the Parungpanjang Public Health Centre Pharmacy Warehouse, the warehouse has adequate ventilation accompanied by air conditioning then has a window with trellis protection accompanied by curtains, the floor is made of cement and white tiled with a condition that is always dry and

not damp and always prioritizes cleanliness of the floor, walls are made slippery and there are no floor corners or sharp walls in the Parung Panjang Public Health Centre Pharmacy Warehouse. Drugs in bulk are stacked on *pallets* on a regular basis no drugs in bulk are placed anywhere or without the use of *pallets*. The results of the in-depth interviews with informants also emphasized that there were no major obstacles because the Public Health Centre always tried to follow procedures from the Health Office.

It can be concluded that the warehouse requirements in the observation sheet are in accordance with the *Pedoman Direktorat Jenderal Bina Kefarmasian dan Alat Kesehatan Kementerian Kesehatan RI tahun 2010* [9].

TABLE 2. Storage requirement of Drugs

No.	Item in observation	Result		Note
		Accordance	Not accordancec	
1.	Drugs keep in special room, separate from others	✓		
2.	Drugs classified by alphabet	✓		
3.	Drugs classified by the types of drugs	✓		
4.	Drugs classified by the types of preparation	✓		
5.	Drugs classified by class therapy		✓	
6.	Drugs placed with FIFO Methode	✓		
7.	Drugs placed with FEFO Methode	✓		
8.	Drugs placed in the closet	✓		
9.	Drugs that is stored on the floor to be placed on pallet	✓		
10.	Drugs not be placed on the wall	✓		
11.	Use special closet to placed narcotics and psychotropics drugs	✓		
12.	Drugs that requires a cool temperature stored in the refrigerator	✓		
13.	Damage drugs places in separate closet with the good one	✓		
14..	Expired drugs places in separate closet with the good one	✓		
15.	A liquid preparation drugs (syrup) separated from solids preparation (tablet)	✓		
16.	Separate internal usage drugs with external usage drugs	✓		

17.	Use labelling in storage shelves		✓	
18.	Big size and heavy drugs not to be stored in higher place	✓		
19.	Small size drugs not to be stored in hidden place	✓		
20.	Maximum piles height is 2.5 m	✓		
Score obtained		18	2	
Maximum score		20		
$P = \frac{\text{Score obtained}}{\text{Maximum score}} \times 100\%$		$\frac{18}{20} \times 100\% = 90\%$		accordance

The results of the research that have been carried out in table 2 show that the requirements for storing or compiling drugs in Parung Panjang Public Health Centre Warehouse are in accordance with 90% and 10% (Classification of drugs based on therapeutic class or efficacy, given labeling / drug names on storage racks) is not in accordance with standard procedures operational at Public Health Centre of Parung panjang. As a comparison of the results of other research conducted by Pratiwi and Sri Rezkiani (2018) regarding the requirements for storage / preparation of drugs at the Bangkinang Regional General Hospital, 55.56% were accordance and 44.44% were not suitable in the form of drugs that were not arranged. based on alphabetical basis, preparations liquid drugs are not separated from solid preparations drugs, internal use drugs are not separated from drugs for external use, storage racks are not labeled (drug name) [10].

Requirements for storage or preparation of drugs in accordance with procedures can make it easier for officers to search, count and find out the amount of supplies more accurately, easily monitored, and easy to control [11]. Based on the provisions of *Direktorat Jenderal Bina Farmasi dan Alat Kesehatan (2010)*, things that must be considered and regulated as best

as possible to facilitate supervision and control are all drugs must be stored in a room, arranged alphabetically and labeled, dosage form, type of drug classification, and therapy classes. Narcotics and psychotropic drugs are stored in a separate cupboard and always locked. Drugs in bulk are placed on *pallets* on a regular basis. Liquid and solid preparations are placed separately. Broken or expired drugs are stored in a separate cupboard. Small drugs are not placed in a hidden place, large amounts of drugs are not placed in high places. As well as using FIFO and FEFO system to prevent drug expiration [9].

Based on the results of research that has been carried out through checklist observations and in-depth interviews for the storage / preparation requirements of drugs that are not suitable, namely drugs are not stored in therapy or efficacy classes and are emphasized by one of the informants due to limited knowledge of informants who are not from pharmacy schools so that they make arrangements In the warehouse it is made easier by alphabetical basis, there is no labeling (drug name) on the storage shelf because according to one informant at the Parung panjang Public Health Centre only provides alphabetical labeling such as alphabet A (amlodipin), and others.

TABLE 3. Requirement of Drugs Stock System

No.	Item in oservation	Result		Note
		Accordance	Not accordance	
1.	Stock card use to record drugs mutation (input, output, losses, damages or expired)	✓		
2.	Each sheet of stock card is only intended to record data for mutation type of drug originating from one source of funds	✓		
3.	Each line of data is only intended to record one drug mutation drug	✓		
4.	Stock cards are placed together or adjacent to the drug	✓		

5.	Data on stock cards are used to compile reports, planning, procurement, distribution and as a comparison to the physical condition of the drug in a storage	✓		
6.	Recording is done regularly every day	✓		
7.	Every time a drug mutation occurs (receipt, expenditure, loss, damaged or expired), immediately recorded on the stock card	✓		
8.	Receipts and expenses are added up at the end of month	✓		
Score obtained		8	0	
Maximum score		8		
$P = \frac{\text{Score obtained}}{\text{Maximum score}} \times 100\%$		$\frac{8}{8} \times 100\% = 100\%$		Accordan ce

The results of the research that has been carried out in table 3 shown that the accordance has reached 100% conformity to the requirements for the pharmaceutical warehouse stock recording system at Parung Panjang Public Health Centre in 2019.

As a comparison of the results of other studies conducted by Pratiwi and Sri Rezkiani (2018) regarding Requirements of Stock Recording System at Pharmacy Warehouse of the Bangkinang Regional General Hospital obtained results that were 87.5% are accordance and 12.5% unsuitable in the form of receipts and expenses not added up at the end of each month [10].

Based on the provisions of Direktorat Jenderal Bina Kefarmasian dan Alat Kesehatan (2010), recording stock of drugs with a stock card includes recording drug mutations (receipt, dispensing, lost, damaged or expired) to enter or release the amount of stock without a transaction process, each sheet of stock card is only for to record a mutation of a drug type, each data only intended to record an incident of a drug mutation, the data on the stock card is used to compile reports, planning, procurement and distribution and as a comparison of the physical condition of the drug [9].

Based on the results of research that has been carried out through observation checklists and in-depth interviews for the requirements of the drug stock recording system at the Parung Panjang's Public Health Centre pharmacy warehouse, there is a stock card that is used to record drug mutations (receipts, expenditures, losses, damaged or expired), each sheet of stock card at the Public Health Centre of Parung panjang is only intended to record mutation data of one type of drug originating from one source of funds, each data only intended to record an incident of drug mutation, data on stock cards is used to compile reports, planning, procurement and distribution and as a comparison of the physical condition of the drug . The results of in depth interview, informants also emphasized that there were no major obstacles to recording drug stocks, it was just that sometimes there was a lack of human resources, then the informants had to serve in the medicine room so sometimes they didn't have time to write it down immediately, and the recording was done the next day.

It can be concluded that the system requirements for recording drug stocks on the observation sheet are in accordance with *Pedoman Direktorat Jenderal Bina Kefarmasian dan Alat Kesehatan Kementerian Kesehatan RI Tahun 2010*.

TABLE 3. Requirements for Human Resources

Availability Human Resources				
No.	Operational variable	Result		Note
		Accord ance	Not accordance	
1.	There is a superior head of the warehouse pharmacy		✓	Multiple jobs because there are only 2 officers at the pharmacy, 1 in the warehouse, 1 at the drug depo, and all responsibilities in the warehouse are held by the person in head of warehouse Parung
2.	There is a head of warehouse	✓		
3.	There is a goods manager		✓	

4.	There are warehouse implementing staff		✓	panjang's Gudang Public Health Centre
Score obtained		1	3	
Maximum score		4		
P= $\frac{\text{Score obtained}}{\text{Maximum score}} \times 100\%$		$\frac{1}{4} \times 100\% = 25\%$		Not accordance

TABLE 5. Characteristics of Human Resources

Human Resources	Amount	Age	Education	Amount of work
Responsible warehouse	1	49 years	D1 Kebidanan	21 years
Person in charge of Pharmacy	1	42 years	Sekolah menengah Farmasi	13 years

TABLE 6. Parung panjang's Public Health Centre Warehouse Staff Discipline

Parungpanjang's Public Health Centre warehouse Staff discipline				
No.	Activity Human Resources	Implementation		Note
		Accordance	Not accordance	
1.	Pharmacy warehouse staff arrives on time	✓		
2.	Pharmacy warehouse staff starts their work according to the hour specified by Parung panjang's Public Health Centre	✓		Starting from 08.00 AM
3.	Pharmacy warehouse staff carries out their activities in accordance with applicable SOP	✓		
4.	Pharmacy warehouse staff does not delay their jobdesk	✓		
5.	Pharmacy warehouse staff returns home on time according to the hour set by the Parung panjang's Public Health Centre	✓		At 12.00 AM
Score obtained		5	0	
Maximum score		5		
P= $\frac{\text{Score obtained}}{\text{Maximum score}} \times 100\%$		$\frac{5}{5} \times 100\% = 100\%$		Accordance

The results of research that have been carried out in table 4 show that the requirements for human resources at Parung Panjang Public Health Centre Warehouse are 25% (there is a warehouse head) is appropriate and 75% (there is a pharmaceutical warehouse chief, goods manager, and warehouse executive staff) is not in accordance with the standard operational procedures at Parungpanjang's Public Health Centre. As a comparison of the results of other studies that have been conducted by Palupiningtyas (2014) regarding the availability of

human resources at the Mulya Tangerang Hospital, 25% of the results are appropriate, namely there is a superior head of a pharmacy warehouse and 75% is not suitable in the form of the absence of a warehouse chief, head warehouse and goods manager. All warehouse responsibilities are carried out by the Pharmacist Mulya Hospital [12].

Based on the provisions of the warehouse management guidelines, the availability of minimal human resources that must be present in warehouse management consists of a warehouse chief, a

warehouse head, a manager, an executive staff [3]. Likewise, the Permenkes RI provides provisions for the number of human resources consisting of a warehouse chief, a warehouse head, a goods manager, and an executive staff [1].

5. CONCLUSION

Based on the results of research that has been carried out through checklist observations and in-depth interviews for human resource requirements, the availability points are not yet suitable, namely the absence of the warehouse chief, goods manager, and implementing staff. This occurs due to a lack of human resources at the Parung panjang Public Health Centre, only two employees in the pharmacy section, one in the Pharmacy section and one in the warehouse as well as being the person in charge of the Parung panjang Public Health Centre pharmacy warehouse. one employee of this warehouse is responsible for the entire series of drug storage, starting from receipt, preparation of drugs, dispensing of drugs to reporting documents related to storage. With the minimum number of human resources, it is common for employees to do multiple jobs, such as employees at the pharmacy doing work in the warehouse section when the person in charge of the warehouse is unavailable or is attending meetings or training between Public Health Centre in Bogor district. The lack of human resources was emphasized in-depth interviews by the two informants who desperately needed additional staff at the Pharmacy Warehouse, the informants (the person in charge for the warehouse and the person in charge for the Drug Depot) said that the availability of human resources was not in suitable with the procedure.

Hasibuan (2006) states that an important factor that needs to be considered in assigning a position is the suitability of the knowledge and skills of officers, then work discipline will emerge [13]. So far the discipline of the Parung Panjang Health Centre Pharmacy warehouse staff has been in accordance with the results of observations with checklists that reached 100%. then employees also received additional training and knowledge from meetings between Public Health Centre in Bogor district which have been emphasized by one of the informants, when there is something new in the world of pharmacy, it is ensured that there will always be a meeting of the person in charge of the pharmacy warehouse to be given new knowledge from the Health Office to avoid if there are errors in the SOP for Pharmacy work in all Public Health Centre in Bogor.

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