



A DRUG STORAGE PHARMACEUTICAL INSTALLATION EVALUATION USING FIFO AND FEFO METHOD OF HEALTH DEPARTMENT BINJAI IN 2022

Ira Fazlina¹, Ermi Girsang², Sri Lestari Ramadhani Nasution³

Program Study Master Of Public Health , Faculty Of Medical, Dental And Health Sciences
University Prima Indonesia Medan

ABSTRACT

The City of Binjai Health Office is fully responsible for drug management. In order to achieve the effectiveness of drug therapy and health goals, it is necessary to have drug stability that supports drug storage conditions. The Binjai City Health Office applies the FIFO (First In First Out) and FEFO (First Expired First Out) methods in the drug storage system at the Binjai City Health Office Warehouse. This study aims to evaluate drug storage using the FIFO (First In First Out) and FEFO (First Expired First Out) methods as drug safety stocks in the Binjai City Health Office warehouse in 2022. The type of research is descriptive qualitative. The results showed that drug storage activities using the FIFO (First In First Out) method and the FEFO (First Expired First Out) method in the Warehouse of the Binjai City Health Service Pharmacy Installation were going well. Although in carrying out drug storage activities it was found that Human Resources (HR) played a dual role in their duties, the problem of miscommunication between Human Resources (HR) and the lack of training regarding drug storage using the FIFO (First In First Out) and FEFO (First Expired) Methods First Out).

Keywords : Evaluation, Drug Storage, FIFO (First In First Out) Method and FEFO (First Expired First Out) Method.

1. INTRODUCTION.

Pharmaceutical services are a health service system that is oriented towards patient care, providing quality and affordable pharmaceutical preparations, medical devices, medical consumables and clinical pharmacy services. Pharmaceutical services are said to be good if they are in accordance with pharmaceutical service standards. Pharmaceutical service standards are benchmarks used as guidelines for pharmaceutical personnel in administering pharmaceutical services. 2,3,5

Patient-oriented health services require pharmaceutical services that can improve quality in management and clinical pharmacy in hospitals. Pharmaceutical quality control includes monitoring and evaluation of the services provided. These activities are carried out to ensure that activities run according to what has been determined Hospital pharmacy services must be carried out effectively and efficiently. To be able to provide pharmaceutical services effectively and efficiently, a good drug management system is needed. Drug management is a series of activities



that include planning, budgeting, procurement, storage, distribution, control, destruction, recording, reporting, and drug evaluation.

In this paper, researchers focus on the topic of drug retention in a Pharmacy Installation warehouse Drug storage is an activity of storing and maintaining by placing medicines received in a place that is considered safe from theft and physical disturbance that can damage the quality of the drug and medical supplies. 6,9,20.

Inappropriate drug storage systems can cause many losses, namely drugs that are quickly damaged, reduced drug quality, expired drugs, stockouts and stagnant drugs. Stagnant drug is a condition where the amount of drug remaining is more than the safety stock at a certain time or in other words that the drug stock in stock does not come out for 3 months and above. Safety stock is an additional supply of drugs to guard against possible stockouts. Stockout and stagnant drugs can cause losses and ineffective service quality 7,8

There are many methods that can be used in storing drugs in the Pharmacy Installation warehouse. These methods include FIFO (First In First Out), FEFO (First Expired First Out), LIFO (Last in First Out) and various other drug storage methods. Drug storage using the FIFO (First In First Out) and FEFO (First Expired First Out) methods has been widely used in various pharmaceutical installations. This method certainly aims to make the drug storage system in the Warehouse better and more systematic. The FIFO (First In First Out) and FEFO (First Expired First Out) methods are not only applied to drug logistics management but are also widely applied to other goods logistics management. 12,16,17,18,20

Drug storage methods using FIFO (First In First Out) and FEFO (First Expired First Out) in the Pharmaceutical Installation Warehouse will not run smoothly without a good, focused and sustainable system.

The warehouse inventory information system using the FEFO (First Expired First Out) method at the Indomedika Sukabumi Pharmacy is proven to be able to carry out transactions effectively and efficiently. This method can anticipate empty drug stocks because there is a minimum limit for drugs to be available in warehouses and can anticipate selling expired drugs to customers and provide information 30 days before drug expiration.

The pharmacy information system using the FEFO (First Expired First Out) method provides convenience in processing drug data inventory at the Muhammadiyah Palembang Hospital Pharmacy. By applying the FEFO method in the Pharmacy information system at Muhammadiyah Palembang Hospital, it is hoped that there will be no more accumulation of drugs and drugs with shorter expiration dates than drugs with longer expiration dates can be issued according to the order.

Based on the results of the initial survey of researchers using observation and interview methods conducted at the Binjai City Health Office Pharmacy Installation regarding the Section Head of the Pharmacy Installation regarding drug storage methods, it was found that there were problems with drug stockouts, stagnant drugs and there were still many expired drugs.



II. LITERATURE REVIEW.

2.1. Warehouse Duties Pharmacy

Carry out some of the duties of the Health Service in the management of public medicines and health supplies, including planning needs, procurement, receipt, storage, distribution, control of use, recording and reporting, monitoring, supervision and evaluation.

2.2. Function Pharmaceutical Warehouse

Pharmacy Warehouse functions are as follows:

1. Implementation of planning the need for medicines and health supplies for basic health services.
2. Implementation of the provision of drugs and medical supplies for basic health services.
3. Implementation of selection of public drugs and health supplies for basic health services.
4. Participate in the planning and implementation of the procurement of drugs and medical supplies.
5. The implementation of receiving, storing and distributing public medicines and health supplies originates from various budgetary sources, programs and/or requests for service units in accordance with statutory provisions.
6. Preparation of materials for monitoring, supervising and evaluating the management of public medicines and health supplies at the Basic Health Service Unit.
7. Implementation of technical guidance on the management of public drugs, health supplies, and control of drug use in the Basic Health Service Unit.
8. Implementation of administrative activities in management units and pharmaceutical services.
9. Implementation of other official duties given by the Head of the Gresik District Health Office in accordance with his field of work.

2.3. Resources Pharmaceutical

Pharmacy services must be performed by pharmacists and pharmacy technicians. Pharmacy Technical Personnel who perform Pharmaceutical Services must be under the supervision of a Pharmacist. Pharmacists and Pharmacy Technicians must meet administrative requirements as stipulated in the applicable laws and regulations. Provisions related to functional positions in Pharmaceutical Installations are regulated according to organizational needs and in accordance with applicable regulations. The Pharmacy Installation must be headed by a Pharmacist who is responsible for all pharmaceutical services in the Hospital. It is preferable for the Head of Pharmacy Installation to have experience working in a Pharmacy Installation for at least 3 (three) years.



2.4. Definition of Drug Logistics Management

Drug logistics management is a strategic management process for the procurement, distribution and storage of drugs in an effort to achieve optimal performance. Drug management is a very important and interrelated aspect of hospital management which starts with the selection, planning, procurement, receipt, storage, distribution, destruction and withdrawal, control and administration needed for pharmaceutical service activities in the provision of health services as a whole. Inefficiency and ineffective drug management will have a negative impact on the hospital, both medically, socially and economically.^{1,2,5,6,12}

The goals of drug logistics management include:

1. Monitoring the storage and movement of goods at every level of health services in a supply chain system
2. Ensuring the availability of pharmaceutical logistics in every health facility
3. Taking into account the availability of drugs at each level and expiration date through relocation of logistics between locations (regions) so that drugs and consumable medical goods can be absorbed optimally both for routine service purposes and special circumstances.

Selection is an activity to determine the type of pharmaceutical preparations, medical devices, and consumable medical materials according to needs. The selection of pharmaceutical preparations, medical devices and medical consumables is based on:

- a. Formularies and standard of treatment/guidelines for diagnosis and therapy
- b. Predetermined Standards for Pharmaceutical Preparations, Medical Devices, and Medical Consumables
- c. Disease pattern
- d. Effectiveness and safety
- e. Evidence based medicine
- f. Quality
- g. Price
- h. Availability on the market

III. METHOD.

This research was conducted at the Binjai City Health Office Pharmacy Installation Warehouse with a descriptive research design to evaluate drug storage using the method First In First Out (FIFO) and First Expired date First Out (FEFO). The primary data in this study were obtained based on the results of interviews with respondents and triangulation, while secondary data was obtained from the results of searching documents for 2021. Pharmacists and Pharmacist Assistants selected are those who know the problem clearly, can be trusted to be a good source of data.



Judging from the benefits to be obtained, this research is evaluative (evaluation research) in nature, namely research conducted on the implementation of ongoing activities in order to seek feedback that can be used as a basis for improving an ongoing program.

The research location is a place where researchers conduct research to find phenomena or events that occur from the object under study in order to obtain accurate research data. This research was conducted at the Binjai City Health Office Pharmacy Installation.

Informants/samples in this study were taken by purposive sampling. The technique of determining the sample by purposive sampling is a sampling technique in which the data source is taken on the basis of certain considerations. The method of selecting participants in this study was directed at suitability, adequacy to reach the required data saturation.

The informants involved as data sources in this study were selected based on their abilities and knowledge associated with all drug storage activities which is in accordance with the research topic raised, namely the Evaluation of Drug Storage Using the Method *First In First Out* (FIFO) and *First Expired date First Out* (FEFO). These informants are:

1. Head of Pharmaceutical Installation Section (1 person): Rosmawati Hutagalung S.Farm
2. Person in charge of Pharmaceutical Warehouse (1 person): Anita, S.Farm
3. Members (3 people): Eka Julita Lusiana Lumban Toruan AMF, Sarintan br.Tarigan S.Farm, Apt, Mismalem, AMF

In this study, researchers conducted direct interviews with informants, besides those researchers also made direct observations on drug storage activities and document reviews. The instruments used in this study included interview guidelines, document review guidelines, observation sheets, stationery, laptops, cameras and recording devices. Guidelines for interviews, observation sheets and document reviews refer to guidelines for the management of pharmaceutical supplies and medical devices compiled by the Director General of Pharmacy and Medical Devices Development in 2010 and several references related to pharmaceutical management and drug logistics in hospitals.

Data collection in this study was carried out in several ways including:

1. In-depth interviews
2. Observation

Conducted to find out the drug storage system that is carried out in the Pharmacy Warehouse. Observation of inputs, namely in the form of observing the adequacy of the number of storage officers in the pharmaceutical warehouse with the suitability of the tasks carried out daily with those stated in the work instruction document, the discipline of officers (whether the officers carry out their work in accordance with the applicable SOPs and the hours of arrival and departure of officers), availability of recording and reporting forms/documents, availability of drug storage procedures, as well as observation of the availability of facilities and infrastructure that support the drug storage process. Observation of the drug storage process, namely in the



form of observing drug receipt, preparation/arrangement of drugs in the drug warehouse, drug dispensing activities, as well as recording and reporting.

3. Review documents

Conducted on guidelines or procedures for drug storage or SOP for drug management in the pharmaceutical installation warehouse to determine the suitability of the implementation of storage in the pharmaceutical warehouse. Drug receipt book, drug dispensing book, stock taking report and proof of goods out/goods transfer letter.

In this study, the research variables were grouped into 3, namely input variables (HR, budget, documents, procedures and infrastructure), process variables (drug storage using the FIFO and FEFO methods) and output variables (drugs stored in the Binjai City Health Office pharmacy warehouse effectively).

The data obtained from the results of observations, interviews and document reviews were then processed by comparing and adjusting them with the guidelines made by the Director General of Pharmaceutical Development and Medical Devices in 2010. Then the results were prepared in the form of brief descriptions and tables, and data analysis was carried out. The data triangulation carried out in this study consisted of:

1. Source Triangulation

Examining several results of in-depth interviews with several different informants. Examination was carried out by matching the information obtained from one informant to another.

2. Triangulation Method

In this study, the method used in addition to in-depth interviews, was also carried out by observation and document review. Observation and review of documents were carried out to support the results of interviews which were compared with the organizational structure, job descriptions and Standard Operational Procedure (SOP). By doing data triangulation in this study, it is hoped that researchers can carry out precise, accurate and reliable analysis. In order to get proper, accurate and reliable data analysis

IV. RESULT.

This study focuses on drug storage using the FIFO (First In First Out) and FEFO (First Expired First Out) methods in the Warehouse of the Binjai City Health Office Pharmacy Installation.

4.1. Drug Storage Input Using FIFO (First In First Out) and FEFO (First Expired First Out) Methods

Input is input that must be available for the implementation of an activity. Input is very important to support the success of a process. Input from drug storage using the FIFO (First In First Out) and FEFO (First Expired First Out) methods consists of Human Resources (HR), budgets, procedures, documents, facilities and infrastructure.



Human Resources (HR) are the personnel involved in carrying out drug storage activities in the Pharmacy Installation warehouse. Human Resources (HR) in the Binjai City Health Service Pharmacy Installation warehouse headed by a Graduate Pharmacist as the person in charge of the Pharmacy Installation warehouse. The implementation staff for the Pharmacy Installation Warehouse is held by D3 Pharmacy Analyst. The following are the qualifications of Human Resources (HR) in the Binjai City Health Service Pharmacy Installation warehouse in 2020:

1. The head of the Pharmaceutical Installation warehouse consists of 1 person
2. The implementation staff for the Pharmaceutical Installation warehouse consists of 2 people
3. The administration staff for the Pharmaceutical Installation warehouse consists of 1 person. Total Human Resources (HR) in the warehouse

Binjai City Health Service Pharmacy Installation in 2022 totaling 4 people. This number has decreased from the previous year which amounted to 6 people. Based on the guidelines for organizing the Pharmacy Installation regarding the calculation of the number of staff for implementing personnel excluding the Head of the Pharmaceutical Installation, namely the total need for Human Resources (HR) for implementing the Pharmacy Installation warehouse is 3 people. While the existing Human Resources (HR) only amounted to 4 people. In terms of quantity, the number of Human Resources (HR) in the Binjai City Health Office Pharmacy Installation warehouse already meets existing standards.

The quality of Human Resources (HR) in carrying out their duties is influenced by many factors such as educational background, age, work experience and so on

4.2.Document

Documents are files used in drug storage activities. Based on the results of the interviews, it is known that the Binjai City Health Office Pharmacy Installation warehouse already uses computers to input several documents such as goods invoice documents, goods mutations, stock items, slow moving drug lists, expired drug lists and several other activities. But recording and reporting for some activities are still done manually. Recording and reporting are done manually, such as temperature forms, order letters, empty medical device lists, goods pick-up books and adjustment books. Here's an excerpt of the interview:

"On the computer, goods can be fractured, goods transferred, and stock items. Apart from that, we also have temperature forms, order letters, return forms for expired goods, and a list of drugs that will expire" (Inf-1)

"There are fractures, goods mutations, stock items, temperature forms, order letters, expired goods return forms, and a list of drugs that will expire" (Inf-2)



"Fractures, mutations of goods, empty alkes lists, goods pick-up books, adjustment books, return notes and temperature forms" (inf-3)

The results of the interviews were also supported by the results of observation and document review that showed that there were documents used in drug storage activities using the FIFO (First In First Out) and FEFO (First Expired First Out) methods, both manually and using a computer.

The results of the interviews were also supported by the results of observation and document review that there were documents used in drug storage activities using the FIFO (First In First Out) and FEFO (First Expired First Out) methods which were quite helpful in carrying out drug storage activities.

Based on interviews, document review and observations that have been made, it can be concluded that the Pharmacy Installation warehouse already has complete documents for drug storage activities using the FIFO (First In First Out) and FEFO (First Expired First Out) methods both manually and using a computer.

4.3. Infrastructure

The availability of infrastructure is very important and needs to be considered to support drug storage activities. Based on the results of the interviews, it is known that the availability of completeness and feasibility of the facilities and infrastructure used to support the work of officers in storing drugs at the Pharmacy Installation Warehouse of the Binjai City Health Office are basically good and complete. Here's an excerpt of the interview:

"The facilities and infrastructure used are quite complete, of course yes" (Inf-1)

"There are lots of facilities used, yes, there is an office, there is a telephone, there is a storage area and so on, there are a lot if you want to mention them one by one" (Inf-2) *"There are lots of facilities, there are trolleys to transport goods when they arrive, there are telephones for ordering goods from units, there are cupboards, shelves, lots of them anyway" (Inf-3)*

The results of the interviews were also supported by the results of observation and document review at the Warehouse of the Binjai City Health Office Pharmacy Installation. The following results of observations can be seen in table 4.3 regarding facilities and infrastructure in the Binjai City Health Office Pharmacy Installation warehouse below:



Table 1. Facilities and Infrastructure in the Binjai City Health Office Pharmacy Installation Warehouse

No	Observation Statement	Results		Information
		Yes	No	
1	Room/office available for the head of the Pharmaceutical Installation	V		
2	Room/office available for the head of the warehouse	V		
3	Separate room/office with a drugstore		V	
4	There is a computer.	V		
5	There are tables, chairs, cupboard, in the room/office.	V		
6	There is ATK in office room	V		
7	Telephone available support	V		
8	Refrigeration is available room/AC	V		
9	Extinguishers are available fire/fire	V		
10	There are gauges and temperature regulators that work Good	V		
11	There is a diary drug acceptance	V		Use computer
12	There is a diary drug production	V		Use computer
13	Drug documents are available expired	V		Use computer
14	There are drug storage shelves/cabinets that are clean and not placed directly on the floor	V		



-
- 15 Availability of a special V
cupboard that is locked for
storage of Narcotics and
Psychotropic
 - 16 Refrigerators are available to V
store certain types of drugs that
require temperature
cold
 - 17 There is a special cupboard for V
medicines
damaged and expired / expired
 - 18 Indirect shelving/cabinet V
stick to the floor
 - 19 Shelf/cabinet not attached V
directly on the wall
 - 20 Availability of internal medicine V
transfer aids
Warehouse
 - 21 Availability of drug stock cards V Use computer
to provide information
on a shelf/storage cupboard
 - 22 There is a color label / sign that V
distinguishes the drug
first login
 - 23 There is a color label / sign that V
distinguishes the drug
approaching expiration
 - 24 Availability of pallets / V
baseboards
for goods
 - 25 The distance between the pallet V
and the floor
(min.10 cm)
 - 26 The distance between the pallet V
and the wall
(min.30 cm)
-



-
- | | | | |
|----|--|---|-------------------------------------|
| 27 | The door to the room is layered | V | |
| 28 | Warehouse has a safety lock and is locked when no activity. | V | |
| 29 | Available room keys are made double | V | |
| 30 | The shed has a window trellis | V | |
| 31 | Warehouse has ventilation, adequate air circulation and lighting. | V | |
| 32 | Warehouse area is sufficient and safe for movement officer. | V | Warehouse area = 8x6 m ² |
| 33 | Warehouse roof and walls in good condition and no leaks. | V | |
| 34 | The floor is not earth and deep clean state. | V | |
| 35 | Warehouse free of pests has the potential to damage the quality of drugs such as ants, cockroaches, rats etc | V | |
| 36 | Prohibited provisions are available enter the drug storage area other than officers. | V | |
-

The condition of the Binjai City Health Office drug storage warehouse is in good condition, the arrangement is good, the existing shelves are still sufficient to place goods so that the existing goods do not pile up. The Binjai City Health Office Pharmacy Installation Warehouse is not only used to store medicines but is also used to store other medical devices. The warehouse area is quite adequate, of course, so it doesn't hinder the warehouse staff in carrying out the task of storing drugs in the Pharmacy Installation warehouse. Warehouse staff can move more freely when they are about to arrange the medicines they have just received. This



statement is supported by the results of interviews that have been conducted by researchers as follows:

"Actually, if I see that the facilities are quite adequate, the storage warehouse is also the right size, it can contain all the goods" (Inf-1) "(Inf-2) "In terms of existing facilities and infrastructure, there are actually enough, yes, the area is also right" (Inf-3)

The interview results above were also supported by the results of observations in the pharmaceutical installation warehouse which found that the condition of the warehouse was quite good with sufficient area for storing all medicines and other medical devices.

Based on observations, interviews, and review of documents that have been carried out, it can be concluded that the facilities and infrastructure used in drug storage activities at the Pharmacy Installation warehouse are sufficiently good and complete.

V. CONCLUSION.

1. The Human Resources (HR) in the Binjai City Health Office Pharmacy Installation warehouse that carry out drug storage activities using the FIFO (First In First Out) and FEFO (First Expired First Out) methods are quite good. Obstacles found are dual roles in carrying out tasks and problems of miscommunication between Human Resources (HR).
2. The Binjai City Health Office has not provided a special budget for drug storage activities using the FIFO (First In First Out) and FEFO (First Expired First Out) methods. Meanwhile, for ATK and other needs, the Pharmacy Installation warehouse staff asked the general logistics section of the Binjai City Health Office.
3. The existing Standard Operating Procedures (SOP) related to drug storage using the FIFO (First In First Out) method and the FEFO (First Expired First Out) method are complete and good. Each SOP is made brief and clear so that officers can easily understand it. In addition, the application of Standard Operating Procedures (SOP) can also be said to be good, because all existing processes are in accordance with existing Standard Operating Procedures (SOP).
4. The Pharmacy Installation Warehouse already has complete documents for drug storage activities using the FIFO (First In First Out) and FEFO (First Expired First Out) methods.
5. The facilities and infrastructure used in drug storage activities using the FIFO (First In First Out) method and the FEFO (First Expired First Out) method in the Pharmacy Installation warehouse are quite good.



REFERENCES.

- Asri, M., 2020. Study of Drug Management in the Pharmacy Installation of the Sawerigading Regional General Hospital, Palopo City in 2019. Thesis for Univ. Hasanuddin.
- Asnawi, R., Kolibu, FK, Maramis, FRR, 2019. Management analysis of drug management at Wolaang Health Center. *J. Health. Mass.* 8, 306–315. Minister of Health of the Republic of Indonesia. 2020. Regulation of the Minister of Health Number 3 of 2020 Concerning Hospital Licensing Classifications. Jakarta: Ministry of Health.
- Astriani, D., 2018. Analysis of Drug Management in the Lahat District Health Office Pharmacy Installation in 2018.
- Dampung, VM, Niku, I., Halim, H., 2019. Evaluation of Management of Pharmaceutical Supplies Management at the Makassar City Health Office in Disaster Management in Makassar City. *J. Researcher. healthy. Pelamonia Indonesia.* 11, 1–14.
- Emilia, E., Sudirman, Yusuf, H., 2018. Drug Management at the Lambunu 2 Health Center, Parigi Moutong Regency. *J. Collaborative Science* 1, 104–114.
- Fitriani, A., Dwimawati, E., Parinduri, SK, 2019. Analysis of Medicine Logistics Management at the Pharmacy Installation of Leuwiliang Hospital, Bogor Regency, West Java Province, 2019 2.
- Fatma, Rusli, Wahyuni, DF, 2020. Evaluation of Drug Planning and Procurement at the Lau Health Center, Maros Regency. *Pharmacy* 8, 9–14.
- Laidahane, IF, 2018. Management of Drug Management in the Pharmacy Installation of the Lubuk Attitude Hospital, Pasaman Regency.
- Minister of Health of the Republic of Indonesia. 2020. Regulation of the Minister of Health Number 3 of 2020 Concerning Hospital Licensing Classifications. Jakarta: Ministry of Health.
- Sembiring, F. 2019. Application of the First Expired First Out (FEFO) Method in the Warehouse Information System. *Information Technology and Vocational Education.* V(1) No.2. Nusa Putra University Information Systems Study Program.