PHARMACON
Jurnal Farmasi Indonesia
Pharmaceutical Journal of Indonesia

Pharmacon: Jurnal Farmasi Indonesia
Vol. 22 No. 1, 2025, pp. 70–76
DOI:10.23917/pharmaconv22i1.6395
p-ISSN: **1411-4283**, e-ISSN: **2685-5062**

Evaluation of Drug Management in the Planning, Procurement, and Distribution Stages at the Hospital Pharmacy Installation

Clara Ritawany Sinaga[1*], Roivelisko Tikes[2], Raymon Simanullang[3]

[1]Program Studi Farmasi, Fakultas Kedokteran, Universitas Tanjungpura, Jalan Profesor Dokter Haji Hadari Nawawi Pontianak, 78115, Indonesia
[2,3]Program Studi Farmasi, Sekolah Tinggi Ilmu Kesehatan Dirgahayu Samarinda, JaIan Pasundan, 75122, Indonesia

**Corresponding author: clarasinaga24@gmail.com*

ARTICLE HISTORY:
Submitted : 2024-08-20
Accepted : 2025-06-29
Published : 2025-06-30

KEYWORDS:
Drug management; Expert judgment; Hospital; Indicators; Pharmacy Installation

Citation:
Sinaga, C.R., Tikes, R., Simanullang, R. (2025). Evaluation of Drug Management in the Planning, Procurement, and Distribution Stages at the Hospital Pharmacy Installation. Pharmacon: Jurnal Farmasi Indonesia, 22(1), 70-76. https://doi.org/10.23917/pharmacon.v22i1.6395

ABSTRACT

Pharmacy department is a very important part of the hospital because it is the center of drug management and a source of hospital income. This study aims to determine drug management at the planning, procurement, and distribution stages at the Hospital Pharmacy Installation. This type of research is a descriptive evaluative research with qualitative methods. Data collection was carried out retrospectively on drug management indicators at the planning, procurement, and distribution stages, prospectively by conducting direct interviews and using random sampling methods. Data analysis uses and according to the Indonesian Ministry of Health in 2008, WHO in 1993 and Pudjaningsih in 1996. The validity test used is expert judgment. The results of the study showed that the conformity of drug items with the National Formulary was 18%, the frequency of procurement of each drug item was 5,6x/year, 13% invoice errors, the frequency of delayed payments by the hospital against the specified time was 70%, the level of drug availability was 46 months, the percentage of dead stock was 1%, the compatibility between drugs and stock cards was 100%. This shows that the indicators of drug management at the planning, procurement, and distribution stages are still not efficient, because there are still several indicators that do not comply with the established standards so that improvements need to be made.

INTRODUCTION

Pharmaceutical Service Standards in Hospitals do not only include drug service standards, but must also include the availability of medical equipment used and how to place consumable medical materials. Pharmaceutical Service Standards in Hospitals include management standards for pharmaceutical preparations, medical devices and consumable medical materials as well as clinical pharmaceutical services. Management of pharmaceutical supplies, medical devices and consumable medical materials consists of several stages, namely selection, needs planning, procurement, receiving, storage, distribution, destruction and withdrawal, control and administration (Kemenkes RI, 2016).

Pharmacy Installation is a very important division for hospitals because it is a revenue center for hospitals, so that hospital income can be increased through the number of prescriptions served, considering that more than 90% of health services use pharmaceutical supplies and 50% of hospital income comes from pharmaceutical supplies (Purwandari dkk., 2017). Management of pharmaceutical preparations, especially drug management, is a series of the most important activities that receive a funding allocation of 40-50%. Medicines must be managed optimally to ensure accuracy in the quantity and type of

pharmaceutical supplies and medical devices. The aim of drug management is to have drugs available whenever they are needed, both in terms of type, quantity and quality, effectively and efficiently. The management process must be carried out, because inefficiency and smooth drug management will have a negative impact on pharmaceutical service activities in providing overall health services, both medical, social and economic (Akbar dkk., 2016). Based on research conducted by (Oktaviati dkk., 2021) regarding Evaluation of Drug Management in Pharmacy Installations at Level IV Hospitals in Samarinda shows that at several stages of drug management there are stages that do not meet standards, namely at the planning stage they do not meet standards due to long waiting times for orders and development plans. Then at the procurement stage it was not up to standard due to excessive procurement of medicines which resulted in stock piling up so that many medicines had an expiry date of more than 2 years. Likewise, at the storage stage it is not yet up to standard because there is still a buildup of boxes and cartons (Oktaviati dkk., 2021).

Based on research conducted by (Indriana dkk., 2021) regarding the Analysis of Drug Management in the Adhyaksa General Hospital Pharmacy Installation in 2020 shows that at several stages of drug management there are stages that do not comply with standards, namely at the selection stage the suitability indicators for drug items available in the Hospital Pharmacy do not comply with standards because The hospital formulary used has not been updated. This causes new drugs proposed by specialist doctors to be provided not yet included in the Hospital Formulary. At the planning stage, the percentage indicator for the allocation of funds for drug procurement is still below standard, this can be caused by internal problems or external problems of the hospital. At the distribution stage, the indicator for the percentage of dead stock is not yet up to standard because the process of recording drug stock is done manually and the existing hospital logistics information system is not yet optimal (Indriana dkk., 2021).

METHODS

Types of research

This type of research is descriptive, evaluative and observational research with qualitative methods. Data collection was carried out using a retrospective method on stock taking and drug invoices in 2023. And a prospective method on stock cards using the cross sectional method.

Population and Sample

The population used in this research is drug management data at the planning stage, procurement stage and distribution stage at the Pharmacy Installation of Hospital procurement funds based on drug management indicators at the planning stage, procurement stage and distribution stage in the X Hospital Pharmacy Installation in 2023.

Data collection technique

The drug management data at Hospital X for the year 2023 were collected through methods including observation, document review, and structured interviews.

Data analysis

The data analysis used is descriptive data analysis and according to the Indonesian Ministry of Health in 2008, WHO in 1993 and Pudjaningsih in 1996.

Planning Stage

a. Indicator of conformity of available drug items with the National Formulary.

$$z = \frac{x}{y} \text{x } 100\% \quad (1)$$

Information: x = Number of drug items according to the National Formulary and y = Number of drug items available in the hospital.

Procurement Stage

a. Frequency indicators for procurement of each drug item. This is done by taking drug stock cards at random and then observing how many times drugs are ordered each year.

b. Invoice error indicator

$$z = \frac{x}{y} \text{x } 100\% \quad (2)$$

Information: x = number of incorrect invoices and y = number of invoices received.

c. Indicator of the frequency of delays in payment by the hospital within the specified time. This is done by observing the debt list and matching it with the payment list.

d. Indicators of drug availability levels
$z = \frac{x+y}{z} x\ 100\%$ (3)
Information: x = amount of drug stock, y = drug use for 1 year and z = average monthly drug use.

e. Dead stock percentage indicator
$z = \frac{x}{y} x\ 100\%$ (4)
Information: x = number of unused drug items for 3 months and y = number of drug items in stock

Distribution Stage

a. Indicator of compatibility between drugs and stock cards. By taking a 10% sample of the drug stock card and matching it with the existing items. then calculated.
$z = \frac{x}{y} x\ 100\%$ (5)
Information: x = number of drug items that match the stock card and y = number of stock cards taken.

Data Validity

Validity tests were carried out to test observation sheets and in-depth interview guides. Validity is a test to explain how good the data collected from the research instrument is. Validity can be carried out in several types, one of which is content validity, which is a test carried out through rational analysis by a competent panel or expert judgment (Utomo, 2019). Expert Judgment is a technique where judgment is given based on a series of criteria or specific expertise that has been obtained in a particular field of knowledge, application area, or product area, certain discipline, etc (Szwed, 2016).

RESULT

Planning Stage

Indicators of Conformity of Available Medicines with the National Formulary 2023.

Table 1 . Calculation Results of Indicators of Conformity of Available Medicines with the National Formulary 2023.

Number of Drug Items According to the National Formulary	Number of Drug Items Not Appropriate to the National Formulary	Results (%)	Standard Value (%)
108	484	18	76

Procurement Stage

Procurement Frequency Indicator for Each Drug Item.

Table 2. Calculation results of procurement frequency indicators for each drug item.

Procurement Period	Number of Times Medication Ordered Each Year	Average	Standard
(Low<12x/year) (Medium12-24x/year) (High>24x/year)	84 1 0	5.6	Low <12x/Year

Indicator Invoice Error

Table 3. Calculation results of Invoice Error Indicators.

Incorrect Invoice Amount	Number of Invoices Received	Results (%)	Standard Value (%)
150	1114	13	0

Indiator Frequency of Delayed Payments by Hospitals Against Predetermined Time

Table 4. Calculation results of indicators for the frequency of delayed payments by hospitals over the specified time.

Pending Payment Invoice	Invoice Received	Results (%)	Standard Value (%)
784	1114	70	0

Drug Availability Level Indicator

Table 5. Calculation Results of Drug Availability Level Indicators.

Number of Medicine Stocks	Number of Drug Use Per Year	Average Medication Use Per Month	Results (Month)	Standard Value (Month)
1,640,861	578.154	48,179	46	12-18

Dead Stock Percentage Indicator

Table 6. Calculation Results of Dead Stock Percentage Indicator.

Number of Unused Medication Items for 3 Months	Number of Drug Items in Stock	Results (%)	Standard Value (%)
7	592	1	0

Distribution Stage

Table 8. Match Indicator Between Drugs and Stock Cards.

Number of Drug Items Corresponding to Stock Card	Number of Card Stock Taken	Results (%)	Standard Value (%)
85	85	100	100

DISCUSSION

Planning Stage

Indicators of Conformity of Available Medicines with the National Formulary 2023

Based on **Table 1** above, it is known that the number of drug items available at the Pharmacy Installation at Hospital Thus, Hospital Pharmacy Installations X in 2023 have not yet reached the 76% standard (Satibi, 2014). Therefore, it can increase human error when adjusting drug items written on prescriptions with the National Formulary. Apart from that, doctors only prescribe drugs based on the urgency of the disease pattern and the patient's severity. This is what causes the indicators of conformity of drug items to the National Formulary to be inefficient.

The role of pharmacists is quite large in communicating and coordinating with doctors in prescribing drugs according to the national formulary (Dianingati & Prasetyo, 2015). This can be conveyed in regular meetings at the Pharmacy and Therapy Committee (KFT).

Based on research conducted by (Falinda dkk., 2022) regarding the Evaluation of the Selection, Planning and Procurement Stages of Drugs at the Kembangan Regional General Hospital, it is known that the percentage of conformity of drug items with the national formulary is 60% in the inefficient use of drugs included in the national formulary. This is because the medicines proposed by specialist doctors are based on urgency, disease pattern and level of importance so that the medicines issued are not based on the National Formulary (Falinda dkk., 2022).

Procurement Stage

Procurement Frequency Indicator for Each Drug Item

Based on **Table 2**, the results of research conducted by taking 85 samples from drug stock cards at the Pharmacy Installation at Hospital because it is less than 12x/year. There were 84 items of medication ordered <12x/year, while there was 1 item of medication ordered 12-24x/year, there was no medication ordered >24x/year, and there were 5 items of medication that were not reordered. Based on the results of an interview with the Head of the Departement Pharmacy of X hospital, this happened because medicine orders were made by looking at the number of medicines that were frequently used. For example, the drug sucralfate is a fast moving drug or one that is taken frequently. Medicines are procured at Hospital X once a month using the consumption method.

The frequency of drug procurement each year is classified into 3 categories, namely low frequency (<12x/year), medium (12-24x/year) and high frequency (24x/year). The large number of drugs with medium and high frequency shows the ability of the Hospital Pharmacy Installation to respond to changes in drug needs in quantities appropriate to drug needs at that time. Repeated procurement of medicines also shows that what is available in the Hospital Pharmacy Installation is medicine with fast moving. The large number of drugs included in the slow moving type can mean losses for the hospital. Therefore hospitals must use a combination method to plan drug needs. The combination method is a combination of the epidemiological method and the consumption method. This method was carried out to overcome the weaknesses of the two methods (Mahdiyani dkk., 2018)

Based on research conducted by (Diana Putri Arfianingsih dkk., 2023) regarding Evaluation of Medication Management in the Pharmacy Installation of RSUD dr. Soeratno Gemolong, Sragen Regency, it is known that the procurement of each drug item is carried out 4-6 times a year and is in the low category, namely less than 12 times per year. This is because procurement at RSUD dr. Soeratno Gemolong is carried out every 3 months using an e-catalog system.

Indicator Invoice Error

Based on the research results from **Table 3**, it shows that there were 150 invoice errors out of a total of 1114 invoices received in 2023. Therefore, invoice errors were obtained at 13% and had not yet reached the 0% standard (Satibi, 2014). As a result of an interview with the head of the Pharmacy Installation at Hospital X, other

invoice errors include when goods arrive that do not match the quantity ordered, there are reductions in quantities and excess quantities, and even errors in the type of inventory. The purchase invoice error criteria used are a mismatch in the type of drug, the number of drugs in one item, or the type of drug in the invoice against the corresponding order letter. Inconsistency between the invoice and the order letter can be caused by the goods being vacated by the tender provider and the stock of goods not being suitable (Satibi, 2014). If an error occurs in ordering medicines, Departement Pharmacy can make a return/refund to the distributor based on applicable procedures.

Based on research conducted by (Diana Putri Arfianingsih dkk., 2023) concerning Evaluation of Drug Management in the Pharmacy Installation of RSUD dr. Soeratno Gemolong, Sragen Regency, it is known that there were 8 invoice errors that occurred because more goods arrived than the goods ordered.

Indiator Frequency of Delayed Payments by Hospitals Against Predetermined Time

Table 4 shows that the frequency of delayed payments by hospitals is 70% and does not meet the 0% standard (Satibi, 2014). That the number of pending invoice payments was 784 invoices out of the total number of invoices received, namely 1114 invoices. Based on the results of an interview with the Head of the Pharmacy Installation at Hospital Indicators of the frequency of delayed payments indicate poor financial management by the hospital.

Based on research conducted by (Diana Putri Arfianingsih dkk., 2023) regarding Evaluation of Medication Management in the Pharmacy Installation of RSUD dr. Soeratno Gemolong, Sragen Regency, where the frequency of delayed payments by hospitals is in accordance with the indicator, namely 0. because pharmacy officers pay orders according to the predetermined deadline before they are due.

Drug Availability Level Indicator

Based on **Table 5**, the level of drug availability is 46 months so it is not in accordance with the standard, namely 12-18 months (Satibi, 2014). Based on the results of interviews with the Head of the Pharmacy Installation at Hospital Apart from that, cases of disease suddenly decreased, causing some medicines not to be released, for example vaccines left during the Covid-19 era were destroyed by parties entrusted to the hospital. Control of the use of pharmaceutical preparations, medical devices and consumable medical materials is carried out by the pharmaceutical installation together with the Pharmacy and Therapeutics Committee (KFT) at the hospital. The aim of controlling the inventory of pharmaceutical preparations, medical devices and consumable medical materials includes the use of drugs in accordance with the hospital formulary. Based on this, the pharmaceutical management department must ensure that the medicines given by doctors must comply with the formulary (Kemenkes RI, 2016).

Based on research conducted (Dyahariesti & Yuswantina, 2019) regarding Evaluation of the Effectiveness of Medication Management in Hospitals, it is known that the value of drug availability is 27,4 and is not yet effective because it exceeds the standard of 12-18 months due to doctors' changing prescribing patterns and causing medication. The drugs used also change and as a result many drugs are not used and end up piling up.

Dead Stock Percentage Indicator

Based on the research results from **Table 6** above which was carried out on 85 people by taking a sample of 85 out of 592 population of drug items which were calculated using the Slovin formula. There are 7 items of medicine that have not been used for 3 months with a dead stock percentage of medicines of 1%. According to (Satibi, 2014) the standard value for the dead stock percentage indicator is 0%. So based on the results obtained from the Pharmacy Installation of Hospital X in 2023 it has not yet reached the standard. The results of the interviews showed that this happened because of the continuous change of general practitioners every year (resignation) so that the drugs used were different. Dead stock is drug stock that has not been used for 3 consecutive months. Dead stock can result in losses such as poor money circulation, damage to medicines due to being stored for too long, causing the medicines to expire (Satibi, 2014). The occurrence of dead stock is caused by an inappropriate procurement process in accordance with existing needs and budget, based on the type, quantity and price of drug supplies. Efforts that can be made to minimize dead stock are by monitoring drug stocks every month (Khairani dkk., 2021).

Based on research by (Sabarudin dkk., 2020) regarding Evaluation of Medication Management in the Pharmacy Installation at Dr. Army Hospital. R. Ismoyo Kendari In 2018, it can be seen that the percentage of drug dead stock value was 1,64% and had not yet reached the standard of 0% in the Satibi book (Satibi, 2014). This is due to prescribing that does not comply with the formulary and changes in disease patterns that occur.

Distribution Stage

Based on the research results from **Table 7**, 85 stock card samples show that the match between the number of drugs and the stock card is in accordance with the indicator standard, namely 100% (Satibi, 2014). This shows that there are procedural operational standards in recording pharmaceutical supplies in warehouses. The matching process must be carried out at the same time to avoid mistakes due to incoming or outgoing goods. If it is not carried out simultaneously, the mismatch will cause disruption to the planning of purchasing goods and services for patients (Satibi, 2014).

This is in accordance with research by (Diana Putri Arfianingsih dkk., 2023) regarding Evaluation of Medication Management in the Departement Pharmacy of RSUD dr. Soeratno Gemolong, Sragen Regency, it is known that the percentage of match between the drug and the stock card is 100% so it is said to have reached the standard.

CONCLUSIONS

Based on the results of research conducted at X Hospital, evaluation of drug management using indicators according to the Indonesian Ministry of Health in 2008, WHO Indicators in 1993, and Pudjaningsih Indicators in 1996 at the planning, procurement and distribution stages. The results of the data obtained are that the conformity of drug items with the national formulary is 18%, invoice errors are 13%, the frequency of delayed payments by hospitals at the specified time is 70%, the level of drug availability is 46 months and the percentage of dead stock is 1% which are indicators that are not appropriate. with standards. However, there are 2 indicators that meet the standards, namely 100% match between drugs and stock cards and the frequency of procurement of each drug item is 5,6x/year. So it can be concluded that drug management in the Pharmacy Installation of Hospital X in 2023 has not met the standards that have been set for several indicators.

ACKNOWLEDGMENT

Thank you to Hospital X for providing the opportunity for researchers to conduct research at the hospital, as well as to the writing members who have collaborated to prepare the manuscript of this research.

AUTHORS' CONTRIBUTIONS

All authors actively contributed to the research.

CONFLICT OF INTERESTS

This research has no conflict of interests

ETHICAL CONSIDERATION

No

BIBLIOGRAPHY

Akbar, N. H., Kartinah, N., & Wijaya, C. (2016). Analysis Of Drug Storage Management In Community Health Centers In Banjarbaru City. *Jurnal Manajemen dan Pelayanan Farmasi, 6*(4), 255-260. https://doi.org/10.22146/jmpf.354

Diana Putri Arfianingsih, Isna Nur K, & Kusumaningtyas Siwi Artini. (2023). Evaluation of Drug Management at the Pharmacy Installation of Dr. Soeratno Gemolong Regional Hospital, Sragen Regency. *Jurnal Rumpun Ilmu Kesehatan*, *3*(3), 165–185. https://doi.org/10.55606/jrik.v3i3.2646

Dianingati, R. S., & Prasetyo, S. D. (2015). Analysis of Prescription Suitability for National Health Insurance Patients with WHO 1993 Prescribing Indicators at the Outpatient Pharmacy Installation at Ungaran Regional Hospital for the Period January - June 2014. *Jurnal Majalah Farmaseutik, 11*(3), 362-371. https://doi.org/10.22146/farmaseutik.v11i3.24129

Dyahariesti, N., & Yuswantina, R. (2019). Evaluation of the Effectiveness of Drug Management in Hospitals. *14*(1). *Media Farmasi Indonesia, 14*(1), 1485-1492. *14*(1), 1485–1492. https://mfi.stifar.ac.id/MFI/article/vie w/109

Falinda, R., Andriani, H., & Sjaaf, A. C. (2022). Evaluation of the Selection, Planning and Procurement Stages of Drugs at Kembangan Regional Hospital. *Syntax Literate: Jurnal Ilmiah Indonesia* , *7*(11), 16179-16185. https://doi.org/10.36418/syntax-literate.v7i11.9914

Indriana, Y. M., Darmawan, E. S., & Sjaaf, A. C. (2021). Analysis of Drug Management at the RSUA Pharmacy Installation in 2020. *Promotif : Jurnal Kesehatan Masyarakat*, *11*(1), 10–19. https://doi.org/10.56338/pjkm.v11i1.1512

Khairani, R. N., Latifah, E., & Nila Septianingrum, N. M. A. (2021). Evaluation of Expired Drugs, Damaged Drugs and Dead Stock at Health Centers in Magelang Region. *Jurnal Farmasi Dan Ilmu Kefarmasian Indonesia*, *8*(1), 91. https://doi.org/10.20473/jfiki.v8i12021.91-97

Kementerian Kesehatan Republik Indonesia. (2016). *Regulation of the Minister of Health of the Republic of Indonesia Number 72 of 2016 concerning Pharmaceutical Service Standards in Hospitals.* https://peraturan.bpk.go.id/Home/Details/117280/permenkes-no-72-tahun-2016

Mahdiyani, U., Wiedyaningsih, C., & Endarti, D. (2018). Drug Management Evaluation Focusing On Procurement at Muntilan District Hospital Magelang in Year 2015 – 2016. *Jurnal Manajemen dan Pelayanan Farmasi,* 8(1), 24-31. https://doi.org/10.22146/jmpf.31883

Oktaviati, E., Fatimah, N., & Warnida, H. (2021). Evaluation of Drug Management in the Pharmacy Installation of Samarinda Level IV Hospital. *1*(72), 152–159. http://jurnal.stiksam.ac.id/index.php/prosi ding/article/view/586

Purwandari, N. K., Suryoputro, A., & Arso, S. P. (2017). Analysis of Waiting Time for Outpatient Prescription Services at the Pharmacy Depot of the Mceb Building, Sultan Agung Islamic Hospital, Semarang. *Jurnal Kesehatan Masyarakat*, *5*(1), 103-110. https://doi.org/10.14710/jkm.v5i1.14983

Sabarudin, S., Ihsan, S., Nirmala, F., Tendri Adjeng, A. N., & Dzulhijjah, D. (2020). Evaluation of Drug Management at the Pharmacy Installation of the Dr. R. Ismoyo Army Hospital, Kendari in 2018. *Medula*, *8*(1), 23. https://doi.org/10.46496/medula.v8i1.15024

Szwed, P. S. (2016). *Expert judgment in project management: Narrowing the theory-practice gap*. Project Management Institute.

Utomo, B. (2019). Analysis of the Validity of Question Item Content as an Effort to Improve the Quality of Learning in Islamic Value-Based Madrasahs. *Jurnal Pendidikan Matematika (Kudus)*, *1*(2). https://doi.org/10.21043/jpm.v1i2.4883