Effective Drug Procurement Planning in Hospital Pharmacy Installation: Evaluation and Recommendations

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Abstract

Drug management is a process of planning, implementation, and control. This study evaluates the drug procurement planning process at the Pharmacy Installation of X General Hospital. The research is descriptive qualitative. Data for this study were collected in November 2023, at X General Hospital. The informants in this study consisted of 5 individuals, 2 primary informants, the Head of the Pharmacy Installation and the Pharmacy Warehouse Pharmacist, and 3 triangulation informants, a user, a finance staff member, and the Deputy Director. Data collection techniques included indepth interviews, direct observation (IFRS) with note-taking, and document analysis using monthly drug usage reports. The triangulation method was also applied. Data were analyzed through data reduction, data display, and conclusion drawing. The results revealed that the drug planning process, drug selection, and drug calculation were different from holds. Price determination during planning was based on prices offered by suppliers by cooperation agreements. Examination of financial records showed that the percentage of capital funds in 2023 was 20.7%, indicating that the allocation of funds was inefficient. The number of drug items held at the Hospital, compared to those planned for 2023, was 91.8%, meaning not all drugs were acquired as planned. Similarly, the percentage of drug receipts relative to the plan was also 91.8%, further indicating that not all drugs were received as expected. This study concludes that drug planning and procurement at X General Hospital must still comply with existing regulations, necessitating planning, procurement, and evaluation improvements. The ABC-VEN method can be utilized to assist hospitals in creating a matrix to plan drug procurement more effectively

Keywords: Pharmacy, Management, Medicine, Hospital

INTRODUCTION

Medicine is one of the irreplaceable components in health services. Medicine is one of the essential elements in health efforts, starting from efforts to improve health, prevention, diagnosis, treatment, and recovery, so it must always be available when needed. Quality health services are services that can provide satisfaction to its users. One way to provide exemplary patient service can be implemented if hospitals can manage resources to the maximum (Ampah & Ali, 2019; Siregar et al., 2023).

Hospitals are healthcare institutions with distinctive characteristics that are influenced by several factors, such as health science, technological advances, and the socio-economic life of the community (Setyawan et al., 2020). Health services of higher quality and affordable for the community must be realized and maintained (Ihsan et al., 2018).

Logistics management is a supply chain process with planning, implementation, and control functions. It aims to achieve the efficiency and effectiveness of storing and distributing

goods, services and information related to the point of origin to the point of consumption in meeting customer needs (Islam et al., 2023).

Minister of Health Regulation Number 72 of 2016 concerning Pharmaceutical Service Standards in Hospitals makes pharmaceutical service standards a benchmark for organizing pharmaceutical services (Kemenkes RI, 2016). This obstacle is due to the patient surge, as the data illustrated. Hospital X was established in mid-2019, with a total number of patient visits based on payment methods during March-May 2023 of 16.612 visits consisting of General and National health insurance patients. The percentage of general patients is 25%, and 75% are national health insurance patients (Karuniawati et al., 2016). Be a concern in quality and cost control so that the Hospital can remain sustainable and the quality provided to patients can be maintained (Bhati et al., 2023).

One of the Minimum Service Standards (MSS) in Pharmaceutical Installation is the response time for preparing non-recombinant drugs <30 minutes. This requires maximum service, including the availability of drugs in the Pharmaceutical Installation (Tahir, 2022). Drugs are an important element in health efforts, starting from efforts to improve health, prevention, diagnosis, treatment and recovery, so they must be made available when needed. The availability of complete medicines is a goal that must be achieved. Drug management includes selection, procurement, distribution and utilization activities (Faramita & Wiyanto, 2016; Trianengsih et al., 2019).

General Hospital X was established in mid-2019, with a total number of patient visits based on payment methods during March-May 2023 of 16.612 visits consisting of General patients and National Health Insurance. A percentage of general patients (25%) and 75% are national health insurance patients, and this must be a concern in controlling quality and costs so that the Hospital can remain sustainable and the quality provided to patients can be maintained. This Hospital is relatively new and still in the system formation stage, so researchers want to contribute to the evaluation of the drug planning and procurement system currently running in the X General Hospital Pharmacy Installation so that drug availability can be maximized. Drug vacancies still occur frequently so there is a drug debt by the Hospital to patients, especially patients with a history of chronic illness who require treatment for 30 days. However, the drug is experiencing empty stock and must wait for the re-procurement process then will be given to the patient when the drug is available again, but this is risky because it will affect the patient's treatment.

Based on preliminary studies, it was found that the data on the drug debt report of the X Hospital Pharmacy Installation to patients in August 2022 were 43 patients and increased by

139 patients in September 2023 and 46 patients in October due to drug unavailability at X Hospital. The stock-taking report for January 2023 includes data on all drug items and consumables with a total of 2132 items with a nominal value of Rp 1.123,811,463.00, data on drug items and BHP with a minus difference of 411 items with a nominal value of Rp 348.398. 056.00, data on drug items and consumables with a plus difference of 564 with a nominal value of Rp 299.332.568.00, data on drug items and consumables with results in accordance between the physical amount and system stock of 1157 with a nominal value of Rp 687.778.081.00, data on ED (expired date) drug items as many as 55 items with a nominal value of Rp 19.059.628.00. According to the Directorate of Pharmaceutical Development and Medical Devices of the Ministry of Health of the Republic of Indonesia 2008 concerning the management of pharmaceutical supplies in hospitals, to maintain the quality of pharmaceutical supply management by conducting monitoring and evaluation activities where these activities have benefits as input for planning and decision making. Meanwhile, this Hospital has never evaluated drug procurement planning at General Hospital X after 4 years of running.

Based on the description above, the impact of not implementing good pharmaceutical logistics management in hospitals is in the drug procurement planning process, resulting in reduced quality of hospital services and affecting patient satisfaction. Therefore, it is necessary to evaluate the drug procurement planning process in the Pharmacy Installation of General Hospital X. This study aims to evaluate the drug procurement planning process at the Pharmacy Installation of General Hospital X.

METHODS

Qualitative research is presented descriptively through indepth interviews, observation, and documentation. The research was conducted in November 2023 based on the data to be studied in one period of the annual Drug Availability Plan, namely in 2022-2023, which was carried out at X General Hospital Kendal. The informants of this study consisted of the main informants, namely the Head of the Pharmacy Installation as much as 1, Triangulation informants consisted of 3 informants, 1 person as a user, 1 person from the finance sector, and 1 person from the deputy director's board of directors.

Data collection used pedowan interviews with drug procurement planning officers at IFRS. Observation Sheet as a tool to record the results of observations during the study where direct observation was carried out at IFRS on the stages of drug procurement planning activities. And sound recording devices and stationery are tools used to record the results of observations made by researchers with informants.

Data collection procedures where researchers analyze IFRS service guideline documents related to standard operating procedures (SPO) for drug procurement planning. Researchers will calculate the previous drug consumption based on data on fund allocation, drug list, initial stock, receipt, expenditure, remaining stock, expired drugs, empty drugs, and safety stock. This activity is continued by calculating planning needs using the consumption method, then researchers calculate the percentage of each indicator based on data obtained from IFRS. The evaluation was done after all calculations were done.

Data analysis uses content analysis in data reduction, presentation, and conclusion drawing. Data reduction, where interview data is transcribed and coded to identify findings data presentation, coded data is presented in descriptive narratives, and a conclusion drawing is drawn based on patterns seen in the data and verified through source triangulation. Triangulation is done by comparing the results of interviews with other data sources. This research has received ethical approval from the Health Research Ethics Commission of the Faculty of Public Health, Diponegoro University, with Number 462/EA/KEPK-FKM/2023.

RESULT

Table 1. Characteristics of Respondents

Informant code	Gender Age	Age	Resent Education	length of employment	Position
IU 1	Male	33 years	Pharmacist	3 years	Head IFRS
IU 2	Male	26 years	Pharmacist	2 years	Pharmacy Warehouse Pharmacies

Based on the table above, the two informants are, by the provisions of the Minister of Health Regulation Number 72 of 2016, namely the pharmacist is responsible for managing pharmaceutical preparations according to applicable regulations and ensuring their quality, benefits and safety starting from planning drug needs, procurement, receipt, storage, distribution, destruction and withdrawal, control and administration required for activities in the Hospital Pharmacy Installation.

Table 2. Characteristics of Triangulation Informants

Informant Code	Gender	Age	Last Education	Length of Work	Department
IT 1	Male	58 years	Dentist	4 years	Deputy Director
IT 2	Female	34 years	Bachelor's Degree in Civil Engineering	4 years	Head of Finance
IT 3	Female	32 years	General Practitioner	4 years	Emergency room doctor and head of medical services

The triangulation informants in this study consisted of 3 informants, namely 1 person as a user, 1 person from the finance sector, and 1 person from the board of directors currently serving as deputy director. However, he once served as Acting Director in 2022. Director in 2022.

Drug Procurement Planning Process in the Pharmaceutical Installation of Kendal General Hospital X

The results of interviews with the Head of the Hospital Pharmacy Installation and Pharmacist of General Pharmacy Warehouse X Kendal showed that the drug procurement planning process did not follow the guidelines.

"...The drug procurement planning process is carried out before procuring drugs, which functions to find out how much funds we need for planning the expenditure outside of sudden needs, because indeed the stock we have planned is because there is a surge in patients, so there are additional needs..." (IU1)

"...Before making expenditures for drug needs, we make a plan first from the head of the installation in coordination with the warehouse section to determine drugs that are running out or nearing exhaustion and look for distributors that are available for drugs included in the plan based on previous usage history to then make a plan and after that we give it to management and directors to be approved or signed..."(IU2)

How to Select The Types of Drugs Included in Drug Procurement Planning

The drug selection process carried out in planning at IFRS General X Kendal is not by the standard because it does not consider the DOEN or the National Formulary so it is very prone to errors or causes drug vacancies that will affect the quality of the quality of hospital services and of course this will be very detrimental to patients where the patient does not get the treatment that should be.

"...the selection of the types of drugs included in the planning is purely from the history of previous drug purchases only, not based on DOEN (National Essential Drug List) or based on the national formulary because for drugs that are widely used by doctors even though it is not a national formulary will still be included in the planning because of its high usage history..." (IU1)

"...the pharmacist in the warehouse will coordinate with the head of the pharmaceutical installation regarding which drug stocks are running low or have run out, to be then compiled in the planning of drug needs by the head of the pharmaceutical installation, while checking the stock itself is carried out before the plan will be made..." (IU2)

How to Determine The Number of Drugs That Will Be Included in The Procurement Plan

Determination of the amount of drugs in planning needs is done using Excel, based on the use of the nearest period with an estimated lead time of 2 days, without considering buffer stock and remaining stock. It does not follow the existing drug requirement calculation methods (consumption, epidemiology, or combination). This is due to the need for hospital guidelines

related to drug requirement planning. Weak planning can disrupt the pharmaceutical logistics management cycle, leading to budget waste, suboptimal storage capacity, poor drug distribution, and drug shortages, damage, or expiry risks.

"...because there is no benchmark for the needs of 30 days or how many days, usually the amount of calculation is based on the closest history adjusted to that, for example, 100 boxes of paracetamol drugs are needed, well later when the drug runs out, or the stock is tight in week 2, there will be another purchase outside the planning that was previously submitted to the directors, so, for example, the calculated need for 1 week requires 10 boxes, then the amount of drugs planned is estimated for the needs of 3 weeks, which means I need 30 boxes, but what happens because what is used is an estimate, often the calculation misses and does not know when the stock runs out. So there will be a chase of empty stock because of late procurement..." (IU1)

"...for the amount of drugs that will be included in the planning, it will be made or calculated by the head of the installation, and the warehouse pharmacist only helps to confirm the availability of stock and prices at PBF or drug distributors that we can make purchases there. Because several distributors are locked or we cannot shop because the Hospital has not completed the payment." (IU2)

How to Determine The Price of Drugs That Will Be Included in The Procurement Plan

The interview results show that drug pricing in planning is based on the prices offered by suppliers in the cooperation agreement. The problem is that the Hospital is bound to buy drugs from the cooperation agreement even though the drugs are rarely used. The cooperation agreement only involves 3 suppliers, while for drug items outside the cooperation agreement, direct negotiations are carried out based on previous prices that the Hospital has obtained for the same item.

"...because there is no benchmark for the needs of 30 days or how many days, usually the amount of calculation is based on the closest history adjusted to that, for example, 100 boxes of paracetamol drugs are needed, well later when the drug runs out, or the stock is tight in week 2, there will be another purchase outside the planning that was previously submitted to the directors, so for example the calculated need for 1 week requires 10 boxes, then the amount of drugs planned is estimated for the needs of 3 weeks, which means I need 30 boxes, but what happens because what is used is an estimate, often the calculation misses and does not know when the stock runs out. So there will be a chase of empty stock because of late procurement..." (IU1)

"…my job as a warehouse pharmacist is to negotiate directly with drug distributors, and because there is already a Cooperation agreement with 3 suppliers, the price used is in accordance with the Cooperation agreement and is flat for 1 year, for medicines outside the Cooperation agreement we negotiate directly, some give us discounts with an off and on invoice system if off invoice the price of the medicine we get is higher because later the discount is accumulated annually and will be transferred to the Hospital or can be in the form of support when the Hospital holds an event, if the discount is on invoice then the price obtained is by the discounted price and the Hospital and distributor have agreed upon this.. " (IU2)

Table 3. Percentage of Allocation of Drug Procurement Planning Funds

Proposal (IDR)	Budget Amount		Total (IDR)	%
	Year 2023	Revised Budget 2023		
1.180.000.000	985.250.000	138.561.463	1.123.811.463	95,2

Source: Financial Report on Drug Planning for X Kendal Hospital

Data shows that the percentage of capital funds for the Hospital Pharmacy Installation is 95.2%, less than 100%, so it is considered inefficient and can hinder the drug management process, including procurement, distribution, and use of drugs. The Head of the Pharmacy Installation stated that the Hospital did not always fully approve the proposed funds because they had to be adjusted to the existing budget. The budget received usually includes a buffer stock for 9-10 months, with the shortfall proposed in the revised budget in September. As a result, drug procurement is often not fully realized according to the initial plan due to limited funds.

Table 4. Percentage of Number of Drugs Procured to Plan

Number of drug items held	Number of planned drug items	%
1185	1215	97,5

Source: Financial Report on Drug Planning for X Kendal Hospital

The data shows that the percentage of realization of the number of drug items at the X Kendal General Hospital is 97.5%, meaning that not all planned drugs are realized. Ideally, the percentage should reach 100%, so drug planning is yet to be efficient. According to an interview with the head of the planning and procurement section, this inefficiency is also related to limited funds and drug availability from distributors.

Table 5. Percentage of Total Drug Receipts Procured to Procurement Plan

Number of drug receipt items	Number of planned drug items	%
1123	1215	92,4

Source: Financial Report on Drug Planning for X Kendal Hospital

Data shows that the percentage of drug acceptance at RSU X Kendal only reached 92.4%, so not all planned drugs were received. Ideally, this percentage should be 100%, so drug planning has yet to be efficient. The high frequency of orders indicates a fast drug turnover, but this also increases costs and workload in the ordering, receiving, and payment processes.

Drug procurement at X Kendal General Hospital experienced several obstacles and constraints that disrupted the drug procurement cycle, this is according to the following interview results :

"Often in procurement, sometimes the medicine in the factory runs out or is empty, so we have to look for another type of medicine with the same efficacy. The problem of emptiness from the pharmaceutical goods provider itself,

and sometimes also because the order is small, so they also consider the shipping operations. In addition to the emptiness of the pharmaceutical goods provider, there is also a problem of the taxpayer identification number, where all pharmaceutical goods providers are required to create a local taxpayer identification number, while the pharmaceutical goods provider does not want to because their taxpayer identification number is one and centralized, so there are pharmaceutical goods providers who are lazy to take care of it" (Results of Interview with the Head of the Pharmacy Installation)

Apart from that, there is also an interview statement from the Pharmacy Warehouse Pharmacist, namely:

"Problems that arise in drug procurement, such as planning reports and realization of needs, are still not balanced because there may be miscommunication between doctors, pharmacists, pharmacy staff, and others. Other problems arise due to less than optimal planning, which results in a shortage of drug stock or excess drug stock" (Results of Interviews with Pharmacy Warehouse Pharmacists)

Based on the interview results above, there are problems related to ordering drugs and so on when planning drug procurement at the pharmacy installation.

The interview results with the Head of the Pharmacy Installation of the X Kendal General Hospital regarding more effective and efficient drug procurement planning solutions are as follows: "Solutions or strategies that can be applied to drug procurement planning at the Hospital Pharmacy Installation through initial planning. In this case, the strategy arises from planning that uses remaining inventory data other than drug usage from the previous year as a basis for planning or by using the top 10 diseases in the planning selection process. Furthermore, in the procurement process, the available budget can be utilized, more selective supplier selection, and requires effective communication between the Hospital and the Distributor" (Results of the Interview with the Head of the Pharmacy Installation)

Based on the interview results above, a more mature planning procedure can be used to improve the effectiveness and efficiency of drug procurement, such as by using remaining inventory data other than drug usage from the previous year as a basis for planning or by using the top 10 diseases in the planning selection process. In addition, in terms of procurement, it must also be more selective regarding the budget, more selective suppliers for smooth drug procurement. It can also be supported by a drug procurement information system. Drug procurement planning at the pharmacy installation of X Kendal General Hospital requires problem-solving for the efficiency and effectiveness of drug procurement by planning to support the availability of drugs at the pharmacy installation of X Kendal General Hospital.

DISCUSSION

Drug planning and procurement at X Kendal Hospital generally do not fulfil the requirements. Caused by an unsupportive information system that causes delays in the pharmaceutical installation to make drug procurement plans, poor drug planning makes drug vacancies still occur, and the Pharmacy Committee has not been formed. The resulting impact is patient safety and hospital quality. This is necessary for the effectiveness and efficiency of drug procurement so that it can use more mature planning procedures. Other problems can be seen at Dr Kandou's Hospital, which often experiences drug vacancies. This condition is caused by many drug items that are included in the high-investment group but are rarely used or slow-moving. This condition affects the procurement process of drugs that have a significant use value or fast-moving drugs (Rarung et al., 2020).

The effectiveness of technology in this study is not a benefit. It supports drug procurement, but it will be a reference for future research that shows that technology is very important in facilitating and assisting data and information problems. The formation of the Pharmacy Therapy Committee so that the Hospital Formulary was not prepared, which resulted in drug planning based on the hospital formulary not being implemented, and the number of human resources in the Pharmacy Installation of the Kartika Pulomas Hospital not meeting the standards of type C hospitals. Pharmaceutical installation service standards based on the Regulation of the Minister of Health Numer 72/2016 outline that drug control is carried out on the type, amount of supply, and use of drugs (Amalia et al., 2020). Drug planning can be done quickly using the ABC analysis method (Quesado & Silva, 2021).

Activity-based costing (ABC) analysis is helpful because it can help determine ordering priorities based on investment and drug use. The steps for calculating costs using the ABC method include identifying activities, identifying cost drivers, grouping costs to activities, determining rates per cost driver, and charging costs to products. An example of the use of ABC analysis in other studies by dividing drug planning into three groups based on the hospital budget (Abdurrahman et al., 2023; Fahamsya et al., 2024).

Analysis in drug inventory control can be sharpened, and then PUT analysis (priority, main, and additional) is used. This category combines ABC-VEN analysis into a matrix. The results of the combined analysis can show which drugs are included in the categories of priority drug groups (VA, VB, VC), main (EA, EB, EC), and additional (NA, NB, NC) (Oetari et al., 2020).

In line with pharmaceutical logistics management, the initial stage is planning, and also planning is an activity in the general management concept. Suppose planning needs to be made

ideally and adequately, for example, in determining an item of excessive or lacking goods. In that case, it will disrupt the overall logistics management cycle, starting with budget waste, expired goods, or accumulation in storage (Muntasir, 2019). Pharmaceutical logistics management in hospitals aims to ensure that the required medicines are always available in sufficient quantities, with guaranteed quality and at affordable prices to support quality and maximum service (Riady et al., 2024). The efficiency of the use of hospital funds for drug procurement depends on the ability of the pharmaceutical installation to manage it, especially at the planning and drug procurement stages (Irawan et al., 2024).

CONCLUSION

This study shows that the planning and procurement of drugs in X Hospital still needs to be by applicable regulations, influenced by systems and policies that do not run well, between the Hospital and the Pharmacy Therapy Committee so that the Hospital Formulary. So, improvements need to be made in planning, procurement, and evaluation. The ABC-VEN method can be used to assist the Hospital in creating a matrix to plan drug procurement. Policies, planning, procurement and evaluation must be supported by sufficient technology to resolve drug procurement limitations adequately. There is a need for analytical methods related to all types of drugs in the X Kendal General Hospital pharmacy installation to determine which drugs are more prioritized. There is a need to increase compliance with the national formulary to minimize the purchase of drugs outside the Hospital and increase Doctor compliance in writing prescriptions based on the formulary by creating hospital therapy standards.

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