Evaluation of Drug Management in the Pharmacy Department of Government General Hospitals in Medan City

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ABSTRACT

Background: Drug management constitutes a critical component of hospital administration, ensuring the effective provision of medical services. This study was done to check how drugs are managed in the pharmacy department. Including the selection, planning, procurement, storage, distribution, and use of medications.

Method: This research used both quantitative and qualitative methods, selected through purposeful sampling. The data was collected using a sequential explanatory retrospective. The study took place in the pharmacy department of government general hospitals in Medan city in 2024: class A (Adam Malik hospital), class B (Dr. Pirngadi Medan hospital), and class C (Prof. Dr. Chairuddin P. Lubis hospital). Prescriptions were collected by randomly choosing 100 sheets each from outpatient and inpatient records. The tools used were observation forms.

Results: The study found that the drugs available matched national formulary standards by at least 76%. The number of times drugs were bought was low ≤12 times a year. Warehouse management system with a 100% match. The average number of medications per prescription for outpatients was compliant with standards, in outpatient, only class B prescriptions a percentage of generic drugs doesn't meet standard. Antibiotic prescribing to the standard in classes A and C outpatients. For injection prescriptions outpatient services fulfilled the standard, but not inpatient. The processing speed non-compound prescriptions class C met the standard. Compound prescriptions, compliance was observed in classes B and C. Overall, drug availability was consistently 100%, with all medications correctly labeled. It can be concluded that drug management in the pharmacy department, adequately meets the standards in the areas of drug selection and distribution, however weaknesses remain in drug planning and use.

Keywords: Drug Management, Evaluation, Pharmacy Department, Indicators

INTRODUCTION

A hospital is a place where people go to get medical help, it offers different kinds of care such as inpatient, outpatient, and when there's an emergency care (1–3), This is based on the Indonesian Minister of Health Regulation Number 72 of 2016, which outlines the standards for pharmaceutical services in hospitals (4). The pharmaceutical services are managed by the hospital pharmacy unit, which is a specific part of the hospital (5). This unit is usually a department

with pharmacists and other trained staff. Pharmacists are in charge of all the work related to medicines in the hospital (6). The pharmacy unit is one of the important departments in a hospital because it uses a large part of the hospital's budget, up to 50-60% (7–9).

According to the Minister of Health Regulation Number 72 of 2016, the activities involved in managing drugs, medical devices, and supplies include choosing, planning, getting them, receiving them, storing them, distributing them, getting rid of them when they are no longer useful, taking them out if needed, checking them, and managing them all properly (4). Managing medicines is a key part of hospital operations that helps provide good healthcare (4). However, if this process is not done well, hospitals can suffer from medical, social, and financial problems (10,11).

From various studies in hospitals, it has been found that there are several issues related to drug management. These include situations where medicines are not available, which forces patients to buy them outside the hospital (10). There are also problems with the distribution of drugs, which can be slow because there aren't enough pharmacists (12,13). Another issue is the long time it takes for patients to get their medicine from the moment it is prescribed until they actually receive it (12,14). These inefficiencies can lead to losses for the hospital (15,16).

Based on observations and interviews at different hospitals in Medan City, there has been no study on how medicines are managed in the pharmacy units of these hospitals. Also, no research has been done to compare the pharmacy department in government general hospitals of classes A, B, and C in Medan City in 2024. Because of this, the researchers wanted to evaluate medication management to find out what problems exist and where improvements can be made, in order to improve public health services and understand the factors that support or hinder the process.

MATERIALS & METHODS

This study used both quantitative and qualitative methods. The data was gathered using a sequential explanatory retrospective approach to assess how drugs are managed in the pharmacy department of government general hospitals in Medan City. These hospitals are classified as A (Adam Malik hospital), B (Dr. Pirngadi Medan hospital), and C (Prof. Dr. Chairuddin P. Lubis hospital). The research took place in 2024. Prescriptions were collected through random sampling, with 100 sheets taken from each outpatient and inpatient.

The tools used for data collection were observation forms (17,18). The study was carried out between February and May 2025. Primary data was collected through direct observation and interviews with the head of the pharmacy department (19). Secondary data was gathered by reviewing documents from the previous year, such as procurement reports and drug stock records (19). Retrospective data was obtained by examining previous year's documents related to various drug management indicators, including compliance with the national formulary, frequency of drug purchases, number of drug items per prescription, percentage of generic drugs, percentage of antibiotic prescriptions, and percentage of injection prescriptions. To ensure the accuracy of data related to pharmacy layout, average waiting time for prescription services, percentage of drugs dispensed, and percentage of drugs with complete labels, data was collected directly in the outpatient department. This research has been approved by the research ethics committee at Universitas Sumatera Utara with the reference number 46/KEPK/USU/2025.

The stages of drug management indicators are as follows (20)

Selection

1) The suitability of the drug items available with the national formulary

Data is obtained by writing the number of drug items in the national formulary (X)

divided by the number of drug items in the hospital formulary (Y) multiplied by 100%.

Rumus $= \frac{X}{Y}$ x 100%

Planning and procurement

1) Frequency of drug item procurement per year

Data was obtained retrospective from drug ordering documents for 2024. This was done by recording the number of times a drug item was procured or ordered from distributors during the year. The total sample of 100 drugs, include fast-moving drugs, was prescribed to outpatients and inpatients in 2024.

Distribution

1) Drug storage system in the warehouse

Data is obtained by writing and observing the drug storage system, namely writing the batch number, expiration date, and date of purchase of the drug on the shelf or pallet (X) divided by the observed drug stock of 100 drug items (Y) multiplied by 100%.

Rumus $= \frac{X}{Y}$ x 100%

Use

1) Number of drug items on each prescription sheet

Data were obtained retrospective by observing the number of drug items per prescription sheet from the previous year (2024). The results were obtained by dividing the total number of prescribed drug items (X) by the number of prescriptions sampled (Y). The sample consisted of 100 prescription sheets from outpatient and inpatient settings. The standards set according to (WHO, 1993) are 1.8-2.2 (21) and 3.3 drug items per prescription sheet (22).

Rumus $= \frac{X}{Y}$

2) The percentage of generic drugs

Data were obtained retrospective by observing the generic drugs prescriptions on each prescription sheet from the previous year (2024). Sample of 100 prescription sheets from each outpatient and inpatient installation. The result is obtained from the number of generic drugs (X) divided by the number of prescribed sampel (Y) multiplied by 100%.

Rumus $= \frac{X}{Y}$ x 100%

3) The percentage of antibiotic drugs

Data were obtained from antibiotic prescriptions from the previous year (2024). A sample of 100 prescriptions from outpatient and inpatient pharmacies was used. The results are obtained from the number of antibiotic drugs (X) divided by the number of prescriptions sampled (Y) multiplied by 100%.

Rumus $= \frac{X}{Y}$ x 100%

4) The percentage of injection prescriptions

Data were obtained from antibiotic prescriptions from the previous year (2024). A sample of 100 prescriptions from outpatient and inpatient pharmacies was used. The results are obtained from the number of injection prescriptions (X) divided by the number of prescriptions sampled (Y) multiplied by 100%.

Rumus $= \frac{X}{Y}$ x 100%

5) The Average speed of prescription (compound and non-compound)

Data was obtained during prescription processing in outpatient settings. Researchers activated a timer to directly observe the process, from when the patient handed the prescription to the pharmacy, verifying the patient's identity and assigning a queue number, entering data, preparing the medication, writing the label, rechecking by the pharmacist, and finally dispensing the medication to the patient. The same applies to compounded prescriptions: after the medication is prepared, the pharmacist then compounds the medication, writes the label, performs a double check by the pharmacist, and then dispenses the medication to the patient. The samples observed were 50 non-compound recipes and 50 compound recipes, then the average speed of completing the recipes was observed.

6) The percentage of drugs that can be given

Data were obtained from outpatient prescriptions activity, with 100 prescription

samples observed. The percentage of drugs that can be given is obtained by dividing the number of drug items given to patients (X) devided by the total number of drug items prescribed (Y) and multiplying by 100%.

$$\text{Rumus} = \frac{X}{Y} \times 100\%$$

7) The percentage of drugs that are full labeled

Data were obtained from outpatient prescriptions activity, with 100 prescription samples observed. The percentage of drugs labeled completely is determined by writing the number of drug items that are labeled completely and correctly containing the name, date of birth, prescription number, date of prescription, instructions for use of the drug (X) divided by the total number of drug items received by the patient (Y) multiplied by 100%.

RESULTS

Table 1. Drug management indicator results

No	Stage	Indicator	Standard	Class A		Class B		Class C	
1	Selection	The suitability of the drugs available with national formulary (23)	≥ 76% (23)	90,2%		93,5%		92,5%	
2	Planning and procurement	Procurement frequency drugs per year (24)	Low <12 times per year Medium 12-24 times per year High >24 times per year (24)	low (average of 62 drugs) Medium (average of 38 drugs)		Low (average of 65 drugs) Medium (average of 35 drugs)		Low (average of 89 drugs) Medium (average of 11 drugs)	
3	Distribution	Drug warehouse management system (24)	100% (24)	100%		100%		100%	
4.	Use			Outpatient	Inpatient	Outpatient	Inpatient	Outpatient	Inpatient
		The average drugs per prescription (22)	1,3 – 2,2 (21) 3,3 (22)	2.1	10	2,4	6,1	2,9	9
		The percentage of generic drugs (21)	82-94% (21)	92%	84%	97%	89%	82%	82%
		The percentage of antibiotic drugs (21)	<22,70% (21)	15%	94%	44%	61%	35%	81%
		The percentage	0,2-48% (21)	8%	100%	12%	98%	17%	99%

			Inpatient		
of injection prescriptions (21)					
The Average speed of prescription (23)	≤ 30 men it (non-compound) ≤ 60 men it (Compound) (23)	34 men it (Non-compound) 68 men it (Compound)	40 men it (Non-compound) 55 Men it (Compound)	20 men it (Non-compound) 47 Men it (Compound)	
Percentage of drugs that can be given (24)	76-100% (24)	91%	95,3%	100%	
Percentage of drugs labeled complete (21)	100% (21)	100%	100%	100%	

DISCUSSION

Selection

1) The suitability of the drug items available with national formulary

The results showed that the suitability of the drug items available with Fornas standards ≥ 76% (23) Classes A (90,2%); B (93,5%) dan C (92,5%). The medicines available and given to patients at government general hospitals in Medan City are in accordance with the medicines listed in the national formulary, based on the results of the study and showing that the medicines listed in the hospital formulary are in accordance with the national formulary. Drug selection in the pharmacy department is based on the national formulary and recommendations from the medical staff group, which consists of general practitioners and specialist doctor (25). Drugs that are not listed in the national formulary but are needed for patient treatment can be ordered for use in hospitals.

Planning and procurement

1) The procurement frequency drugs per year

For the low category procurement is carried out <12 times per year, the medium category 12-24 times per year, the high category >12 times per year (24). Based on research for classes A, B, and C government general hospitals in Medan City in 2024, the procurement frequency is still included in the low category because the average of all drugs used as observation samples is procurement <12 times per year, for the medium category frequency class A 38 drug items, class B 35 drug items, and class C 11 drug items are included in the medium category from 100 samples. High category there are no drug items procured >24 times per year in the pharmacy department of government general hospitals in Medan City in 2024.

Distribution

1) The warehouse management system

Based on the research results it was concluded that the pharmaceutical warehouse arrangement system in the government general hospitals in Medan City meets the standard 100%. Warehouse staff have carried out their duties effectively and meticulously. Drug storage based on FIFO (First in first out) and FEFO (First expired first out), arranged alphabetically, dosage form, therapeutic class, storage temperature. Narcotic and psychotropic drugs are stored in special cupboard in accordance with the Minister of Health Regulation (26). LASA (Look A Like Sound A Like) drugs are given special markings and placed separately to prevent medication errors (27).

Use

1) The average number of drugs per prescription

Based on the research results, the average number of drug items per prescription sheet government general Hospitals in Medan City classes A, B, and C in 2024 for outpatient care was 2.1, 2.4, and 2.9, respectively. In outpatient installation, the standard range is 1.3-2.2 medication items per prescription (21). The results in the inpatient department were 9.6; 6.1; and 9 average drug items per prescription sheet and these results were far above the established standards when compared with (WHO, 1993) and with a maximum standard of 3.3 drug items per prescription sheet (24). The drug management system government general hospitals in Medan City, especially for inpatients, does not meet standards and shows a tendency for drug interactions and polypharmacy to occur because many prescriptions containing more than 3 drug items are still found, and in hospitalized patients there are 10-15 drug items per prescription sheet. Usually, these prescriptions are often found in patients in internal medicine, heart polyclinic, lung polyclinic, and neurology polyclinic.

2) The percentage of generic drugs

The percentage set by WHO (1993) is 82-94% (21). The results of the use of generic drugs in Medan City government general hospitals in 2024 that meet the standards are class A outpatient (92.6%), inpatient (84%) and class C inpatient and outpatient (82%), for class B inpatient according to the standard (89.5%), outpatient not according to the standard (97.1%). The percentage of generic drug prescriptions that do not meet standards is because the drug prescribed to the patient does not have a generic name available on the market, so doctors prescribe drugs with their trade names such as (Pulmicort, Ventolin, Insulin, etc.), for some patients who feel that a branded drug is suitable, they prefer that drug over general drugs and there is a public perception that more expensive branded medications are more effective. For patients who receive a combination of multivitamins, doctors rarely prescribe each drug individually with a generic name, but doctors prescribe one drugs with a trademark containing the required drug composition, such as (Neurohax, Neurodex, Neurosanbe).

3) The percentage of antibiotic drugs

The percentage of antibiotic prescriptions set (WHO, 1993) <22.7% (21) and (Satibi, 2016) <43% (20). The results of the percentage of antibiotic prescriptions in government general hospitals in Medan City in 2024 for inpatient care did not meet WHO standards classes A (94%); B (61%); and C (81%), outpatient care according to class A (15%) and class C (35%) standards for class B outpatient (44%) did not meet Satibi standards, namely <43%. The results indicate a need for reassessment of antibiotic prescriptions to prevent resistance. Doctor prescribes antibiotics to prevent nosocomial infections that arise in the hospital environment during a patient's stay, as the environment is susceptible to disease and infection, and as a preventative measure to prevent the patient from worsening. he percentage of antibiotic use in outpatients is decreasing because doctors are already maximizing antibiotic therapy during inpatient care.

4) The percentage of injection prescriptions

The percentage of injection prescriptions based on WHO (1993) is 0.2-48% (21). The results of the percentage of injection prescriptions in government general hospitals in Medan City in 2024 for inpatient care did not meet the standards, namely for classes A (100%); B (98%) and C (99%) and outpatient care according to classes A standards (8%); B (12%) and C (17%). Injection is the first choice given because it quickly reduces pain in patients, prevents infection, and the injected drug will go directly into the blood vessels, and it has become a habit in society that if you haven't had an injection, you haven't received treatment. The high percentage of injection

prescriptions in inpatients is due to the fact that almost all patients receive intravenous infusions such as Nacl 0.9%; Ringer Lactate, Asering, etc, and some patients are unconscious and cannot oral medication. The percentage of injection prescriptions in outpatients is relatively lower because the only injectable medications given are insulin, hemapo, and lidocaine 20 mg/ml in dental clinic.

5) The average speed of prescription

Based on the results of direct research in outpatients, the average value of the speed of prescription service in class A hospital does not meet the standard for non-compounding (37 minutes), and compounding (68 minutes), class B hospital do not meet the standard (38 minutes), and compounding (56 minutes) meet the standard. Class C hospital both meet the standard for non-compounding (20 minutes) and compounding (53 minutes). Factors that cause long waiting times for non-compound and compound prescription services are due to network system problems causing late prescriptions to enter the pharmacy department and ultimately causing a backlog of prescriptions at the same time. rescriptions come into the pharmacy simultaneously from almost all clinics during peak hours. Prescriptions received after 11 a.m. usually have a longer waiting time than prescriptions received at 9 a.m. out-of-stock medications can slow down the waiting time for prescription services because it requires additional time for confirmation from the doctor regarding the patient's replacement medication. The lack of facilities in prescription services affects prescription service times in the pharmacy department, for example, blenders for powdered prescriptions, sealing equipment (to seal the powder mixture so that it is tightly and airtight), capsule filling machines. These tools are available in the pharmacy department, speeding up service compared to manual. The faster the waiting time for prescription service, the better the pharmaceutical service process (28).

6) The percentage of drugs that can be given

Based on the research results, the percentage of drugs that can be dispensed by outpatient pharmacy department of government general hospitals in Medan City, classes A, B, and C, is (95.7%; 96.3%; 100%). Ompared to the standard is 76-100% (21,24), so the number of drugs served by outpatient pharmacy department meet the standard and is efficient in service. The percentage value that did not reach 100% was due to drug shortages when this research was conducted. Drugs that cannot be given occur due to several factors, first, there is a complete shortage of goods at all distributors, second due to long delivery of goods, goods have been ordered but have not yet arrived (18). Drugs that are often out of stock are fast-moving drugs such as hypertension drugs (Candesartan, Nifedipine, Amlodipine), stomach/dyspepsia drugs (Lansoprazole, Ranitidine), because of the high demand for drugs, the available stocks of medicines are running out quickly compared to the time it takes for the medicines to be available again.

7) The percentage of drugs that are full labeled

Based on research results, the percentage of drugs that are correctly and completely labeled in the pharmacy department of a government general hospitals in Medan City is 100%. 100% result indicates that pharmacists have provided patients with the right to information about the medications they receive. This information is clearly stated on the label (such as the patient's name, date of birth, prescription date, drug name, strength, and how to use the drug (29). Providing accurate and complete drug information significantly impacts drug use. A higher percentage indicates that the pharmaceutical facility is making efforts to provide correct and effective treatment to achieve optimal health (11).

CONCLUSION

Based on the research results, it can be concluded that drug management in the pharmacy department of government general

hospitals in Medan City meets standards at the selection and distribution stages, while not all measures at the planning and use stages meet these standards. It is recommended that further research use updated indicators to better align assessments with current conditions.

Declaration by Authors
Ethical Approval: Approved

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