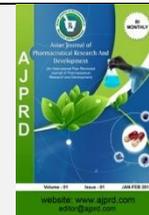


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Research Article

Evaluation of Drug Management For Tuberculosis (TB) Program At Pharmaceutical Installation Public Health Department of North Sumatra Province

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ABSTRACT

Objective: Drug management consists of planning, storing and distribution. It is one of the important duty of Public Health Department of North Sumatra Province. Poor drug management will give a negative impact on service quality. This research aimed to evaluate the management of drug programs for tuberculosis (TB) in 2017, 2018 and 2019 in the Public Health Department of North Sumatra Province. The research was conducted in July - September 2019.

Method: This research was descriptive with quantitative data obtained retrospectively and concurrently. Qualitative data were obtained through observations and interviews with informants. The data obtained were analyzed using indicators and compared with the results of the research.

Result: The result of the research showed that planning, storing and distributing drug for the TB program in the Public Health Department of North Sumatra Province had not fully met the indicator standards. This was indicated by the 6 indicators which had not met the standard, that were the accuracy of planning; planning deviations; level of drug supply; percentage of expired drug; Inventory Turn Over Ratio (ITOR); the average time of drug vacancies and the percentage of dead drug stock and 3 indicators had met the standards, which were the percentage of expired drugs, the structuring system of drugs and the matching of the number of real goods with stock.

Conclusion: the conclusion of this research is drug planning of Public Health Department of North Sumatra Province uses consumption method of previous period. Storage of drugs uses the FIFO/FEFO system. Drug distribution in the North Sumatra Provincial Health Office is based on requests from the District/City.

Keywords: Evaluation, Planning, Storage, Distribution and medication/drug program

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INTRODUCTION

Drug or medicine plays an important role in health service because drug is one of way to improve health status ¹. Drug is one of the important components in health care. Thus, its supply must be guaranteed in sufficient quantities and types according to needs, in a timely, equitable, and continuous manner. Drug costs constitute the largest part of the health budget ².

Drug management is a cycle of activities, starting from the selection, planning, acceptance, distribution, recording and reporting of drugs to achieve a particular goal which is carried out effectively and efficiently ³.

Anti-tuberculosis drug is one of drug program in which it's availability is conducted by Central government. It will be distributed to the provincial and regional levels. Therefore, ensure the supply of anti-tuberculosis drugs in their logistics implementation, it depends on the needs planning done by the health department ⁴.

Logistics management includes: the planning stage, the demand for drugs to the center, storage and distribution. They are to ensure the continued availability and affordability of drugs effectively.

METHODS

Research design

This research was descriptive research by taking the data in concurrent and retrospective. Research material included primary and secondary data. Primary data were obtained from concurrent data conducted at the time of the research, carried out by conducting observations and interviews with relevant parties. Secondary data were obtained from retrospective data collection by reviewing documents in 2017 and 2018 in the form of warehouse stock cards, monthly reports, annual reports, order letters and drug lists for the health service in North Sumatra Province. The data obtained were categorized into qualitative data and quantitative data.

Population

Target population was all document in 2017 and 2018 as well as data observed and obtained during the research at pharmaceutical installation of Health Department North Sumatra Province.

Parameter analysis

Planning accuracy

Planning accuracy is the amount of each planned drug item. It is divided by the amount of usage in a year.

Percentage of plan deviation

Percentage of plan deviation is the percentage of the initial stock sum and the plan for each drug item reduced by the use of each drug item in a year. Furthermore, it is divided by the initial stock sum and the plan for each drug item.

Drug supply level

Drug supply level is the amount of each drug item available divided by the average usage of each drug item per month.

Percentage and value of expired/damaged drugs

The percentage of the number of expired drugs is the percentage of the number of drug items which is

expired in one year divided by the number of drug items available in one year. The value of expired drugs is the number of expired drugs multiplied by the price of the drug.

Percentage of average time of drug emptiness

Percentage of average time of drug emptiness is percentage of the number of days of drug emptiness in a year.

Percentage of unused drug

Percentage of unused drug is obtained from percent of the number of drug items which had not been used for one year divided by the number of items of medicine/drug for a year.

Inventory turn overratio(ITOR)

ITOR (Inventory Turn Over Ratio) is obtained from the total value of the entire drug distributed which is divided by the total average value of the inventory for a year. Average inventory value is calculated from the total initial stock value with the total remaining inventory value divided by two.

System of drug storage

System of drug storage was conducted through observing the drug storage system by observing the batch number and expiration date of the drug on the rack or pallet as well as the date of entry and exit of the drug on the stock card.

Percentage of compatibility for number of real goods with stock card

It is obtained from the last amount of drug stock on the stock card. Furthermore, it is matched to the amount of drug stock on the shelf or pallet.

RESULT AND DISCUSSION

Planning accuracy

Based on Table 1 in 2017, 2018, 2019, it was obtained the results of the planning accuracy the need for drugs in Public Health Department of North Sumatra Province cumulatively of 88%, 65% and 45% are not in accordance with the standards.

Table 1:Percentage of planning accuracy in 2017, 2018 and 2019

Categorizing the accuracy of planning drug items							
No.	Description	Drug items			Percentage		
		2017	2018	2019	2017	2018	2019
1	Less (<100)	2	6	9	12%	45%	45%
2	According (100-150)	14	13	9	88%	40%	45%
3	Over (>150)	0	1	2	0%	15%	10%
	Total	16	20	20			

Percentage of planning deviations

Based on Table 2, it can be seen in 2017, 2018 and 2019, it was obtained the results of the percentage of drug planning deviations of 0%, 40% and 25%

respectively. The standard value of the percentage of deviations in planning is 20-30%⁵. If compared to the standard value, it is not in accordance with the standard.

Table 2:Percentage of planning deviations in 2017, 2018 and 2019

Categorizing planning deviations of drug items							
No.	Description	Drug items			Percentage		
		2017	2018	2019	2017	2018	2019
1	Less (<20)	13	9	9	81%	45%	45%
2	According(20-30)	0	8	5	0%	40%	25%
3	Over (>30)	3	3	6	19%	15%	30%
	Total	16	20	20			

Drug supply level

Based on Table 3, it can be seen that in 2017, there were only 14 of the total 16 drug items were according to the standard. In 2018, 17 of the 20 drug items were based on standards. While in 2019, 4 of

20 drug items were obtained according to the standards. This shows the level of supply in Public Health Department of North Sumatra Province has not yet in accordance with the standard of 12-18 months⁵. Thus, the needs of drug is not met.

Table 3:Percentage of drug supply levels in 2017, 2018 and 2019

No.	Description	Drug items			Percentage		
		2017	2018	2019	2017	2018	2019
1	The level of drug supply <12 months	0	0	14	0%	0%	70
2	The level of drug supply 12-18 months	14	17	4	88%	85%	20
3	The level of drug supply >18 months	2	3	2	75%	15%	10
	Total	16	20	20			

Percentage of number and value of expired/damaged drugs

Based on the result from document and direct observation, it can be seen in Table 4. none of the drug items in 2017, 2018 and 2019 were expired or damaged.

Table 4:The amount and value of expired / damaged in 2017, 2018 and 2019

No.	Drug name	Σ drugs are damage / expired	Σ available drugs
1	-	-	-

The percentage of average time of drug emptiness

Based on Table 5, it can be seen that in 2017, the number of days of drug vacancy was 120 days with a percentage of 30%. in 2018, the number of days of drug vacancy was 73 days with a percentage of 19.96%. While in 2019, the number of days of drug

vacancy was 63 days with a percentage of 18.35%. When compared with the standard value, the average time of the emptiness of the drug was 10 days⁵. Beside, the results obtained were not in accordance with the standard. The results of this research were not better than the results of the research⁶ of 9 days.

Table 5:The average time a drug emptiness in 2017, 2018 and 2019

No.	Year	Σ empty days in a year	Percentage
1	2017	120	30%
2	2018	73	19.96%
3	2019	67	18.35%

Percentage of unused drug

According to table 6, it can be seen in 2017, 2018 and 2019 sequentially that is 23% with 2 types of drugs in 2017, 17% with 11 types of drugs in 2018 and 69% with 1 type of drug in 2019. When

compared with the standard value, it was 0%⁵. In addition, the value of the research results is greater than the standard value, it can be concluded that it is not in accordance with the standard.

Table 6: Unused drug stock in 2017, 2018 and 2019

No.	Year	drug item	Σdrug items	Percentage
1	2017	2	7424	23%
2	2018	11	318807	17%
3	2019	1	8271	69%

Inventory turn overratio(ITOR)

Based on the result of Table 7, in 2017, 2018 and 2019, it were 0.83 times, 1.24 times and 0.56 times.

The results of this research were not better than the results of the research⁷ of 5.77 times.

Table 7:Inventory turn overratioin 2017, 2018 and 2019

No	Year	Σ drug items	ITOR (X)
1	2017	16	0.83
2	2018	20	1.24
3	2019	20	0.56

System of drug storage

Based on the result of observation, it can be see in Table 8. in 2019, it showed that the drug storage

system has already used the FIFO/FEFO system. The results of this research are in accordance with the standards that are according to FIFO / FEFO⁴.

Table 8:System of drug storage in 2019

No	Year	Σ drug items	Observation result
1	2017	16	FIFO/FEFO
2	2018	20	FIFO/FEFO
3	2019	20	FIFO/FEFO

Percentage of compatibility of real goods number and stock card

Based on the result in Table 9, it can be seen that 2019 is 100%. it has been in accordance with standard of 100%⁵.

Table 9:Percentage of compatibility of real goods number and stock card in 2019

No.	Year	Σ drug items	Compatibility between the stock card and the items (Observation result %)
1	2019	20	100

CONCLUSIONS

The conclusion of this research is drug planning of Public Health Department of North Sumatra Province uses consumption method of previous period. Storage of drugs uses the FIFO/FEFO system. Drug distribution in the North Sumatra

Provincial Health Office is based on requests from the District/City.

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