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Branded Drug Planning Based on (Combination) of Consumption Methods With ABC Analysis and Reorder Point (ROP) its Effect on Inventory Value and Turn Over Ratio (TOR) in the Pharmacy Installation of X Hospital, Bekasi

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ABSTRACT
Planning drug needs in the Pharmacy Installation at Hospital X Bekasi, using the consumption method. This causes shortages and excess stock of branded drugs so that the drugs are not used and expire. The high value of branded medicine inventory at Hospital The aim of this research is to determine the difference in inventory value and Turn Over Ratio (TOR) of fast moving branded drugs after testing the application of a branded drug planning model based on a combination of consumption methods with ABC analysis and reorder points compared to the planning before testing in Hospital Pharmacy Installations. X Bekasi. The type of research carried out was pre-experimental using analytical descriptive methods. The approach used in this research is cross sectional. In-depth interviews and Focus Group Discussions were also conducted. The trial was carried out on fast moving ABC branded drugs for 3 months, namely June-August 2023. The quantitative approach was by calculating the inventory value and TOR value of fast moving group A, B and C branded drugs, before and after the trial. The research results prove that the application of model trials can reduce the inventory value of ABC fast moving branded drugs from IDR 124,848,282 to IDR 122,454,522, increase the TOR of ABC fast moving branded drugs from 5.66 to 8.12 and obtain an efficiency of IDR 2,393,760. The conclusion of this research is that planning for fast moving ABC branded drugs based on a combination of consumption methods with ABC and ROP analysis has been proven to reduce inventory value and increase TOR and obtain an efficiency of 1.92%.

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INTRODUCTION

Along with the development of the times, hospitals are required to be able to improve the quality of their services to patients. One of the important services to improve is pharmaceutical services. Pharmaceutical Service Standards in Hospitals include standards management of pharmaceutical preparations, medical devices, and disposable medical

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materials and clinical pharmacy services [1]. Management of pharmaceutical preparations, medical devices, and disposable medical materials as referred to includes selection, planning of needs, procurement, receipt, storage, distribution, destruction and withdrawal, control and administration. The provision of pharmaceutical services in hospitals must ensure the availability of safe, quality, beneficial and affordable pharmaceutical preparations, medical devices, and disposable medical materials.

Drug planning and control is one of the important aspects of hospital management because the existence of drugs in hospitals is very essential, drugs have a contribution to the sustainability of services in hospitals. According to Satibi 2016 in Guswani, drugs are a current asset of the hospital so they are very important for the survival of patients because 90% of health service interventions in hospitals use drugs. Therefore, the availability of drugs is a very important indicator. The existence of drug shortages, out of stock, or piling up stock has medical and economic impacts. This certainly requires efficient and effective drug management and administration efforts.

The management is regulated in logistics management. The definition of logistics management is the process of planning, implementing and controlling the effective and efficient flow and storage of raw materials, inventory in process, and finished goods connected with information from the point of origin to the point of consumption, to meet the needs of customers [2]. The purpose of drug management in hospitals is to ensure that the necessary drugs are available at all times, in sufficient quantities, with guaranteed quality and at affordable prices to support quality services. In terms of drug management, policies and procedures governing these functions must be developed by the pharmacy installation with input from related hospital staff or committees in the hospital.

Hospital X is a type C private general hospital located in the city of Bekasi. Health service activities at Hospital X Bekasi include internal medicine, eyes, nerves, anesthesia, psychiatry, medical rehabilitation, children, heart, obgyn and others. The type of guarantee for patients who seek treatment at Hospital X is insurance and general. The total prescriptions for outpatients and inpatients in 2022 can be seen in the following table.

No	Month	Insurance	General	Total
1	Jan	2103	1168	3271
2	Feb	2480	1169	3649
3	March	2035	1158	3193
4	April	1675	948	2623
5	May	1980	1457	3437
6	June	2163	1508	3671
7	July	2319	1195	3514
8	Aug	1731	1286	3017
9	Sep	2080	1453	3533
10	Oct	2067	1621	3688
11	Nope	2044	1580	3624

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No	Month	Insurance	General	Total
12	Dec	1285	1342	2627
Total		23962	15885	39847

Based on table I.1, it shows that the total prescriptions for outpatients and inpatients at Hospital X in January-December 2022 were 39,847 prescriptions with insurance and general coverage types . However, Hospital X started accepting BPJS patients in December 2022. The following is the total data for outpatient and inpatient prescriptions at Hospital X in January-March 2023, namely:

No	Month	Insurance	General	Total (As s + General)	BPJS	Total (Ass+General+ BPJS)
1	Jan	1458	1365	2823	1919	4742
2	Feb	1654	1391	3045	2015	5060
3	March	1668	1718	3386	2706	6092
Total				9254	6640	15894

Based on table I.2, the total prescriptions for outpatients and inpatients with insurance and general guarantee types have increased every month and the total BPJS prescriptions are more than half of the total prescriptions for general insurance. This can be used as a consideration in drug planning at the Pharmacy Installation of X Bekasi Hospital in 2023 that the provision of branded drugs must be reviewed further.

No	Month	Purchase Value of Branded Drugs	Branded Drug Inventory Value	Ratio N.Inventory / N.Purchases (%)
1	Jan	Rp. 628,113,256	Rp. 1,596,461,234	254.17
2	Feb	Rp. 551,995,692	Rp. 1,566,849,574	283.85
3	March	Rp. 446,335,245	Rp. 1,709,717,627	383.06
4	April	Rp. 399,318,880	Rp. 1,434,819,089	359.32
5	May	Rp. 536,093,071	Rp. 1,258,042,961	234.67
6	June	Rp. 695,433,567	Rp. 1,212,755,850	174.39
7	July	Rp. 569,044,489	Rp. 1,046,413,299	183.89
8	Aug	Rp. 1,017,704,855	Rp. 1,067,066,556	104.85
9	Sep	Rp. 870,556,034	Rp. 926,316,714	106.41
10	Oct	Rp. 801,829,566	Rp. 851,818,591	106.23
11	Nope	Rp. 801,361,235	Rp. 866,376,255	108.11
12	Dec	Rp. 904,617,989	Rp. 952,128,706	105.25
Total		Rp. 8,222,403,879	Rp. 14,488,766,456	176.21

Based on table I.4, it shows that the ratio of the value of branded drug inventory to the purchase value is still large but has decreased every month. The large value of branded drug

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inventory indicates that there is less efficient use of funds. The increase in the number of drug prescriptions for insurance and general types of guarantees in January-March 2023 indicates an increase in drug consumption which will result in an increase in drug needs, but there are many empty drug stocks, while when viewed from the value of branded drug inventory it is very high. Problems that occur at the Pharmacy Installation of Hospital X Bekasi , namely the problems related to drug shortages, high inventory values, and a number of expired drugs are still found . The cause of *expired drugs* is because the drugs are rarely used or drugs that do not exist if the disease exists. In addition, the doctors at Hospital X Bekasi always take turns, therefore each drug prescribed by the doctor is different, resulting in the drugs provided by the pharmacy installation being unused and *expired* .

Based on the interview results, drug needs planning at the Pharmacy Installation of Hospital X Bekasi is carried out twice a week by the *purchasing department* of Hospital X Bekasi using the consumption method. With this method, drug needs planning is increased by about 10% from previous usage. Drug procurement has been carried out by ordering directly to the *Corporate Warehouse, if the drug stock is empty in the Corporate* Warehouse, direct purchases can be made from the distributor.

The consumption method is one of the standard methods often used for planning the amount of drug needs. This method also provides good accuracy predictions for drug needs planning. but does not always provide satisfactory results [3] , because this method only predicts how much drug needs will be planned, or it cannot be known when it is time to reorder. Another weakness of the consumption method is that it cannot provide information about drug planning based on the priority of its investment value.

Effective inventory control must be able to answer three basic questions, namely what drugs will be a priority to be controlled, how much should be ordered, and when should reorders be made [4] . Therefore, a calculation is needed to be able to answer the three basic questions. The combination chosen in answering the three basic questions above, namely a combination of the consumption method with ABC analysis and *Reorder Point* by considering the Hospital Formulary , hospital budget, number of visits and disease patterns because the consumption method is a method that has been running so far so that it is easier to apply.

ABC analysis is also known as Pareto analysis, which is one of the methods used in logistics management to divide groups of goods/drugs into three, namely A, B and C [5] . Group A is goods with a number of items of around 20% but has an investment value of around 80% of the total investment value, group B is goods with a number of items of around 30% but has an investment value of around 15% of the total investment value, while group C is goods with a number of items of around 50% but has an investment value of around 5% of the total investment value [6] . From this grouping, the management of each will be easier, so that planning, physical control, supplier reliability and a large reduction in safety stock can be better [7] . The use of the ABC analysis method in branded drug planning is intended to prioritize the planning of branded drugs that are often used and usually have

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few types but have large investment costs. so if the Hospital Pharmacy Installation (IFRS) can control branded drugs in groups A and B, it means that it can control 80% - 95% of the value of branded drugs used in the Hospital Pharmacy Installation [8].

Pharmaceutical inventory management activities are to minimize inventory value by considering availability according to needs. One approach to pharmaceutical logistics management is starting from planning, procurement, storage, distribution to use, of course each stage must coordinate with each other, to obtain efficient and effective drug management control [10]. Drug inventory efficiency is measured by calculating the *Turn Over Ratio* (TOR) value of drugs, namely the cost of goods sold divided by the average value of drug inventory. The higher the TOR value, the more efficient the management of drug inventory [8].

Research Problems

Ensuring the availability of the right type and amount of drugs available according to needs is one of the most effective drug management processes. Effective management will certainly improve the quality of health for patients. Drug needs planning at IFRS X Bekasi is carried out twice a week by the *purchasing department* using the consumption method. With this method, the planning of branded drug needs is increased by about 10% from previous usage. This causes empty and excess stock of branded drugs so that the drugs are not used and become expired. By using the consumption method alone, it is not possible to know which branded drugs should be provided in large or small quantities, so there is no priority in drug planning. In addition, by using the consumption method, it is also not possible to know which branded drugs absorb large investments. The high value of branded drug inventory at Hospital X Bekasi indicates that there is excess drug stock, but what happens is that many drugs are empty.

Research Hypothesis

Based on the background, problem formulation, research objectives and theoretical framework presented previously, the hypothesis in this study is as follows:

1. There is a difference in the inventory value of *fast-moving branded drugs* before the trial implementation of the branded drug planning model based on a combination of consumption methods with ABC and *Reorder Point analysis* and after the trial.
2. There is a difference in the *Turn Over Ratio value fast moving* branded drugs before the trial implementation of the branded drug planning model based on a combination of consumption methods with ABC and *Reorder Point analysis* with after the trial.

RESEARCH METHODS

The type of research conducted is pre-experimental using descriptive analytical methods. The approach used in this study is *cross-sectional* . *Cross-sectional* research is a study to study the dynamics of the correlation between risk factors and effects, by means of an approach, observational, or data collection. *Cross-sectional research* only observes once and measurements are made on the subject variables at the time of the study [30].

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Quantitative approach by calculating the inventory value and TOR value of branded drugs in groups A, B and C *fast moving* , before and after the trial. The analysis used to determine whether there is a difference between before and after the trial is by comparing the inventory value and TOR value of branded drugs in groups A, B and C *fast moving* for 3 months at once before and after the trial whether it is smaller, the same or larger, without using statistical tests. The determination of the calculation 3 months before the trial is the same month as the month during the trial. This is with the consideration that the pattern and trend of the disease will approach the same in the same month.

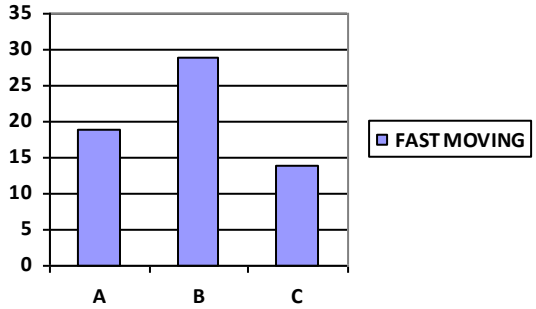
In addition to the quantitative approach, a qualitative approach was also carried out, namely through in-depth interviews and continued with *Focus Group Discussions* (FGD) or directed discussion groups. to the actors related to drug management at Hospital X. This qualitative approach is intended to understand the phenomenon of what is experienced by the research subjects about the branded drug planning system at the Hospital Pharmacy Installation, for example desires, behavior, perceptions, motivations, actions and others by means of descriptions in the form of words and language.

RESULTS AND DISCUSSION

Table V.8. Grouping of Branded Drugs Using ABC Analysis Based on the Number of Drug Items and

No	Group	Number of Items	% Item	Usage Value	% Usage
1	A	34	8.27	Rp. 366,790,587	70.23
2	B	85	20.68	Rp. 105,473,076	20.19
3	C	292	71.05	Rp. 50,018,834	9.58
AMOUNT		411	100	Rp. 522,282,496	100

Based on the ABC analysis, it can be seen that the number of drugs included in group A is 34 items (8.27%) with a cost of Rp366,790,587 (70.23%), while those included in group B are 85 items (20.68%) with a cost of Rp105,473,076 (20.19%), and those included in group C are 292 items (71.05%) with a cost of Rp50,018,834 (9.58%). The use of ABC analysis in planning aims to identify branded drugs according to usage value and investment value .



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From the results of table V.13. is an ABC analysis of *fast-moving branded drugs* totaling 62 drug items, lead time requirements, *safety stock* to drug requirement plans for June-August 2023, including group: A 19 branded drugs, B 29 branded drugs, C 14 branded drugs.

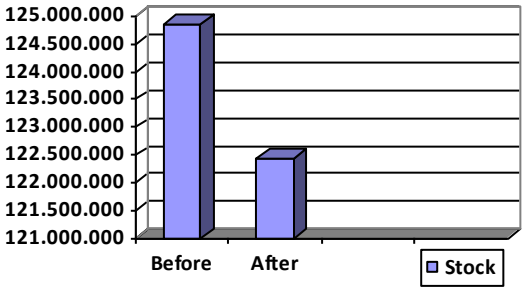

Table V.82. Comparison of Inventory Value and TOR of ABC *fast branded drugs moving* Before and After Trial From the table it shows that There was a decrease in the value of the inventory of *fast-moving* ABC branded drugs before and after the trial, namely from IDR 124,848,282 to IDR 122,454,522 .

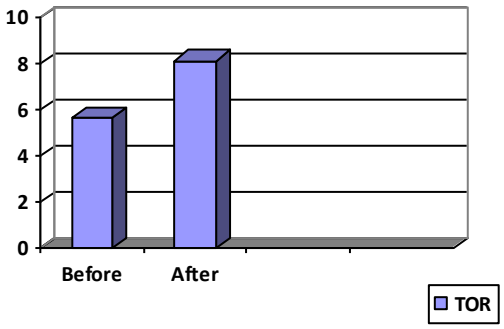

Table V. 83, There was an increase in the TOR value of the *fast moving* ABC branded drug before and after the test. try that is from 5.66 to 8.12 , Planning and procurement of ABC branded drugs before the trial obtained a higher inventory value and a smaller TOR value compared to the inventory value and TOR value after the trial. The larger TOR value after the trial was due to the average inventory value of each ABC branded drug item during the trial being smaller than the average inventory value before the trial.

Recommendations Based on *Focus Group Discussion* (FGD)

From the results of the FGD involving people directly involved in drug management, it was found that drug management as carried out before the trial resulted in high inventory values and low TOR, so it was not economically profitable for the hospital. Compared to after the trial of a combination of consumption methods with ABC and ROP analysis which were proven to reduce inventory values and increase TOR, they considered that the trial method was very good to be applied, because it would be possible to plan how much

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medicine would be needed in the future, besides that new procurement would be carried out if the medicine was at the ROP point so that excess stock or empty stock could possibly be avoided. Based on the results of the FGD, the recommendation in preparing drug planning by making policies, namely the need to apply a sustainable combination method according to the research model for one-month drug planning at the Pharmacy Installation of Hospital X.

Discussion

Discussion of research results is conducted to obtain scientific arguments for the results of hypothesis testing. The following is a discussion of the research results: Planning medicine that is done by Responsible for pharmaceutical warehouse in collaboration with the Head of Pharmacy Installation, each month is only determined by adding about 10% of the previous month's usage. Determination of the amount and need for each drug is only based on estimates and experience of the Head of Installation and the person in charge of the pharmacy warehouse . Planning takes into account the priority of the drugs needed, disease pattern trends and remaining stock. Drug planning for the needs of the Pharmacy Installation is not done in writing which is made for 1 period, but is only submitted to the hospital *corporate in the form of a purchase order* then approved based on hospital needs. If emergency drugs are needed, the Pharmacy installation can purchase directly from Distributors, other hospitals, pharmacies without corporate approval.

Planning and procurement of ABC *fast moving branded drugs* before the trial obtained a higher inventory value, which is Rp124,848,282 and a smaller TOR value, which is 5.66 compared to the inventory value and TOR value after the trial, which are Rp122,454,522 and 8.12 . The larger TOR value after the trial is due to the average inventory value of each ABC *fast moving branded drug item* during the trial being smaller than the average inventory value before the trial. The decrease in inventory value indicates budget efficiency, because with a low inventory value a smaller budget will be needed and this can be seen from the cost efficiency of the inventory value before and after the trial of Rp2,393,760 or 1.92%. Although the decrease in the Rupiah value is not significant, the distribution of inventory value for each branded drug item is much better according to the drug needs of Hospital X Bekasi. While the increase in TOR value indicates a faster turnover or replacement of ABC *fast moving branded drugs. The higher the TOR value, the more efficient the inventory management.* This was also proven by Veronica M [34] and Yudha Pranata [35]. For the TOR value in the Pharmacy Installation of Hospital X per year before the trial, it was 22.64 (rounded to 23) and after the trial, it was 32.48 (rounded to 33). The general standard for TOR that is commonly used is 8-12 times in 1 year [33]. The planning and procurement system based on this trial method is an effort to control costs in increasing efficiency related to the amount of investment invested in the inventory value. The amount of investment in antibiotics will affect the amount of overall pharmaceutical spending, and pharmaceutical spending will affect the amount of hospital operational spending. So if there is efficiency in the management of management in the Pharmacy Installation, then operational efficiency of the hospital will automatically occur.

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CONCLUSION

Based on the results of the analysis and discussion that have been carried out, the following conclusions were obtained: The branded drug management system carried out before the trial at the Pharmacy Installation of X Hospital, Bekasi, used the consumption method. Branded drug management system after trial using Combination of consumption method with ABC and ROP analysis. Based on the planning model that has been tested at the Pharmacy Installation of Hospital X Bekasi which has been proven to reduce inventory value and increase TOR, the recommendation in preparing drug planning by making policies, namely the need to apply a sustainable combination method according to the research model for one-month drug planning at the Pharmacy Installation of Hospital X Bekasi. From the results of the FGD on Drug Management at the Pharmacy Installation of Hospital X Bekasi, it can be recommended that drug planning be carried out with a combination of Consumption, ABC and ROP. Although the decrease in the Rupiah value is not significant or only 1.92%, the distribution of the inventory value of each branded drug item is much better according to the drug needs of Hospital X Bekasi. Meanwhile, the increase in the TOR value indicates a faster turnover or replacement of *fast-moving ABC branded drugs. The higher the TOR value, the more efficient the inventory management.*

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