

Planning and procurement evaluation in 2019-2020 at pharmaceutical installation of X Private Hospital, Sidoarjo, Indonesia

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ABSTRACT

Hospitals must timely provide qualified health services to the community, so pharmaceutical supply management is very important. Appropriate drug supply control has a major impact on service quality to the patients. This study aimed to analyze the drug inventory control system in the planning and procurement stages by analyzing ABC, VEN, and ABC-VEN combinations. This study is an observational descriptive study using retrospective data collected at the pharmaceutical installation of X Private Hospital in Waru, Sidoarjo Regency, in 2019-2020. The drugs analyzed were orals, injections, and infusions, and the inventory control was analyzed using ABC, VEN, and ABC-VEN Analysis in 2019-2020. This study showed differences in ABC-VEN drug class, changes in the parenteral multivitamin group from C-N to A-V, and antibiotics (Ceftriaxone) from B-E to A-V groups. Group changes caused changes in priorities in procurement and inventory control, which happened due to the Covid-19 pandemic occurring in Indonesia and throughout the world. Based on SWOT analysis, strategic development is to develop a Hospital Information System and increase the competence and skills of pharmaceutical staff.

Keywords: Drug procurement, Drug planning, Covid-19, ABC Analysis, VEN analysis, Sars-Cov-2

Introduction

Drug management in hospital management must be planned properly, especially at the planning and procurement stages of pharmaceutical supplies [1, 2]. The planning stage can provide direction, minimize the impact of changes, reduce waste, and set standards for quality control. In addition, procurement is a planning unit to actualize what has been planned following the

existing conditions [3, 4]. Inefficient drug control can negatively impact hospitals, both medical and economic, such as the level of public trust in health services. Thus, it will affect the level of pharmaceutical services in hospitals, so that patient satisfaction is reduced. Inventory of medicines in hospitals must be controlled considering its importance in hospital operational management since effective and efficient drug inventory control can significantly impact the return on investment. If investment in drug supply increases, the return on capital will naturally decrease. Therefore, the inability of the pharmaceutical installation to provide the drugs needed by patients will hugely impact the hospital, ranging from discomfort to physical danger to patients who need emergency services to save patients' lives [5].

Inventory control in an organization is very important to note. If the hospital cannot meet consumer demand at a certain time due to running out of supplies or increasing demand, it will be disadvantageous to the organization. Therefore, the inventory

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must be managed properly to avoid such a situation. The management of drug inventory control begins at the planning and procurement stages, so it is necessary to analyze using the ABC and VEN methods at the planning stage. The inventory control method has the same basis, namely the inventory value. Inventory value is obtained by multiplying the inventory stock by the drug price. Excess inventory value (overstock) causes waste in inventory. Based on research conducted by Dampung *et al.* [6], the application of the method can increase the efficiency of drug supplies as indicated by the inventory value that shows a significant difference in the group before the application of the method, as much as 4,835,087,839; thus, there is a decrease in the inventory value of 2,540,410,122.

The value of drug supplies in 2019 and 2020 at the pharmaceutical installation of X Private Hospital in Waru, Sidoarjo Regency, was quite high due to the increasing number of patients visiting the hospital. It resulted in the addition of drug variants and drug classes because of various types of diseases. The increasing number of drugs stored in the hospital pharmacy warehouse and service units will cause a high level of drug inventory in the pharmaceutical installation. So, it is necessary to control the supply of drugs and medical devices efficiently by using ABC and VEN inventory control methods that aim to reduce inventory value and increase inventory turnover ratio (ITOR) so that services to patients can be carried out more optimally [7].

X Private Hospital in Waru in Sidoarjo Regency is a hospital that collaborates with BPJS Health. Compliance with the doctors with the formulary inhibits drug turnover, which results in drug accumulation. The consumption method is an inventory control method used at the pharmaceutical installation of X Private Hospital in Waru, Sidoarjo Regency. The consumption method is a drug planning method based on the actual need for drugs in the previous periods by adjusting and making corrections based on the use in previous periods. The medicine procurement is done by making a contract with distributors that serve the hospital's needs.

Based on the description of the management of pharmaceutical supplies and medical consumables at the pharmaceutical installation of X Private Hospital in Waru, Sidoarjo Regency, this study analyzed the management of pharmaceutical preparations. The management of pharmaceutical preparations studied was about inventory control using the ABC, VEN, and combinations of ABC and VEN methods. This research was hoped to provide recommendations for effectively, efficiently, and excellently controlling pharmaceutical preparations.

Materials and Methods

This research was conducted using a non-experimental descriptive research design. Data were collected retrospectively, aiming to analyze the drug supply application and control at the pharmaceutical installation of X Private Hospital in Waru, Sidoarjo Regency, in 2019 and 2020. The data obtained were analyzed and then presented in the form of a table, percentage,

and value using rupiah, which were analyzed descriptively analytically using predetermined indicators in the next stage. The data obtained were in the form of primary and secondary data.

Research subjects and samples

In this study, the data included in the planning and procurement of oral drugs (tablets, caplets, capsules, syrups), injections, infusions, and external drugs (ointments, eye drops, ear drops, suppositories) were those included in the hospital formulary in 2019 and 2020. Information was obtained by conducting interviews with primary data sources, namely the heads of the pharmacy installation and the procurement department, and then continued with planning and procurement data collection for data processing. This research was carried out at the pharmacy installation and the procurement section of X Private Hospital in Waru, Sidoarjo Regency, East Java, Indonesia.

The sample used in this study was divided into two, the planning and procurement stages. At the planning stage, the data needed were pharmaceutical preparations planning from the pharmacy installation unit. The results were the number of drug items obtained from the warehouse and drug planning data obtained from the head of the pharmacy installation. The procurement officer's data obtained at the procurement stage were the frequency of drug procurement, the cost of storing each drug, the cost of ordering drugs, and the number of drug items at pharmacy installation.

Variable identification

The variables in this study were to see the drug inventory control using the ABC, VEN, and a combination of ABC and VEN methods. The control variable was the presence of distributors who could deliver drugs to the hospital by assuming that the acceptance of the goods was according to the schedule ordered, purchases with discounted prices were assumed non-existent, and it assumed that the price per unit of medicine was fixed, the amount of storage cost each year was fixed, the amount the cost of ordering each year was fixed.

ABC methods

ABC method is an inventory control method emphasizing inventory that has an expensive or relatively high use-value. Thus, the inventories could be classified into three categories (A, B, and C). ABC analysis is seen based on the use of funds of 75-80% (Category A), the use of funds of 15-20% (Category B), and the use of funds of 5-10% (Category C) [8, 9].

VEN analysis

The VEN (Vital, Essential, Non-essential) method is an inventory control method determined by macro factors (government regulations or regional epidemiological data) and micro factors (types of health services available in a hospital). Drug categories in the VEN system are V (Vital) drugs that are included in potential life-saving drugs and are very important in the provision of basic health, E (Essential) drugs that are effective in reducing

pain but are not vital for the provision of basic health systems, and N (Non-essential) drugs that are used for certain diseases whose indications are still in doubt and cost a lot of money to produce a therapeutic effect [10].

Research process

The initial stage of the study was to collect yearly real usage data during the study period. The data obtained from the research results, namely interviews with the head of the pharmacy installation who plan the pharmaceutical supplies and the head of the drug procurement department who has the task of procuring pharmaceutical supplies at the pharmacy installation of X Private Hospital in Waru, Sidoarjo Regency, were processed. After collecting management data on the management of pharmaceutical supplies, the existing documents, and the actual situation at the pharmacy installation of X Private Hospital in Waru, Sidoarjo Regency were observed. The data collected were analyzed and divided into groups of drugs based on the ABC VEN categories.

In this stage, the data obtained were collected retrospectively from observations of reports on the inventory of pharmaceutical supplies at the pharmacy installation of X Private Hospital in Waru in 2019 and 2020. The analysis and calculations were carried out using the Pareto ABC method by making groups for all purchase data of pharmaceutical supplies into three groups, namely group A, group B, and group C, from now on determined as vital, essential, and non-essential group medicines every year for drug procurement.

Results and Discussion

ABC analysis

Planning for pharmaceutical supply needs at the pharmacy installation of X Private Hospital in Waru, Sidoarjo was still carried out using the consumption method, meaning that the fulfillment of drug needs was based on prescriptions received by the hospital pharmacy installation, drug requests made by the prescribing doctors, and drug supplies that were about to run out. Then, the pharmacy installation would procure drugs for drug distributors since the location of X Private Hospital in Waru is close to several drug supply distributors, so the fulfillment of drug procurement can be done within one day (one-day delivery).

Table 1. Comparison of Planning Value between 2019 and 2020

No.	Description	Year 2019 (Rp)	Year 2020 (Rp)
1.	Planning Value	2.434.949.113	4.927.041.153
2.	Drug Group:		
	A	236.281.147	912.797.314
	B	1.955.149.071	3.521.123.526
	C	243.518.896	493.120.313

Based on **Table 1**, the value of planning and classifying drugs from 2019 to 2020 increased. The planning value in 2019 compared to that in 2020 increased by 202.37% or doubled. It was possible because the need for drugs and treatment therapies has changed due to the Covid-19 pandemic. ABC analysis used the secondary data on drug use in the previous year and then was calculated using percent and cumulative percent. The cumulative value of less than 10% is grouped into Group A, the cumulative value between 10 - 90% is in Group B, and the cumulative value of 90 - 100% is in Group C. The analysis results of drug planning for 2019 - 2020 using the ABC method can be seen in **Table 2**. These results were obtained by performing ABC calculations where the components of the number of drugs and the cost of goods purchased were the basis for calculations [11]. The considerations in planning were the number of drugs used and the drug procurement process related to ordering and storage costs. Therefore, drug planning must be in line with existing procurement because drug procurement is based on a plan that has been made and determined with additional drug adjustments every period. The plan that has been made should be evaluated using the ABC analysis method to make corrections from an economic point of view because one type of drug can spend a large budget, which can be caused by frequent use or expensive drug prices [12]. Pharmacy management in hospitals aims to maintain a continuous supply of drugs over time, and a higher number of patients can be served with better drug management in the implementation of rational drug services [13]. The analysis of the ABC method was carried out on all drugs at the pharmaceutical installation of X Private Hospital in Waru, Sidoarjo, using the Pareto technique, where the concept is that the number of drugs in the hospital is only a small part that spends a large budget.

Good drug planning and control can impact the efficiency of drug use. If management is not carried out efficiently, it will harm the hospitals and patients both medically and economically. In several studies carried out, many hospitals do not carry out good drug planning and control processes, which can cause problems, such as empty stock, excess stock, damaged drugs, and expired drugs at service points. The calculation of the need for planning for the pharmacy installation of X Private Hospital in Waru in 2019 and 2020 was done using the ABC analysis method. The ABC analysis method is carried out with the following steps: lists of all drugs used, the number of uses, the purchase price of the smallest dose unit, and the investment value by multiplying the number of uses by the price [14]. Based on **Table 2**, the classification of drugs using the ABC method in 2019 differed from that in 2020. Differences in drug classification occurred due to drug needs and different types of drugs used in medical therapy. It happened because there was no Covid 19 pandemic in 2019, while in early 2020, there was a Covid 19 pandemic. Coronavirus disease 2019 (COVID-19) is an infection in the respiratory tract caused by a new virus from an acute respiratory syndrome, the newly discovered severe acute respiratory syndrome Corona Virus 2 (SARS-CoV-2) [15]. COVID-19 can cause various respiratory system diseases characterized by mild

symptoms, moderate symptoms, severe symptoms, or asymptomatic [15, 16].

Table 2. Analysis of Drug Procurement using the ABC Method between 2019 and 2020

No	Year	Group	Drug Items	Percentage (%)	Total Inventory Value (Rp)	Cumulative Percentage (%)	Inventory Value (Rp)
1	2019	A	1	016	2.434.949.113	0,00 - 9,70	236.281.147
		B	202	32,01		16,66 - 90,00	1.955.149.071
		C	428	67,83		90,07 - 100,00	243.518.896
2	2020	A	3	0,45	4.927.041.153	0,00 - 18,53	912.797.314
		B	175	26,04		24,00 - 90,00	3.521.123.526
		C	494	73,51		90,07 - 100,00	493.120.313

The results of the ABC analysis research can be seen in **Table 3** and **Table 4**. It was found that the addition of drug group A from one item (BP Lantus Solostar Pen) in 2019 to three items (Terpacef Injection, Cernevit Injection, BP Lantus Solostar Pen/Sansulin) in 2020. The additions of drugs in 2020 in group A were antibiotics and vitamins due to an increase in Covid-19 cases. Covid-19 cases in Indonesia began in March 2020 and have

caused death, and the first wave of Covid-19 cases in Indonesia was recorded from November 2020 to January 2021 [17]. The Parenteral Antidiabetic therapy class (Insulin) in 2019 changed to the third generation of Cephalosporin Antibiotic therapy class (ceftriaxone), multivitamin therapy (Vitamin C and B complex), and Parenteral Antidiabetic (Insulin) in 2020.

Table 3. Top Five Classification of Drugs using the ABC Method at the Pharmaceutical Installation of X Private Hospital in Waru in 2019 based on drug use data

No.	Name	Usage (unit)	Cost of goods sold	Unit	Total (Rp)	Percentage (%)	Cumulative	Group
1	BP Lantus Solostar pen	3.096	76.318	Tube	236.281.147	9.7	9.7	A
2	Cefspan capsule 100 mg	2.335	18.700	Capsule	43.664.500	1.79	31.47	B
3	Sporetik 100 mg	1.981	19.276	Capsule	38.186.635	1,57	33.04	B
4	Brainact 500 mg tablet	3.873	9.699	Tablet	37.564.188	1,54	34.58	B
5	Gabapentin 300 mg	12.459	2.581	Capsule	32.152.750	1,32	37.3	B
6	Fentanyl injection	668	44.000	Ampule	29.392.000	1,21	41.02	B
7	Norelut 5 mg	573	3.171	Tablet	1.816.882	0,07	90.07	C
8	PZ 100 ml (Otsuka)	151	11.965	Bottle	1.806.759	0,07	90.15	C
9	Provula	145	12.457	Tablet	1.806.327	0,07	90.22	C
10	Duvadilan tablet	360	5.000	Tablet	1.800.000	0,07	90.3	C
11	BP D5% - ½ NS Widatra	201	8.910	Bottle	1.790.937	0,07	90.37	C

Table 4. Top Five Classification of Drugs using the ABC Method at the Pharmaceutical Installation of X Private Hospital in Waru in 2020 based on drug use data

No.	Name	Usage (unit)	Cost of goods sold	Unit	Total (Rp)	Percentage (%)	Cumulative	Group
1	Terpacef injection	1.608	210.950	Vial	339.201.272	6,88	6,88	A
2	Cemevit injection	1.615	182.750	Vial	295.071.805	5,99	12,87	A
3	BP Lantus Solostar pen/ Sansulin	3.650	76.318	Tube	278.524.237	5,65	18,53	A
4	Broadcet injection	1.589	143.500	Vial	228.071.725	4,63	28,63	B
5	Avigan tablet 200 mg (favipiravir)	3.328	50.295	Tablet	167.363.948	3,4	36,54	B
6	BP Pionix 30 mg/pioglitazone30mg/Deculin 30 mg	54.063	2.504	Tablet	135.367.494	2,75	39,29	B
7	RL (generic)	12.587	6.936	Bottle	87.304.264	1,77	45,19	B
8	Taxegram injection	513	142.700	Vial	73.259.326	1,49	46,68	B
9	Rocum 10 mg injection	40	101.779	Ampule	4.060.991	0,08	90,07	C
10	Valisarbe 5 mg	10.378	390	Tablet	4.047.416	0,08	90,16	C
11	Granisetron 3 ml injection	173	22.756	Ampule	3.934.550	0,08	90,32	C
12	Levofloxacin 500 mg	5.674	682	Tablet	3.867.929	0,08	90,4	C
13	PZ 3% (Otsuka)	138	27.577	Bottle	3.814.451	0,08	90,55	C

Table 4 shows that in 2020 the drug item included in the third category A was BP Lantus Solostar® Pen/Sansulin® (Insulin glargine), and this shifted from 2019 which was the only drug item in the A category. Some research reported that the prevalence of Covid-19 with cardiovascular complications was 10.5%, 7.5% with Diabetes Mellitus, 6.3% with chronic respiratory disease, 6% with hypertension, and 5.6% with cancer [16]. In a study at X Hospital in Surakarta, 52% of covid 19 patients were with comorbidities, namely Diabetes mellitus (28.85%), hypertension (28.85%), and heart disease (15.39%) [18].

The changing therapy pattern was visible between 2019 and 2020, namely antibiotic therapy with oral preparations and anesthesia for OBGYN cases in 2019, and it shifted to oral antibiotics and antivirals in 2020. It is in accordance with a report from the Ministry of Health regarding the increase in Covid-19 patients with co-infectious complications, including pneumonia, meningitis, and sepsis. Patients with severe degrees of co-infection require antivirals and antibiotics, referring to the Covid-19 Management Guidelines from the Ministry of Health and B POM Information and Therapy Guidelines for Covid-19 patients from WHO [19]. Analysis of the ABC method was carried out to control drug inventory at X Private Hospital in Waru, Sidoarjo, for one year. Based on existing data using the ABC method, drugs in group C had the largest number of drugs but had the smallest investment value. It happened because the drug price per item was relatively low compared to those in Group A and Group B. From **Table 4**, it was found that the top five drug items in group C in 2019 were Norelut® 5 mg, 100 mL PZ Fluid (Otsuka), Provula®, Duvadilan® tablets, and BP Liquid D5% - 1/2NS Widatra, and in the year 2020, there were Rocum® (Rocuronium Br) 10 mg Injection, Valisanbe® (Diazepam) 5 mg, Granisetron 3 mL Injection, levofloxacin 500 mg, and PZ 3% (Otsuka). It showed a change in the therapy pattern from hormone therapy to alternative antibiotic therapy in cases of Covid-19 (Levofloxacin), PPI, and strong electrolytes. The clinical manifestation of patients with suspected Covid-19 was the presence of three or more of the following acute symptoms/signs: fever/history of fever, cough, fatigue, headache, myalgia, sore throat, coryza/runny nose/stuffy nose, shortness of breath, anorexia/nausea/vomiting, diarrhea, or loss of consciousness. PPI was indicated for nausea/vomiting, while 3% PZ fluid was for correcting the hyponatremia due to diarrhea [20].

VEN analysis

VEN analysis was performed to determine drug classification based on the therapy's effect on the patient. In VEN analysis, drugs are grouped into three, namely V (Vital) which are drugs for the patient's survival, E (Essential) which are important drugs

to cure the disease but are not vital, and N (Non-essential) which are supporting drugs [21]. **Table 5** shows the changes in the V (Vital) drugs group from 2019 to 2020 there was a decrease in the number of drug items. Drugs included in the V group must always be kept in stock, not expired, and become a priority in procurement since group V drugs are important for patients' survival and emergency conditions. Since the onset of Covid-19 in March 2020 and the first wave of Covid-19 in November 2020, there has been a change in the pattern of therapy and hospital policies regarding the priority of procurement of pharmaceutical preparations to face the Covid-19 pandemic. This change is in accordance with the theory that changes in vital, essential, and non-essential groups are determined by VEN criteria compiled by a team (doctors and pharmacists) by determining criteria based on conditions and needs. Based on the compiled criteria, planning can cover various aspects, including clinical aspects, consumption, targets, conditions, and costs. V (Vital) group is a group of drugs capable of saving lives, such as anaphylactic shock drugs, E (Essential) group is a group of drugs that acts on the source of the disease and are most needed for basic health services, such as antidiabetic, analgesic, anticonvulsant, and N (Non-Essential) group is for drugs functioning as supporting drugs that work lightly and are usually used to provide comfort or to treat minor complaints, such as supplements. Classification of drugs using the VEN system can be used to adjust the plan for drug needs by allocating available funds. Drugs that need to be added or reduced can be based on the grouping of drugs according to VEN. Preparation of plans for drug needs included in the V group should always be available [22]. **Table 5** shows that the E group also experienced a decrease in the number of drug items in 2020 compared to 2019 due to a shift in the E group to the A and N groups. Since multivitamin injection became a vital necessity in the management of Covid-19, oral multivitamins, especially those containing vitamin C, Vitamin B complex, and Vitamin D, add the number of items in the N group [23, 24]. Vitamins in 2019 were included in drug group C, but in 2020 shifted to drug group A. In the era of the Covid-19 pandemic, especially vitamin A, vitamin D, and vitamin E are needed in Covid-19 patients, both asymptomatic, with mild, moderate symptoms and weight, to increase immunity and as an antioxidant. Vitamin C or ascorbic acid is a water-soluble compound that is an antioxidant, the antioxidant effect of vitamin C inhibits cell damage caused by free radicals of oxygen (reactive oxygen species/ROS) and nitrogen (reactive nitrogen species/RNS). Vitamin C is also known to support various cellular functions of the immune system, both the innate and adaptive immune systems, and influence the inflammatory response [25, 26].

Table 5. Results of drug classification based on VEN analysis

No	Year	Group	Drug Items	Percentage (%)	Total Inventory Value (Rp)	Inventory Value (Rp)	Percentage (%)
1	2019	V	84	13,31	2.434.949.113	1.090.052.268	44,77
		E	400	63,39		981.593.735	40,31
		N	147	23,30		363.303.111	14,92

		V	78	11,61		1.201.926.333	24,39
2	2020	E	396	58,93	4.927.041.153	2.712.201.777	55,05
		N	198	29,46		1.012.913.063	20,56

ABC and VEN combination analysis

Classification of drugs based on the ABC-VEN combination shows that the ABC-VEN combination in 2019 is different from 2020 (Table 6). A-V groups both have one drug item in both

2019 and 2020. While for classes A-E, there was a change in 2020, two drug items were not listed in 2019. This change was prompted by the need for drugs that adapt to changes in disease patterns, namely the Covid-19 pandemic, which began to affect people's behavior during their visits to hospitals.

Table 6. Classification of ABC-VEN Combination Drugs at X Private Hospital in Waru, Sidoarjo

Year	2019			2020		
Group	A	B	C	A	B	C
V	1	42	41	1	23	54
Value (Rp)	236.281.147	834.244.910	19.426.211	278.524.237	850.170.318	73.231.758
Percentage (%)	9,7	34,27	0,8	5,65	17,26	1,49
E	0	111	289	1	117	278
Value (Rp)	0	810.723.278	170.870.457	339.201.272	2.101.024.335	271.976.170
Percentage (%)	0	33,3	7,02	6,88	42,64	5,52
N	0	49	98	1	35	162
Value (Rp)	0	310.080.883	53.222.228	295.071.805	569.928.873	147.912.385
Percentage (%)	0	12,74	2,19	5,99	11,57	3,00

The classification of the B group also changed because the B group supervised drugs used as treatment and maintenance for Covid 19 patients, so the shift in classification occurred with a small amount of medicine but with a large investment value. It happened because the procurement of drugs focused on managing Covid 19 patients. The classification of B-V drugs in 2020 changed, and there was a decrease in the number of drug items compared to that in 2019. The number of drugs in B-E groups increased in 2020 compared to 2019, but those in B-N groups between 2019 and 2020 were relatively the same.

The number of C-E drugs decreased in 2020 compared to that in 2019. C-N groups experienced a slight increase of 1% in 2020 compared to 2019. The change in classification occurred because, in 2019, these drug classes were only supportive therapy with only a few types and quantities of drugs, but in 2020 the groups changed due to the Covid-19 pandemic that focused on managing vitamin support therapy. Based on an explanation of the difference between 2019 and 2020, it occurred because the hospital became a referral for Covid 19 patients, so the pattern of drug classification changed. Hospitals as Covid-19 referrals have caused the drug types and drug needs to change and drug procurement has been focused on meeting the needs of Covid-19 patients. The A-E class of drugs is mostly because the drugs are used to treat disease, so a lot of funds are used to procure A-E class drugs. In line with research by Wulandari [27], the classification of ABC VEN combination drugs changes due to differences in drug needs every year.

Drug planning using the ABC-VEN combination method provides an overview of the level of need for drug use by comparing the drug supply budget. The pharmaceutical

installation of X Private Hospital in Waru used drugs for patient treatment in 2019 based on the treatment management for BPJS patients by using budget and drug classification according to the needs. Then, in 2020, during the Covid 19 pandemic, the hospital also used the budget to fulfill the treatment of Covid 19 patients in the form of antiviral drugs and multivitamins as treatment support therapy. It was also for efficiency regarding drug supply control, meaning that there will be priority drugs that must be provided through procurement considering the existing patterns of disease and pandemics and related to the budget provided by the hospital, so some drugs were provided, but some are reduced or eliminated in drug needs [27].

Based on the data, there was a change in the number of drug items in one class every year, which happened in 2020 due to a pandemic. One of them was the vitamin group; in 2019, vitamins such as Cernevit were included in the N group, but in 2020, Cernevit, which was in group V, had a significant impact on healing Covid patients during the pandemic.

The ABC-VEN combination analysis results at the pharmaceutical installation of X Private Hospital in Waru, Sidoarjo are expected to assist in planning drug needs for determining drug procurement because it is based on budget and needs. Every year, the ABC-VEN combination changes according to service needs. A-V groups are groups where drugs must be given the largest budget. Meanwhile, C-N groups are drugs with a small budget where the drugs are not so important and may not even be provided during that period [28].

The results of the ABC-VEN analysis can help in inventory control management, especially in terms of procurement of drugs needed by the hospital and for drugs that are not needed.

The ABC-VEN analysis can also be used to create and plan drug requirements easier and has predictable results. In today's competitive environment, hospitals that offer services to users at any time, in any quantity and quality, will have advantages. Moreover, it is very important to maintain the basic needs of medicines, health supplies, and other supporting materials in sufficient quantities so that services can continue without any disruption.

Hospitals should store drugs according to cost and importance to minimize inventory and storage costs. It is in line with research from several sources regarding the analysis of drug inventory control using the ABC-VEN method, which can provide results regarding efficiency in the financial sector. The research results conducted by Günergören & Dağdeviren [29] show that drugs are grouped according to their cost and vital importance to making decisions related to inventory control to keep related costs at a minimum level. Drugs were standardized by ABC-VEN analysis. Essential drugs will be controlled more often, and drugs with lower importance will be controlled at longer intervals. Therefore, the staff will be designed according to this analysis, and negative experiences in the past will be prevented. From the results of other studies related to the ABC-VEN analysis, cardiovascular drugs had the highest usage costs during 2019, which were around Rp. 6,924,415,718.20 (22.62%) so it needs special attention in controlling its inventory. Data analysis was conducted to determine the cost-efficiency of cardiovascular drugs using the ABC-EOQ-ROP-SS method compared to the actual data for drug orders in 2019. The results showed that controlling cardiovascular drugs using the ABC-EOQ-ROP-SS method was implemented in Islamic Hospital Jakarta to minimize inventory stock while maintaining service performance and increasing cost efficiency by around 17.91% of the actual ordering cost [30]. Research at Hospitals in Bandung, ABC (Always, Better, Control) classification was also classified in this study to identify the right items that can potentially be reduced from inventory. The study results found that the hospital has the potential to reduce nearly 830 million rupiahs or 57% of the excess inventory level by using a continuous review policy as the basis for calculating the inventory control system [8]. If inventory control is ineffective, shortages of necessary medicines and medical supplies may go undetected. It can lead to consequences, such as death, disability, and inability to compensate and avoid damage, which can negatively impact the hospital's image and result in lost revenue in the long run.

Conclusion

The ABC and VEN analysis methods applied to drug use data of 2019-2020 showed differences in the ABC - VEN drug groups, changes in parenteral multivitamin groups from C-N to A-V groups, and antibiotics (ceftriaxone) from B-E to A-V groups due to changes in disease patterns during the Covid-19 pandemic.

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