

**ANALYSIS OF DRUG LIST BY ABC/VEN METHOD
AT BEN TRE MEDICAL CENTER IN THE FIRST 6 MONTHS
OF THE YEAR 2020**

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ABSTRACT

Background: The construction of the hospital drug list is one of the deciding factors on the rational drug-use, safe, efficiency, reduce costs for patients. **Objectives:** To analyze the drug list using ABC/VEN method at Ben Tre Medical Center in 2020. **Materials and methods:** cross-sectional descriptive studies on the list of drugs in the drug-use report from January to June of 2020 by combining 02 analysis techniques of ABC and VEN. **Results:** The list of hospital drugs included 439 drugs, divided into 23 groups of pharmacological effects, in which the most drug was cardiovascular drug group, accounting for 21.78%, essential medicines 35.76%. National medicine dominated 74.49%, the category C was abundant with 66.97% (according to ABC), category E accounting for 45.79% (according to VEN); Hospital's budget was heavily concentrated on category A drugs accounting for 74.79%, 64.33% for category E. **Conclusions:** analyzing the structure of the drug list and analyzed the drug use according to the ABC-VEN method, found that category A and E account for a large proportion of expenses in the budget, identifying a group of drugs that were prioritized for procurement and stockpiling within the limited budget of the hospital.

Keywords: drug list, ABC/VEN method, Ben Tre.

I. INTRODUCTION

According to Joint Annual Health Review 2016, compared with many other countries in Southeast Asia, the aging index of Vietnam (for over 65 years old) was only lower than Singapore and Thailand, higher than Laos, Cambodia, and the Philippines, thereby forecasting that in the future, the demand drugs in Vietnam will increase more and more [7]. In the world, the process of drug selection is paying special attention. If the drug-use is accurate and rational, prevention and treatment will have a good effect in disease, save unnecessary costs [3]. However, in Vietnam, some studies indicated that the drug lists in the hospitals have not been yet taken into consideration. Currently, some drug use studies through correlative analysis of drug consumption and cost (ABC), VEN-analysis could help The Drugs and Therapeutics Committee (DTC) in hospital, managers identify common troublesome drug-used in hospitals. For this reason, making a plan about constructing a drug list can be used; selecting drug for bidding; intending drug, reserving drug [6]. So, we carried out the research with the aim of determining the drug consumption rate and purchasing cost by ABC analysis, the order of purchase priority according to the VEN analysis in the first 6 months of the year 2020 at Ben Tre Medical Center. This is also a strategy of great significance in improving the quality of treatment and economic management in hospitals.

II. MATERIALS AND METHODS

2.1. Materials: the drug list in drug used report at Ben Tre Medical Center in the first 6 months of the year 2020.

2.1.1. Sampling standard: Drugs included in the list of drugs used at Ben Tre City Medical Center from January to June of 2020.

2.1.2. Exclusion standard: Traditional medicines in the drug used lists at Ben Tre City of Medical Center from January to June of 2020.

2.2. Methods

2.2.1. Research design: A cross-sectional descriptive study.

2.2.2. Sample size: All medicines in the list of drugs used in Ben Tre Medical Center from January to June of 2020.

2.2.3. Sampling method: Selecting all drugs on a list that includes the following information: drug name, quantity, price and consumption value.

2.2.4. Research substance: Analyzing the structure of drug list; analyzing ABC, VEN, ABC/VEN, A/VEN at Ben Tre Medical Center in the first 6 months of 2020.

2.2.5. Collection method: Collecting data from the drug use management software of Ben Tre Medical Center in 2020.

2.2.6. Data processing method: Using Excel 2010 software.

III. RESULTS

3.1. Drug consumption rate classified according to the structure of drug list

3.1.1. Structure of drug consumed by pharmacological effects group

Table 1. Structure of drug list according to pharmacological effects group

No.	Pharmacological drug group	Species		Consumption value	
		Number of items	Rate (%)	Total (VND)	Rate (%)
1	Anesthetic drugs	2	0.46	606,232	0.02
2	Analgesic, antipyretic, non-steroidal anti-inflammatory drug	40	9.11	138,113,790	4.74
3	Antihistamines and used in case of hypersensitivity	17	3.87	21,269,167	0.73
4	Drugs detoxification and drugs used in case of poisoning	1	0.23	1,461,726	0,05
5	Anticonvulsants	7	1.59	59,075,149	2.03
6	Parasite, anti-infection drugs	81	18.45	224,300,495	7.70
7	Anti-migraine drugs	2	0.46	744,888	0.03
8	Drugs for urinary tract infection	1	0.23	61,195,680	2.10
9	Anti-Parkinson drugs	1	0.23	0	0.00
10	Drugs effect on blood	4	0.91	2,532,904	0.09
11	Cardiovascular drugs	96	21.87	1,085,973,694	37.27
12	Dermatological drugs	4	0.91	6,785,283	0.23
13	Disinfectant and antiseptic	8	1.82	1,919,115	0.07
14	Diuretic drugs	5	1.14	3,703,988	0.13
15	Gastrointestinal drugs	51	11.62	292,649,759	10.04

No.	Pharmacological drug group	Species		Consumption value	
		Number of items	Rate (%)	Total (VND)	Rate (%)
16	Hormones and drugs effect on the endocrine system	40	9.11	604,798,237	20.76
17	Muscle softeners and cholinesterase inhibitors drugs	3	0.68	26,171,122	0.90
18	Eye, otolaryngology drug	18	4.10	164,505,289	5.65
19	Oxytocic drugs	1	0.23	4,200	0.14
20	Anti-psychosis drugs	9	2.05	32,880,054	1.13
21	Drugs that act on the respiratory tract	27	6.15	115,009,686	3.95
22	Water, electrolyte and acid-base balancing solution	6	1.37	396,854	0.01
23	Minerals and vitamins	15	3.42	69,617,328	2.39
	Total: 23	439	100	2,913,714,640	100

Drug list of Ben Tre Medical Center had 439 drugs, divided into 23 groups according to pharmacological effects, cardiovascular drugs with 96 species were the most-used group, accounting for 21.87% of species and 37.27% of the use value.

3.1.2. Structure of drug consumed by origin

Table 2. Structure of drug list according to origin

No.	Substance	Species		Consumption value	
		Number of items	Rate (%)	Total (VND)	Rate (%)
1	National drugs	327	74.49	1,846,046,705	63.36
2	Foreign drugs	112	25.51	1,067,667,935	36.64
	Total	439	100	2,913,714,640	100

The rate for national drugs was higher than foreign drugs, accounting for 74.49% of types with consumption value of 63.36%.

3.1.3. Structure of drug consumed by essential drugs

Table 3. Structure of drug list consumed by essential drugs

No.	Substance	Species		Consumption value	
		Number of items	Rate (%)	Total (VND)	Rate (%)
1	Essential drugs	157	35.76	688,108,693	23.62
2	Major drugs	439	100	2,913,714,640	100

The percentage for essential drugs was 35.76% and the consumption value of 23.62%.

3.2. Drug consumption rate and cost of purchase by ABC analysis, ordinal purchase by VEN analysis

3.2.1. Structure of drug consumed by ABC analysis

The consumption value of drugs in category A, B and C got 74.79%, 15.21% and 10.00%, respectively.

Table 4. The result of ABC analysis from January to June of 2020

Category	Species		Consumption value	
	Number of items	Rate (%)	Total (VND)	Rate (%)
A	73	16.63	2,179,123,751	74.79
B	72	16.40	443,202,582	15.21
C	294	66.97	291,388,307	10.00
Total	439	100	2,913,714,640	100

3.2.2. Structure of drug consumed by VEN analysis**Table 5.** The result of VEN analysis from January to June of 2020

Category	Species		Consumption value	
	Number of items	Rate (%)	Total (VND)	Rate (%)
V	160	36.45	691,945,324	23.75
E	201	45.79	1,874,426,861	64.33
N	78	17.77	347,342,455	11.92
Total	439	100	2,913,714,640	100

The consumption value of drugs in category V, E and N got 23.75%, 64.33% and 11.92%, respectively.

3.2.3. Structure of drug consumed by ABC/VEN analysis**Table 6.** Combination of ABC and VEN analysis from January to June of 2020

Category	V		E		N	
	No. of items /Rate (%)	Consumption value /Rate (%)	No. of items /Rate (%)	Consumption value /Rate (%)	No. of items /Rate (%)	Consumption value /Rate (%)
A	21	452.257.833	43	1.472.639.208	9	254.226.710
	4.78	15.52	9.79	50.54	2.05	8.73
B	23	139.177.341	43	271.154.321	6	32.870.920
	5.24	4.78	9.79	9.31	1.37	1.13
C	116	100.510.150	115	130.633.332	63	60.244.825
	26.42	3.45	26.20	4.48	14.36	2.06

ABC/VEN matrix analysis was divided into three categories, which arranged priority.

Table 7. The result of ABC/VEN matrix analysis from January to June of 2020

Category	Species		Consumption value	
	No. of items	Rate (%)	Total (VND)	Rate (%)
I	212	48.28	2,418,811,242	83.02
II	164	37.36	434,658,573	14.92
III	63	14.36	60,244,825	2.06
Total	439	100	2,913,714,640	100

The consumption value of drugs in *category* I, II, III got 83.02%, 14.92%, 2.06%, respectively.

3.2.4. Structure of drug consumed by A/VEN analysis

The consumption value of drugs in *category* AV, AE, AN were 20.75%, 67.58%, 11.67%, respectively.

Table 8. The result of A/VEN analysis from January to June of 2020

A/VEN Category	Species		Consumption value	
	No. of items	Rate (%)	Total (VND)	Rate (%)
AV	21	28.77	452,257,833	20.75
AE	43	58.90	1,472,639,208	67.58
AN	9	12.33	254,226,710	11.67
Total	73	100	2,179,123,751	100

IV. DISCUSSION

4.1. The proportion of consumed drugs classified according to the general structure of the drug list

In recent years, the budget has been allocating to hospitals more and more increasingly; in order to improve the quality of medical examination and treatment, hospital administrators need to pay more attention to building drug lists in hospital, to guarantee that medicines to serve patients safely, reasonably, effectively and economically. Through the results of our drug list analysis, cardiovascular drugs with 96 items were the most-used group, accounting for 21.87% of species and 37.27% of the use value. It was similar to the study at Central Geriatric Hospital in 2016, the cardiovascular drugs with 87 items, accounting for 26.6% of species and 30.21% of the value of use [10]. Maybe the disease patterns in two hospitals were relatively similar because most of the patients who came to hospital for medical examination and treatment were the elderly, most of them had chronic diseases and many comorbid conditions. The consumption value of national drugs was 63.36%, equivalent to Can Tho city of Dermatological Hospital's national drugs of 81.32% [13], it was higher than the study value at the National Burn Institute in 2013 which was 14.3% [4]. It proved that the hospital had successfully implemented the project "Vietnamese give priority to Vietnamese medicine" in 2012 of the Ministry of Health, which was to achieve the value of using national drugs of more than 50% in 2020 [5]. In hospital drug list, there were only 25.76% of essential ingredients to counter population's health care because Ben Tre City of Medical Center based on the local disease pattern; the list of drugs was attached to the Circular 30/2018/TT-BYT in 2018 of the Ministry of Health for building the drug-use in hospitals [8].

4.2. The proportion of drug consumed and purchased cost according to ABC analysis, purchase sequence according to VEN analysis

Based on the database of supplying and using drug from January to June of 2020 by ABC/VEN analysis, the result showed that the construction of drug list was very important in optimizing the use funding as well as ensure the timely and effective supply of quality drugs for medical examination and treatment. There were 439 drugs in the hospital, the use cost total was 2,913,714,640 billion VND, inside 73 drugs were arranged A group, 72 drugs were arranged B group and 294 drugs were arranged C group, accounting for 16.63%, 16.4% and 66.97%, respectively. About 74.79%, 15.21% and 10.0% found to be A, B and C category consumption values of drug. Similar to the result of author Nguyen Thi Thuy Trang, the figures for category A, B and C in 2019 were 80.35%, 15.14% and 4.51% respectively [11]; in Tran Tan Phong's study, the rate for category drug A, B and C were 74.40%, 15.88% and 9.72% [13]; Nguyen Thanh The's study showed the consumption values of category A, B and C were 74.8%, 20.0% and 5.2% [9] and the percentages in

Devnani's research for category A, B and C were 69.97%, 19.95% and 10.08% [2]. From those studies, admittedly, categories A were always the group with the highest use value, so the hospital pharmacy needed to have a tighter monitoring plan to limit the number of drugs. Simultaneously, promoting the use of national drugs, bioequivalent drugs to replace imported and original brand-name drugs in order to use completely the limit resources and reduce treatment costs for patients.

VEN analysis was exhibited that the consumption value of drugs in category V, E, N were 23.75%, 64.33%, 11.92% respectively, the research realized the consumption value of category N was higher than category N of Nguyen Thanh The's study which V, E and N categories of value are 29.7%, 62.7 and 7.6% [9]. However, in Devnani's study, the rates for V, E and D were 17.14%, 72.38% and 10.48%; it also lower than the value of category N of Zeynep Ceylan's research in 2017 in Istanbul, Turkey, that had the percentages for category V, E and D were 23.31%, 55.85% and 20.84% [1]. In this case, the research recognized, the hospital budget used non-reasonably because of the category N was not an essential drug.

Analyzing the ABC/VEN matrix, the research results recorded the consumption value of drugs in category I, II, III were 83.02%, 14.92%, 2.06% respectively. The consumption value of category III at the Medical Center of Ben Tre city was higher than category III of the Hau Giang General Hospital 0.5% [9], but it was lower than category III of An Giang's Central General hospital 4.17% [12], Wandalkar's study of category III was 3.56% [14] and that in Devnani's study was 3.56% [2].

Thus, the category drug III was a non-essential drug and did not need reserving too much to save the hospital's budget for used medicines. It was necessary to get attention on category A and E with many solutions for inventoring, estimating and appropriating procurement measures. The Drug and Treatment Council had integrated ABC/VEN analysis to scrutinize more closely and accurately the selection of drugs in the hospital drug list.

Applying the results of 09 sub-groups when analyzing ABC/VEN to develop a plan to prioritize periodic drug purchase: buying AV, AE group drugs monthly; two months: buying drugs of group BV, BE; quarterly: buying drugs of group CV, CE; buying only when needed or eliminated: groups AN, BN, CN. Inventory was at least 1/2 of the amount used in a month. The maximum inventory was 1.5 times the quantity of one order.

V. CONCLUSIONS

Through the analysis from January to June of 2020, the consumption value of national drugs and foreign drugs got 63.36% and 36.64% respectively, the figures for categories A, B and C were 74.79%, 15.21% and 10.00%; for V, E and N were 23.75%, 64.33% and 11.92%, and for categories I, II and III were 83.02%, 14.92% and 2.06% respectively. So, categories A drugs had the most impact on the budget, categories N drugs and categories III drugs were non-essential drugs with low-treatment effect. To improve the drug budget, the hospitals needed to get attention to these two groups, especially the price and quantity used, which need to be checked, modified and surmounted soon.

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