Original article:

ABC and VED analysis of the drug store of a tertiary care teaching hospital.

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ABSTRACT:

Introduction: Substantial improvement can be brought about in the hospital inventory and drug expenditure by inventory control techniques. These include ABC and VED analysis. The present study was planned to identify the drug categories which need stringent management.

Materials and Methods: The ABC and VED analysis of the drugs used by SGH, Pune, India was conducted for the financial year 2011-2012 to identify the items needing stringent management control.

Results: The total number of the items used by the medical store was 291. The total annual drug expenditure (ADE) was Rs. 6, 98, 74, 457. By ABC analysis, it was found that 13.4%, 16.5% and 70.1% items belonged to A, B and C category respectively, accounting for 69.1%, 19.2% and 11.7% of ADE. VED analysis showed that 50.9%, 40.2% and 8.9% were V, E, and D category items respectively, accounting for 55.2%, 41.5% and 3.3% of ADE. By ABC-VED matrix analysis, 57%, 35% and 8% were found to be category I, II and III items respectively, accounting for 85.3%, 14.2% and 0.5% of ADE.

Conclusion: The study depicted the items belonging to category I which requires top managerial control, also the items belonging to categories II and III which require control by middle and lower managerial level respectively.

Keywords: ABC-VED Analysis and Matrix, Hospital pharmacy

INTRODUCTION

According to experts in the field, the increase in health care allocation in the Union Budget 2013 by 22% would get offset by spiraling inflation.[1] If we break up the cost incurred, drug expenditure consumes a major chunk of the health care budget.[2] Health being the responsibility of the state, most of the drugs are made available free of cost in the government institutions. It is imperative that due efforts should be taken to utilize available funds as economically as possible without affecting quality of health care. Even in the private sector, the bills for healthcare are so huge that many people cannot afford it. By various means it is possible to curtail the cost on medicines, for example, using generics, wisdom in drug purchase and utilization etc. It is thus the responsibility of each hospital to ensure optimum utilization of available resources, aiming at efficiency as well as cost containment.

The medical store is one of the most extensively used facilities of any hospital where a large amount of money is spent on purchases on a recurring basis.

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This emphasizes the need for planning, designing and organizing the medical store in a manner that results in efficient clinical and administrative services.[3] The goal of the hospital supply system is to ensure that there is adequate stock of the required items so that an uninterrupted supply of such items is maintained.
The need of the hour is that we follow the principles of rational drug use and inventory management techniques so that in the existing budget we can cater to more number of patients.[4]

Drug inventory management helps in designing appropriate corrective measures. ABC analysis, popularly known as "Always Better Control", is an important tool used worldwide, to identify items that need greater attention for control. According to it, 10% items consume 70% of budget (Category A). Next 20% consume about 20% of the budget (Category B) and the remaining 70% account for just 10% of the budget (Category C).[5] The limitation of ABC analysis is that it is based only on monetary value and cost of consumption of items. Some items of low monetary value are vital or life saving. Their importance cannot be overlooked simply because they are not in category A. Therefore an additional parameter of assessment is their criticality by VED analysis. "V" is for vital items without which a hospital cannot function, "E" for essential items without which a hospital can function but may affect the quality of the services and "D" stands for desirable items, unavailability of which will not interfere with functioning.[6]

This analysis of inventory control of drug store of a 1296-bed tertiary care teaching hospital in Pune, India for the financial year 2011-2012 was undertaken to identify the items belonging to the categories mentioned above, to determine whether further improvement is needed, and if yes, to find the corrective interventions in the drugstore, if any. The present study was planned to analyze the annual consumption of items of pharmacy and expenditure incurred on them for the year 2011-2012.

MATERIALS AND METHODS

The data of annual consumption and expenditure incurred on each item of the pharmacy of B. J. Govt. Medical College and Sassoon General Hospitals, Pune for the financial year 2011-2012 was obtained. The data was then transcribed in an MS Excel spreadsheet. The statistical analysis was carried out using the MS Excel statistical functions.

For ABC analysis, the annual expenditure of each drug was calculated by multiplying unit cost of that drug by its annual consumption. The resulting figures were arranged in descending order of rupee value. The drugs were then classified into A, B and C categories according to cumulative cost consumed as 70 %, 20 %, and 10 % of the total respectively.

Each item of the inventory was classified into Vital, Essential and Desirable as per guidance of the medical store in-charge (Associate Professor), based on their criticality.

The ABC-VED matrix was formulated by cross-tabulating ABC and VED analysis. From the resultant combination, three categories (I, II and III) were deduced. Category I is constituted by items belonging to AV, AE, AD, BV and CV subcategories. The BE, CE and BD subcategories constituted category II, and the remaining items in the CD subcategory constituted category III. In these subcategories, the first alphabet denotes its place in

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the ABC analysis, while the second alphabet stands for its place in the VED analysis.[7]

RESULTS

The drug store inventory of the hospital consisted of total 291 items. The total annual drug expenditure (ADE) of the pharmacy on items issued in 2011-2012 was Rs. 6, 98, 74, 457.

On ABC analysis, 39 (13.4%), 48 (16.5%) and 204 (70.1%) items were found to be A, B and C category items respectively, amounting to Rs 4, 83, 15, 501 (69.1%), Rs 1, 33, 99, 392 (19.2%) and Rs 81, 59, 564 (11.7%) of ADE. The cut-offs were not exactly at 70/20/10%, and differed marginally, which is permissible.[8] (Table 1)

On VED analysis, 148 (50.9%), 117(40.2%) and 26 (8.9%) items were found to be V, E and D category items, respectively, amounting for Rs 3, 84, 80, 472 (55.2%), Rs 2, 90, 44, 960 (41.5%) and Rs 23, 49, 025 (3.3%) of the ADE of the pharmacy. (Table 2)

The drugs were allocated to nine different subcategories (AV, AE, AD, BV, BE, BD, CV, CE and CD) using ABC-VED matrix analysis. These nine subcategories were further grouped into three main categories, categories I, II and III. There were 166 (57%) items in category I, 102 (35%) in category II and 23 (8%) in category III, amounting for Rs. 5, 96, 37, 545 (85.3%), Rs. 98, 75, 392 (14.2%) and Rs. 3, 61, 520 (0.5%) of ADE of the pharmacy respectively. (Table 3)

Table 1: ABC Analysis

CATEGORY	NUMBER OF ITEMS	PERCENTAGE OF TOTAL	CUMULATIVE COST (Rs)	PERCENTAGE OF TOTAL
A	39	13.4%	4, 83, 15, 501	69.1%
B	48	16.5%	1, 33, 99, 392	19.2%
C	204	70.1%	81, 59, 564	11.7%

Table 2: VED Analysis

CATEGORY	NUMBER OF ITEMS	PERCENTAGE OF TOTAL	EXPENDITURE (Rs)	PERCENTAGE OF TOTAL
V	148	50.9%	3, 84, 80, 472	55.2%
E	117	40.2%	2, 90, 44, 960	41.5%
D	26	8.9%	23, 49, 025	3.3%

Table 3: ABC-VED Matrix Analysis

CATEGORY	NUMBER OF ITEMS	PERCENTAGE OF TOTAL	EXPENDITURE (Rs)	PERCENTAGE OF TOTAL
I	166	57%	5, 96, 37, 545	85.3%
II	102	35%	98, 75, 392	14.2%
III	23	8%	3, 61, 520	0.5%

Table 4: Percentage of items from various studies

Category	GMC Nagpur study	AFMC study	PGI Chandigarh study	Present Study
A	10.76	14.46	13.78	13.4
B	20.63	22.46	21.85	16.5
C	68.61	63.08	64.37	70.1
V	23.76	7.39	12.11	50.9
E	38.12	49.23	59.38	40.2
D	38.12	43.38	28.51	8.9
I	29.15	20.92	22.09	57
II	41.26	48.92	54.63	35
III	29.59	30.16	23.28	8

DISCUSSION

The present study shows that out of total 291 items, 39 belong to category A which consume around 70% of the total budget of the pharmacy. The drugs in this category require stringent monitoring, and have to be ordered frequently to prevent locking up of capital in buffer stocks. For inventory management if we consider ABC analysis alone, it may effectively control drugs from category A, but then it may lead to compromise on the availability of drugs of vital nature from B and C categories.

VED Analysis shows that there are 50.9% items in category V that constitute 55.2% of the total budget of the pharmacy. As these are vital items, their stock outs are unacceptable.

The ABC-VED matrix shows that category I which includes matrices AV, AE, AD, BV and CV contains 166, category II which includes matrices BE, CE and BD contains 102 and Category III which includes matrix CD contains 23 drugs. A strict vigil should be kept on their consumption and the stock in hand Appropriate management of category I drugs would help keep a check on budget as well as drug

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availability, as these are either expensive or vital items.

Category II and III items can be ordered less frequently, thereby saving on ordering cost and blocking substantial capital.

The results are comparable with similar studies in India.[9, 10,11]13.4% of the total items belonged to category A in our study; while the values were 10.76% in GMC Nagpur study, 14.46% in AFMC study and 13.78% in PGI Chandigarh study. Similarly, category B (16.5%) and category C (70.1%) items were comparable with values in studies at GMC Nagpur, AFMC Pune and PGI Chandigarh as 20.63%, 22.46%, 21.85% (category B) and 68.61%, 63.08%, 64.37% (category B) respectively.

There was high variation in the percentage of vital, essential and desirable items. This could be because different institutes have different service profiles, depending on the specialty services available and differ in their policies of classifying drugs into Vital, Essential and Desirable.

(Table 4)

CONCLUSION

From present study we may conclude that there is a need for conducting such analysis regularly, and applying the inventory management tools for effective and efficient management of the medical stores, along with close supervision on items belonging to important categories. The inventory classification and results of the study have been communicated to the drug store officials, and are being incorporated in the decision making on purchases, storage and monitoring of the pharmacy items.

REFERENCES

1. Budget 2013: Inflation to offset 22% rise in healthcare allocation, Vishal Dutta, Economic Times Bureau, 28 February 2013.
2. Kant S, Pandaw CS, Nath LM. A management technique for effective management of medical store in hospitals. J Acad Hosp Adm 1997; 89:41-7.
3. Kunders G.D., Gopinath S. and Katakam, A. Planning and designing supportive services-Pharmacy. Hospitals: Planning, Design and Management. Tata McGraw-Hill Publishing Company Limited, New Delhi; 2001.
4. Khurana S, Chhillar N, Gautam V K. Inventory control techniques in medical stores of a tertiary care neuropsychiatry hospital in Delhi. Health 2013 ;5:8-13.
5. Das JK. Inventory Control. In: Kaushik M, Agarwal AK, Arora SB, editors. Essentials of Logistics and Equipment Managemnt, Manual of Post Graduate Diploma in Hospital and Health Management. New Delhi: Indira Gandhi National Open University, School of Health Sciences; 2001.

6. Vaz FS, Ferreira AM, Kulkarni MS, Motghare DD, Pereira-Antao I. A Study of Drug Expenditure at a Tertiary Care Hospital: An ABC-VED Analysis. J Health Manag 2008;10:119-27.

7. Roy R N, Manna S, Sarker G N. Applying management techniques for effective management of medical store of a public sector undertaking hospital. Indian J. Prev. Soc. Med 2010;41:11-14.

8. Ammer DS. Materials management and purchasing. Bombay: D.B. Taraporevala Sons and Co. Pvt. Ltd; 1982.

9. Thawani VR, Turankar AV, Sontakke SD, Pimpalkhute SV, Dakhale GN, Jaiswal KS, *et al*. Economic analysis of drug expenditure in Government Medical College Hospital, Nagpur. Indian J Pharmacol 2004; 36:15-9.

10. Gupta R, Gupta KK, Jain BR, Garg RK. ABC and VED analysis in medical stores inventory control. Med J Armed Forces India 2007;63:325-7.

11. Devnani M, Gupta AK, Nigah R. ABC and VED analysis of the pharmacy store of a tertiary care teaching, research and referral healthcare institute of India. J Young Pharmacists 2010; 2:201-5.