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Research Article

Always Better Control-Vital Essential Desirable analysis of the drugs used in health centres of Ahmedabad district

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ABSTRACT

Background: The basic principle of inventory control is Always Better Control (ABC) based on cost criteria and Vital Essential Desirable (VED) on criticality. Inequity in drug prioritization and expenses directly affects the health of the community. Study design: Based on ABC-VED matrix, inventory analysis was done. Study area: Community health centre (CHC) - Singarva, two primary health centres (PHC) - Kanbha and Sanathal and two urban health centre (UHC) - Amraiwadi and Sabarmati. Study period: December 2012 to December 2013.
Methods: The drugs were first categorized by ABC method and then by VED method. On coupling the two techniques, ABC-VED matrix was made and drugs were classified in to Category I (AV + BV +CV + AE + AD), Category II (BE + CE + BD) and Category III (CD).
Results: According to VED analysis large amount of money was spent on D category that is; 35% of annual drug expenditure (ADE) from CHC, 7.6% and 23.4% from both the PHC respectively, 20.1% and 24.7% from both the UHCs. On considering the ABC-VED matrix analysis the ADE spent on Class III was 6.6% among CHC, 1.2% and 1.5% among PHC, 2.6% and 7.2% among the UHC.
Conclusion: The ADE used among the ABC-VED Class III should be avoided and the ADE on Class II drugs should be controlled and used judiciously.

Keywords: Always better control, Vital essential desirable, Always better control-vital essential desirable matrix

INTRODUCTION

As per the 12th five year plan, India is spending only 1.02% of gross domestic product (GDP)[1] on health which is much less than the World Health Organisation (WHO)[2] recommended 5% of GDP. Nearly, one-third of GDP spent on health goes for medicines,[3] it is very important to have optimum utilization of the medicines in such a manner that the drug wastage should be kept at bare minimum so that total expenditure on drugs can be reduced and the money resources can be used in other unserved sector.

Inventories constitute the most significant part of the current assets, representing as much as 50-70% of the capital investment. Therefore, it is imperative to manage inventories effectively and efficiently to avoid unnecessary investment in them. There are various methods for managing drug inventories of which we have always used better control (ABC) and Vital Essential, Desirable (VED) inventory method.

To minimize the inventory investment, the hospital may keep the medicines inventory low, but on the other hand, maximum service to the patients cannot be provided and the lack of medicines for patients in critical condition may cause serious problem.

ABC analysis

ABC analysis is based on Pareto principle[4] (70-10 rule) which states that 70% of the overall consumption value (expense) is based only on 10% of the total items i.e., a small portion of the items may typically represent the bulk of money value while a relatively large number of items may form a small part of the money value.

ABC analysis categories inventory into three groups: always "A," Better "B" and Control "C."

ABC analysis is a method for dividing on-hand inventory into three classifications A, B, C based on annual consumption unit. "A" items: money value is highest 70%, represent only 10% of items. "B" items: money value is medium 20%, represent about 20% of items. "C" items: money value is lowest 10% represent about 70% of items.

ABC analysis categories the medicines based on the cost of the medicines so that they can be managed accordingly. A items should have tight inventory control under more experienced management. Re-orders should be more frequent. B items require medium attention for control. An important aspect of Class B is the monitoring of potential evolution toward Class A or, in the contrary, toward the Class C. C items require minimum attention and may be kept under simple observation. Re-ordering is less frequent.

VED analysis

VED[5] classification is based on the criticality of the inventories, in contrast to ABC classification that is based on consumption value.

Vital (V): The medicines that are critically needed for the survival of the patients, which must be available in the hospital all the times. Vital items (V) are items like oxygen that are vital for functioning of a health care establishment and whose shortage will have serious adverse effects on routine functioning of the organisation.

Essential (E): Medicines with lower critical need, which may be available in the hospital. Essential items (E) are the items whose shortage or non-availability can only be afforded for a short time (such as intravenous [IV] sets and IV fluids in a hospital) and if their shortage continues for anything more than the shortest time, the functioning would be affected seriously and adversely.

Desirable (D): The remaining medicines with lowest critically, the absence of which will not be detrimental to the health of the patients. These are items whose shortage would not affect the routine functioning of an organisation even if the shortage is for a long time (such as vitamin E capsules or sun screen lotions in a hospital's medical store).

For V items, a large stock of inventory is generally maintained, while, for D items, the minimum stock is enough.

ABC-VED matrix

On using ABC analysis we will be able to consider only the cost factor, on contrary if we consider VED analysis alone ideal control can be exercised on the vital or essential category. However, we found that desirable category also contained in Class A of ABC classification. Hence it was not possible to use any one of this two inventory methods. Moreover, hence ABC-VED matrix was formulated by combining ABC and VED analysis that can be used for prioritization, known as ABC-VED matrix.[6]

Objective

- To do the ABC and VED analysis on drugs used in the centres
- To categories according to the ABC-VED matrix and to

evaluate the drug consumption by the ABC-VED matrix method.

METHODS

Study design: Drug inventory method by ABC-VED analysis.

Study area: As the study was done under the guidance of Community Medicine Department, Smt. NHL Municipal Medical College, Ahmedabad, Gujarat; the rural centres affiliated with the medical colleges were selected in addition to two urban health centres (UHC) of Ahmedabad Municipal Corporation. List of the centers is as follows:
1. Singharva - Community health centre (CHC), Ahmedabad district, Gujarat
2. Kanbha - Primary health centre (PHC), Ahmedabad district, Gujarat
3. Sanathal - PHC, Ahmedabad District, Gujarat
4. Amraiwadi - UHC, Ahmedabad Municipal Corporation, Gujarat
5. Sabarmati - UHC, Ahmedabad Municipal Corporation, Gujarat.

Study period: October 2013-November 2013.

Methodology

Written consent was taken from the medical officer of the all the centres. The stock registers of all five health centers were checked for total annual usage of the drugs. All the drugs were first arranged in the descending order of their use and then the unit price of drug were used to find out the annual drug expenditure (ADE) of each drug, and then the drugs were categorized into ABC category according to 70%, 20%, and 10% of the total cost consumed (Table 1). The individual drug price was taken from Drug Logistics Information and Management System[7] website (ADE) of each drug. As the VED categorisation is different for PHC and CHC, all the drugs were individually categorized into VED category by the medical officer of the respective health center (Table 2).

Table 1: ABC – Inventory method.

ABC	Expense (%)	Usage of items (%)
Always	70	10
Better	20	20
Control	10	70

Table 2: VED – Inventory method.

VED category	
V	Vital items without which a Hospital cannot function
E	Essential items without which an institution can function but may affect the quality of the services
D	Desirable items, unavailability of which will not interfere with functioning.

Both the inventory methods were combined and the ABC-VED matrix was created (Table 3). A (Always) category was further subdivided into three groups as per the VED categories into three groups AV, AE, AD. AV group includes drugs from A (Always) category that were also included in V (Vital) category similarly B category was subdivided into BV, BE, BD, and C category was subdivided into CV, CE, CD. The AV, AE, AD, BV, CV category makes Class I, BE, BD, CE category makes Class II and CD category makes Class III of ABC-VED matrix.

RESULTS

According to ABC category which classify according to the cost of the drugs; A, B, C group should ideally contain 10%, 20% and 70% of the total drugs consumed. As shown in Table 1, it was found that in CHC 40.9% of drugs were under A category, in both the PHC the A category drugs were 35% and 20.8% respectively which was much higher than the ideal 10% and even in comparison with previous studies. Among both the urban centres the A category was nearly 15%. Among the B category all the rural centers were consuming very high amount of drugs, one of the PHC, was consuming 49.4% and another PHC was making 31.1%. On considering C group the PHC and CHC were around 30% and UHC were making around 70% (Table 4).

After categorizing drugs as shown in Table 2 according to VED analysis which is based on criticality it was found that almost in all the centres the Vital (V) category drugs were 25%, the Essential (E) category drugs was around 45% and the D category was around 27% (Table 5). The proportion of vital and desirable categories was almost equal in all the centres, which was increasing the ADE sent on the overall drugs. Ideally consumption of vital drugs should be increased and use of desirable drugs should be decreased. Some common examples of Desirable (D) drug are norflox-tinidazole combination instead of metronidazol, levofloxacillin instead of ofloxacin, cefadroxil instead of cefixime.

After couplings both the methods, the ABC-VED matrix was created (Table 6). In all the health centres the Class I drugs were around 77%, Class II was forming nearly 17%. The Class III among the Sabarmati UHC was 7.2%, Shingarva CHC was 6.6%, and rest all were around 1.5%.

The ADE of the Singarva CHC was 615,380 rupees, among both the PHCs the ADE was 150,603 and 167,638 rupees while the UHC ADE was 323,757 and 226,751 rupees respectively (Table 7). From the VED analysis we can see that large amount of money is spent on D category that is; 35% of ADE from CHC, 7.6% and 23.4% from both the PHC, respectively, 20.1% and 24.7% from both the UHCs. On considering the ABC-VED matrix analysis the ADE spent on Class III was 6.6% among CHC, 1.2% and 1.5% among PHC, 2.6% and 7.2% among the UHC.

Table 3: ABC-VED matrix.

Categoriles	Vital	Essential	Desirable	Class
Always	AV	AE	AD	Class I
Better	BV	BE	BD	Class II
Control	CV	CE	CD	Class III

ABC: Always better control, VED: Vital essential desirable

Table 4: ABC categorisation of drugs used in health centres.

Comparison between studies	ABC category of drugs		
	A	B	C
Percentage of drugs according to Pareto Law	10	20	70
Reference studies			
CGHS study[8] (%)	17.8	22.6	59.6
Government Hospital Nagpur[9] (%)	10.7	20.6	68.6
Present study			
Singarva CHC (%)	40.9	32.1	27.1
Kanbha PHC (%)	35.0	31.1	34.1
Sanathal PHC (%)	20.8	49.4	29.9
Amraiwadi UHC (%)	14.7	18.7	66.7
Sabarmati UHC (%)	16.6	08.3	75.0

CHC: Community health centre, PHC: Primary health centres, UHC: Urban health centre, ABC: Always better control

Table 5: VED categorisation of drugs used in health centres.

Health centre	VED category		
	V	E	D
Singarva CHC	29.6% (47)	43.4% (69)	27.0% (43)
Kanbha PHC	29.0% (29)	49.0% (49)	22.0% (22)
Sanathal PHC	24.7% (19)	42.9% (33)	32.5% (25)
Amraiwadi UHC	21.3% (16)	44.0% (33)	34.7% (26)
Sabarmati UHC	26.6% (16)	51.6% (31)	21.6% (13)

CHC: Community health centre, PHC: Primary health centres, UHC: Urban health centre, ABC: Always better control, VED: Vital essential desirable

Table 6: ABC-VED matrix for all the health centers.

Center	ABC-VED matrix class		
	ADE* (%) Class I drugs	ADE (%) Class II drugs	ADE (%) Class III drugs
Singarva CHC	77.1	16.22	6.66
Kanbha PHC	78.9	19.7	1.2
Sanathal PHC	83.5	14.9	1.54
Amraiwadi UHC	73.5	23.7	2.6
Sabarmati UHC	78.0	14.6	7.2

ADE: Annual drug expenditure, CHC: Community health center, PHC: Primary health centers, UHC: Urban health center, ABC: Always better control, VED: Vital essential desirable

Table 7: ADE among each centres and ADE spent on D category and Class III of ABC-VED matrix.

Centre	Total ADE (Rs.)	ADE spent on "D"	ADE (%) spent on "D"	ADE spent on Class III (ABC-VED)	ADE (%) spent on Class III (ABC-VED)
Singarva CHC	615,379.7	215,597.1	35.0	41,069.3	6.66
Kanbha PHC	150,602.5	11,555.0	7.6	1942	1.2
Sanathal PHC	167,638.2	39,281.5	23.4	2584.1	1.54
Amraiwadi UHC	323,756.9	65,237.4	20.1	8612.7	2.6
Sabarmati UHC	226,751.7	56,148.8	24.7	16,468.8	7.2

ADE: Annual drug expenditure, CHC: Community health centre, PHC: Primary health centres, UHC: Urban health centre, ABC: Always better control, VED: Vital essential desirable

DISCUSSION

None of the centers was following any of the inventory methods. No separate attention was given on Class I stock, registers were only checked as and when drugs became out of stock. Drug inventory was not at all according to ABC method, the A group was containing around 30% of drugs, which should be only 10%, similarly C group was having 40% of drugs that should have 70% of drugs. As per VED analysis, desirable and vital categories were almost comprising equal proportion, Desirable (D) category was making nearly 22% of the (ADE) ADE in almost all the centres, this can be avoided and the funds can be used on other resources. As per the ABC-VED matrix, nearly 20% of the expense was done on Class II and Class III drugs, which can be minimized. The effort should be made to have the strict management of Class II drugs and minimised the use of Class III drugs, which take away a big part of the budget.

CONCLUSION

Rural and urban centres had wide variation (Table 4) as far as the ABC category is concern, drugs in the urban centres were much nearer to the ABC category by Pareto Law whereas drugs in the rural centres varied greatly concerning Pareto Law ABC category. The reason might be good governance in a geographically limited area of urban centres of AMC as compared to the large area for the district. Another reason could be in urban areas drugs would be available only for the locally endemic diseases were as in rural areas drugs would be available from all the nationally prevalent diseases.

Recommendation

Guidelines for inventory control methods should be formed and pharmacists in the health centre should be trained for that. The medical officer should be sensitised to make a control over use of desirable drugs and inventory control should be included in the medical officer's training. Computerized software should be designed so that by entering the drug we can directly do the categorization of drug in ABC and VED. Monitoring of Class I should be done every 15 days that would help in keeping a check on the annual budget and their availability. More this type of study should be done for sub-district and district hospitals.

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