Pharmacoeconomic analysis of parenteral therapy consumption in hospital pharmacy at Clinical Hospital – Stip

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Introduction

Improper management of drugs and medical devices is a complex problem at all health care levels. A study conducted in 2016 in which were included 35 hospitals in Poland (Religioni, 2016), was the basis for developing a drug management system. This study showed that most managers, including pharmacists (62.86%) have no knowledge for the principles of drug management optimization. Only 20% of them used pharmacoeconomic analysis and 25% did not use any analysis. 77% of the respondents selected the drugs based on the lowest price.

The results from this study can be also observed in other countries, due to insufficient education of managers which results in large budget expenditures and improper use of the same budget.

The use of available analysis and tools can make a great contribution in reducing the costs that is made in the procurement of medicines. One of the available tool is the ABC analysis or the theory of Pareto, this analysis refers to the inventory management technique used to identify drugs that constitute a significant part of the overall inventory value and categorized them into critical, important and moderately important. The basic premise of ABC analysis is that every single drug in an inventory does not have equal value and demand – some drugs cost much more than others. In contrast some drugs are used more frequently and the remaining are a mix of both. In this study we used

ABC analysis to explain the parenteral therapy consumption in hospital pharmacy at Clinical Hospital Stip during the period of 3 years with the goal of showing if the used analysis are relevant in emergency conditions, such as a pandemic.

Materials and methods

The data used for the analysis were obtained via electronic reports from the hospital pharmacy at Clinical Hospital Stip, in the part of parenteral therapy consumption and its cost, for the period from January 2019 to December 2021. ABC analysis, VEN analysis, 3x3 matrix were applied to the obtained data. ABC analysis selects the drugs in three groups: Group A- expensive drugs (10-20% of the total number of drugs), which use 70-80% of the entire budget, Group B- Drugs with average price (10-20% of the total number of drugs) which use 15-20% of the budget, Group C - cheap drugs (60-80% of the total drugs), which use 5-10% of the budget value. VEN analysis was also used to determine the importance of drugs. In this analysis drugs were divided into: Group V - Vital drugs that are needed to save lives and which can have serious consequences for patients if the drug is not available for treatment., Group E - Essential drugs used for treatment of acute and most common diseases that do not directly endanger patients, Group N – Non-essential drugs used in less serious or non-life-threatening diseases. The 3x3 matrix was used to combine ABC and VEN analysis.

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Results and discussion

The following results were obtained with the ABC analysis. Group A includes 25 (17%) of drugs, Group B – 21 (14,2%) , Group C 101 (68,8%). From the analysis we can conclude that 2019 supports Pareto's theory with majority amount of the budget 15.489.273,54 MKD (59,3 %) was spent on group A, 2.247.729,77 MKD (8.6%) on group B and 8.396.968,61 MKD (32.1%) on group C. In the period from 2020 to 2021 we can notice increased consumption of drugs from Group B and Group C. The analysis shows that in 2020 we have slight difference from the theory with 14.021.777,61 MKD (54,5 %) spent on Group A, 2.653.819,73 MKD (10,3%) spent in Group B and 9.075.061,95 MKD (35,2%) spent in group C, this is a result of a pandemic beginning, with smaller number of COVID-19 patients and reduced number of patients in other hospital wards. In 2021 we have a serious change in the ABC structure with 14.741.491,23 MKD (37,6%) spent in Group A, 8.260.797,25 MKD (21,1%) spent in Group B and 16.159.008,98 MKD (41,3%) spent in Group C. This is a result of an increased number of patients in the peak of the pandemic and re-starting normal work at other wards.

Due to the fact that the ABC analysis is a financial analysis and does not take into account the fact that some drugs, although economically cheaper and belong to group C, are vital for the hospitalized patients, we combined it with the VEN analysis according to their objective importance.

With combining VEN with ABC analysis we get that from the total number of categorized vital drugs (39) , 6 of them are in Group A, 1 is in Group B and 32 are in Group C. From the total number of Essential drugs (50), 10 are in Group A, 13 are in Group B and 27 in Group C, and from Non-essential (174), 9 are in Group A, 7 in Group B and 158 in Group C.

By using both analysis at the same time and combining them in a 3x3 matrix, we obtained a tabular order of drugs, with this the ABC analysis becomes even more important because it takes into account the importance of the drugs and allows us to note the low cost drugs. Lack of these drugs would cause greater damage than the cost of storing large quantities of inventory.

Conclusion

Drug management and the preparation of the hospital drug list covers a large area that requires great attention for analysis and improvement. From this study we concluded that these analysis are not relevant in time of a pandemic and the drug lists made in that period needs to be in line its needs. We also concluded that the ABC analysis combined with VEN analysis is of great help in preparation of an optimal drug list with normal hospital functioning. With their use we can focus on a smaller number of more important medicines, controlling the rest of the medicines occasionally.   By implementing simple rules, educating the staff that manages drugs and medical devices can significantly improve the image of proper procurement, and thus reduce the loss of funds that can be allocated to further improve health care.

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