

## Cost comparisons of five leading brands of the Antiplatelet drug, Clopidogrel, available in an Indian town

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### ABSTRACT

**Background:** Antiplatelet drugs need to be prescribed lifelong, for most of the selected patients, once started. Price disparity can lead to large financial stress on the patients, especially when cost related aspects are not paid heed to by the prescribing physician. This study was conducted to compare the cost, to the patient, of five most commonly prescribed preparations of different brands of Clopidogrel seventy five milligram, in Kolhapur city.

**Methods:** The present study was undertaken during February 2019 to June 2019. Authors purchased a strip of 10 tablets each of the five leading brands of Clopidogrel seventy five milligram. The prices of the strip of 10 tablets of each of the five chosen brands were compared. Finally, the yearly cost of each of these five different preparations, was compared directly as well as using percentages. The data was collected, analyzed and presented in tabular forms and figures.

**Results:** The data of the cost of five different brands of a single antiplatelet drug, Clopidogrel seventy five milligram shows that the annual cost of the costliest among the five brands of this drug is almost three times that of the cheapest brand, or in other words almost 300 percent that of the cheapest brand.

**Conclusions:** The cost differences between the five brands were not negligible. India, with a major part of the population being very sensitive to the cost of medications, the prescribing physician must select the preparation wisely. The most costly preparation of Clopidogrel can significantly add to the the financial stress on the patient's yearly expenditure. Thus, Pharmaco economic considerations must take a front seat while making a decision to prescribe medicines, especially in a country like India.

**Keywords:** Antiplatelet drugs, Clopidogrel seventy five milligram, Pharmaco economics, Yearly cost

### INTRODUCTION

Use of antiplatelet drugs is a very important part of the polypharmacy prescribed to the patients suffering from certain chronic non communicable diseases, such as ischemic heart disease and stroke.<sup>1</sup> Volume of sales is at mammoth levels in India. In addition, India is a manufacturing base for drugs, exporting medicines to many countries in the world.<sup>2</sup> But at the same time this is associated with a great price disparity. As antiplatelet drugs are to be taken lifelong, in almost all of such patients,

even a small price rise results in a large financial stress on patients, especially those in lower socioeconomic status, of the developing countries. In India, medical insurance is not so widely established amongst the populations. Major part of healthcare expenditure is shouldered by the consumer or the end user.<sup>3</sup>

In 1997 NPPA (National Pharmaceutical Pricing Authority) was established for ensuring availability and affordability of the drugs. The drug price control order (DPCO) 2013 is one such effort under NPPA. DPCO was

established by the government with the aim of cutting down the cost of essential medicines.<sup>4</sup>

This study was undertaken to evaluate the cost differences in five preparations of different brands of the antiplatelet drug, Clopidogrel seventy five milligram.

## METHODS

The present study was undertaken during February 2019 to June 2019. The authors purchased strips of 10 tablets each of five leading, different brands of Clopidogrel seventy five milligram from the local market of an Indian town of Kolhapur. The price paid was the M.R.P. (Maximum Retail Price). All the five strips were recently manufactured, within last three months. The five different brand strips were labelled as A, B, C, D and E under the coding, to maintain the confidentiality of those brands. The price of the strips of 10 tablets of each brand were recorded under their specific code name.

This price was converted to the yearly cost of each brand preparation for a single patient, based on once a day dosing prescription.

This data was analyzed and presented in the form of tables, figures, bar diagrams for better visualization.

### Inclusion and exclusion criteria

Only those branded preparations were included in the study which were most commonly sold in the local market of Kolhapur city, at the time of the study. All of the included drugs were available for oral intake. Preparations containing only Clopidogrel seventy five milligram were selected. fixed dose combinations were not included.

## RESULTS

The present study was conducted in Kolhapur city, which is the city part of an important district, of Kolhapur in Maharashtra state.

The study was undertaken during February 2019 to June 2019. Preparations of Clopidogrel seventy five milligram of Five leading brands were selected. Strips containing 10 tablets of each preparation were purchased. The price paid was the MRP (Maximum Retail Price) as per the local market. All the preparations were manufactured recently. All the five brand preparations were coded as A, B, C, D, and E to maintain the confidentiality.

From the price of 10 tablets, the cost of single tablet was calculated for each brand preparation. As represented in Table 1, The cost of the strip of Ten tablets of cheapest brand preparation, i.e. brand A was 26 rupees while that of the costliest brand, i.e. brand E was 89.65 rupees. The costs of the strips of remaining three brand preparations were 29.4 rupees, 62.5 rupees, and 64.4 rupees from brand preparations D, C and B respectively. Thus, a single tablet

of brand A costs 2.6 rupees per tablet, while that of brand E was 8.96 rupees. The cost of single tablet for remaining three brand preparations were 2.94 rupees, 6.25 rupees and 6.44 rupees for brand preparations D, C, B respectively.

**Table 1: Showing the prices of five different brands of Clopidogrel seventy five milligram.**

Brand Code	Price for 10 tab. (rupee)	Price of 1 tab. (rupees)
A.	26	2.6
B.	64.4	6.44
C.	62.5	6.25
D.	29.4	2.94
E.	89.65	8.965

As represented in Table 2, as well as presented in figure 1, The annual cost of each of the five brand preparations, based on single tablet once daily dosing pattern was calculated. This was worked out by multiplying the cost of the single tablet of each brand preparation by 365 (total days in one year) and recorded as annual cost in rupees. Thus, the annual cost of the cheapest brand, brand A was 949 rupees. The annual cost of the costliest one i.e. brand E was 3274 rupees, which is almost 3 and a half times more than the cheapest brand preparation. The annual costs on similar basis of the three remaining brand preparations were 1073 rupees, 2281 rupees and 2350 rupees for D, C and B brands respectively.

**Table 2: Showing the annual cost of Clopidogrel seventy five milligram mg tablets to a single patient based on once daily dosing.**

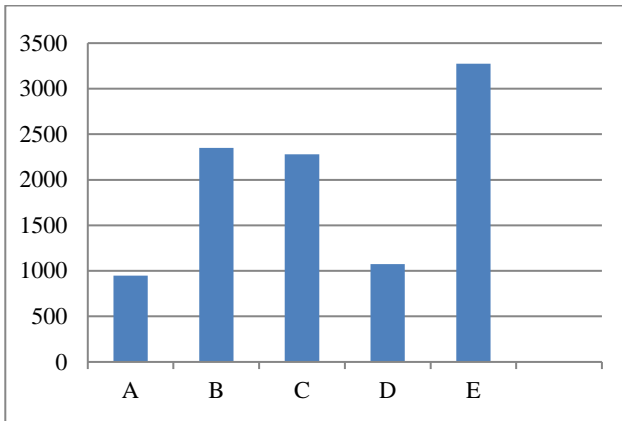
Brand	Annual cost (rupees)
A.	949
B.	2350
C.	2281
D.	1073
E.	3274

\*The calculations are based on a single tablet once daily dosing pattern, # The values are rounded off to the nearest number

Finally, as represented in Table 3, the annual costs, based on single tablet once daily dosing schedule, were also calculated in percentages. Thus, the cost of the cheapest brand preparation i.e. of brand A was considered as 100 %. Thus, Y the cost of the costliest brand preparation, i.e. brand E was 345 %. The percent cost of all remaining the brand preparations were 113 %, 240 %, 247 % for brands D, C and B respectively. Thus, the percent annual cost of the costliest brand preparation (Brand E) is almost 350 % of that of the cheapest brand preparation (Brand A).

Table 1 shows, the prices for 10 tablets as well as single tablet of each of the five brand preparations under the specified code names. Thus, it can be seen that the brand A provides the drug clopidogrel seventy five milligram, the cheapest, costing 26 for 10 tablets, while costing 2.6 for a

single tablet. In contrast brand E is the costliest among all five, costing 89.65 rupees for 10 tablets and 8.96 rupees for single tablet. Amongst the remaining three brands, the brand D costs 29.4 rupees, brand C costs 62.5 rupees while brand B costs 64.4 rupees for 10 tablets respectively. while costing 2.94 rupees, 6.25 rupees. and 6.44 rupees for single tablets respectively.



\*The calculations are based on a single tablet once daily dosing pattern, # The values are rounded off to the nearest number

**Figure 1: Annual cost of the five different brand preparations of Clopidogrel seventy five milligram for a single patient.**

This table represents the annual cost of each of the five brand preparations, for a single patient, based on single tablet once daily dosing. Thus, it can be observed that the cheapest, i.e. brand A costs 949 rupees annually, for a single patient based on a single tablet once daily basis, while the costliest brand, i.e. brand E costs 3274 rupees for a single patient based on single tablet daily dosing. The cost difference between the cheapest and the costliest brand is more than three times. Remaining three brands viz D, C and B fall in between as far as the annual cost is concerned, costing 1073 rupees, 2281 rupees and 2350 rupees.

**Table 3: Comparison of the annual costs of five different brands of Clopidogrel seventy five mg. in percentage.**

Brand	Comparative cost (percent)
A.	100
B.	247
C.	240
D.	113
E.	345

\*The calculations are based on a single tablet once daily dosing pattern, # The percent cost of the cheapest brand is considered 100, \*\* The percent costs are rounded off to the nearest numbers

This table presents the annual cost comparisons for a single patient, based on a single tablet once daily basis of all the five brands. This is presented in the form of percentages. Thus, it can be seen that the brand A, the cheapest amongst all five brands is considered to cost 100 percent. In this

regard, the costliest brand, i.e. brand E, costs 345 percent as compared to brand A. Remaining three brands cost as follows: 247 percent for brand B, 113 percent for brand D and 240 percent for brand C.

**DISCUSSION**

Management of certain chronic non communicable diseases, such as ischemic heart disease, stroke, in Indian patients includes antiplatelet therapy, along with other indicated drugs. When the drug treatment is deemed necessary, The antiplatelet drugs available are low dose Aspirin, Clopidogrel, Ticlopidin, and certain other. In turn These drugs are available in certain specific doses, combinations etc. These are amongst the most commonly prescribed and popular antiplatelet drugs Profit margin of pharmaceutical companies is extremely disparate. In 1995, the first Drug Price Control Order (DPCO-1995) was issued which included the prices of 76 drugs under the purview of price control For the benefit of patients, government authorize NPPA to regulate prices of medicines which are included in the National List of Essential Medicines (NLEM) thus 348 essential medicines were included in the list in 2013.<sup>5,6</sup> Government is making every effort for ensuring availability and affordability of medicines for all citizens of India. The order authorized the NPPA to regulate the medicine prices of not only NLEM but also medicines which are not listed in NLEM (non-NLEM).<sup>7</sup> But even after these efforts there is a great price variation and some drug brand preparations still cost more than the other brands. Naturally every pharmaceutical company aims to quote its own price of the medicines they manufacture without jeopardizing their profit.<sup>8</sup> In some countries of the world, there are less stringent price control practices. This may be one of the reasons that the drug companies in those countries are more enthusiastic for drug invention and development.<sup>9</sup>

But for the sake of population at large there must be some controlling system. This is even more significant in India as there is no well-defined social security system and at the same time the medical insurance coverage is very poor and most of the health-related expenses are to be borne by the consumers or the end users themselves. A significant chunk of Indians are becoming financially stressed to a serious extent, every year, due to rising health care costs and a substantial number of patients die at home following discharge against medical advice from the intensive care units due to exuberant cost of the treatment.<sup>10</sup>

In the present study the annual cost of Clopidogrel seventy five mg for a single patient was considered. It varies between 100 percent to 345 percent between the cheapest and the costliest brands amongst those brands selected for this study. Thus, while prescribing Clopidogrel seventy five mg to the patient, the Pharmaco economics of this drug be considered. Prescribing costlier preparations, without any compelling or justifiable reasons, for not so well to do patients might create a serious economic stress on the annual budget of many patients, especially in a country like

India. Thus, it might be stated that every physician should learn the basic pharmaco economics of drugs, especially for chronic conditions like, ischemic heart disease, stroke, where drug treatment might be required for years together, and mostly for life. In such condition's polypharmacy, which is defined as prescribing of nine or more drugs to a patient concurrently, is quite common which might include other drugs such as antihypertensives, antidiabetics, hypolipidemic agents as per the merit of the case. This is a major factor which should compel the prescribing physician even further to consider cost benefit of the drugs being used.<sup>11</sup>

## CONCLUSION

Large number of brands of Clopidogrel seventy five mg are available in the Indian market. Pricing of medicines is one of the deciding factors and it has direct economic consequences on patients impacting the compliance to treatment. It is the moral responsibility of all medical professionals that cost effectiveness of drugs should be evaluated before prescribing it to any patients.

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