

# Cost of antiepileptic drugs in India

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## INTRODUCTION

Epilepsy is the most common serious neurological disorder and is one of the world's most prevalent non-communicable diseases. Around 90% of the people with epilepsy in developing countries are not receiving appropriate treatment due to cultural attitude, lack of prioritization, poor health system infrastructure and inadequate supply of antiepileptic drugs (AEDs).<sup>1</sup> Economic factors are important determinants of clinical decision making and the degree of effect depends on the country and health systems. In developing countries these may be more related to patients' ability to pay and that of availability of drugs.<sup>2</sup>

The management of epilepsy is primarily based on use of AEDs. The choice of drugs varies considerably among physicians and across countries and do not always indicates a rational clinical decision making. The cost of drugs should be an important consideration in the choice especially in developing countries. The practitioners should weigh the cost against the potential clinical benefits especially with newer AEDs. Dan Chisholm, on behalf of WHO-CHOICE reported that older first line AEDs (Phenobarbital and phenytoin) were more cost effective on account of their similar efficacy but lower acquisition costs.<sup>3</sup> The objective of this review was to determine the drug cost in management of epilepsy in India and other Asian countries; and how it differed from that of Europe and America.

Following electronic search, all studies reporting drug costs of epilepsy management were reviewed. The primary outcomes of interest were the annual drug cost per patient in USD, proportion of total direct medical costs, and proportion of per capita GNP. The secondary outcomes of interest were the proportion of patients on monotherapy and choice of AEDs; first choice AEDs for primary generalized seizures and use of newer AEDs.

## COST OF ANTIEPILEPTIC DRUGS

A total of 35 articles were identified, out of which based on initial screening of abstracts, 13 were excluded. There were 5 reports from Asia,

3 from India, one each from Oman and Hong Kong. One of the Indian studies was from a secondary hospital, and the other two were from university hospitals.<sup>4,6</sup> The proportion of patients on monotherapy were similar (75%-80%). The use of newer AEDs was minimal. Phenytoin (93%) was the most commonly used drug in the secondary hospital. In the other two university hospitals, carbamazepine was the most common AED used (44%-50%), followed by phenytoin (22% - 33%). The mean drug cost per patient per year varied between USD 27.5 at secondary level to USD 47.7 to 53.7 in the two university hospitals. The difference was mainly due to the choice of AEDs. Drug costs constituted about 56% of the total direct medical costs, and about 15% of per capita GNP.

The study from Oman and Hong Kong showed that the AED costs were only about one fourth of the total direct medical costs. Monotherapy use was as high as in India and the cost of AEDs depended on the prognostic group.<sup>7,8</sup>

In US, the first choice AED was phenytoin (48%) and carbamazepine (31%) whereas it was more variable across Europe (generally valproate acid and carbamazepine were preferred). The drug cost as proportionate to direct medical costs (8.3% to 48.5%) and as proportion of per capita GNP were less in Western world.<sup>9</sup>

There were major differences between studies on what costs and how they were measured. The case-mix of the patient groups was also widely different. The task of comparison between studies should be interpreted with caution due to these considerations.<sup>10</sup>

## CONCLUSION

Drug costs constitute a major component of direct medical costs of epilepsy management. There is difference in the choice of AEDs between different parts of the world. The uses of the costly new AEDs in Asian countries need to be weighed against benefits in efficacy, adverse reactions and improved quality of life. Treating Physicians need to be sensitive to affordability issue related to AEDs. More multi-centric studies using same protocol needs to be done to generate comparable

**Table 1: Cost of drug treatment for epilepsy in India**

	Krishnan <i>et al</i> <sup>4</sup>	Radhakrishnan <i>et al</i> <sup>6</sup>	Thomas <i>et al</i> <sup>5</sup>
Setting	Secondary	Tertiary	Tertiary
Year of study	2001	1993-95	1998
No of patients	184	972	285
Subjects	Outpatients	Outpatients	Outpatients
Annual cost per capita (USD)	27.51	47.73	53.75
Percent of direct medical cost	56	---	57
Percent of per capita GNP	5.1	15.4	---
Percent on mono therapy	79.2	76.4	75.5
First choice of AED	Phenytoin (93%)	Carbamazepine (44.2%) Valproate acid/phenytoin (20 – 25%)	Carbamazepine (48%) phenytoin (33%)
Use of new AEDs, percent	Nil	1%	10%

cost estimates of treatment of epilepsy across countries.

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