



**A STUDY ON PRESCRIPTION PATTERN AND COST ANALYSIS OF
ANTIRETROVIRAL DRUGS.**

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ABSTRACT

In HIV infectious disease, anti-retroviral drugs have to be taken for a long duration. Prescribing costly antiretroviral drugs to patient increases the expenditure during treatment. This can be solved by prescribing the drugs with low cost or generic products. In India 136 different brands of Anti-retroviral drugs are available. Out of this 40 brands are available in combination. In the present study we have analyzed the difference in the cost of Anti-retroviral combinational drugs of different brands which will help the physician to prescribe cheaper brands. The cost ratio of combination of drugs varies from 1.10 to 3.867.

KEY WORDS

HIV, Anti retroviral drugs, Prescription pattern, Cost ratio, Combination therapy.



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INTRODUCTION

Human immunodeficiency virus (HIV) infection and acquired immune deficiency syndrome (AIDS) commonly referred to as HIV&AIDS have emerged as being amongst the most serious and challenging public health problems in the world. HIV infection in the human body results mainly from the integration of the viral genome into the host cell for the purpose of cell replication. During the last decade, even though attempts were being made to eradicate HIV, it was found that eradication of HIV is highly unlikely, and effective antiretroviral therapy is required on a long-term basis to maintain viral suppression and reduce disease progression^[1]. According to the World Health Organization, AIDS Epidemic Update of 2007, it has been estimated that there are 33.2 million people living with HIV/AIDS globally. Of this total, 22.5 million people are HIV positive in Sub-Saharan Africa specifically, representing 67.8% of the global number (2007, www.unaids.org 2007). Each day 11,000 persons become newly infected with the virus; of these, half are women and 40% are young people (15–24 years old)^[2].

In India around 2.5 million people were living with HIV as per the survey in July 2007 second only to South Africa^[3]. In HIV-1-infected patients, highly active antiretroviral therapies (HAART) have been used both to reduce viral load in plasma to undetectable levels, and to increase the number of CD4 cells in the majority of infected individuals^[4].

Currently used anti HIV drugs can be classified under three categories: Nucleoside reverse transcriptase inhibitors, Non-nucleoside reverse transcriptase inhibitors and Protease inhibitors. Mono-therapy is no longer recommended because incomplete viral suppression can encourage development of resistance. The current prescription pattern for the HIV infection is based on cocktails of drugs that are currently approved by the Food and Drug Administration. Drugs are prescribed in 5 different combinations.

Type I: 2 Non Nucleoside + 1 Nucleoside reverse transcriptase inhibitors

Type II: 1 Non Nucleoside + 2 Nucleoside reverse transcriptase inhibitors

Type III: 2 Nucleoside reverse transcriptase inhibitors

Type IV: 2 Nucleoside + 1 NonNucleoside reverse transcriptase inhibitors

Type V: 2 Protease inhibitors

METHODOLOGY

The information regarding the prescription pattern and price among the different brands of the Anti-retroviral drugs were evaluated using Advance Drug review^[5] and current index of medical specialties^[6]. The cost of 10 tablet or capsules of each brand was calculated. The cost range and cost ratio was calculated^[7]. Table 1, Table 2, Table 3 shows the different antiretroviral drug combination available in the market. Cost ratio was calculated using the formula



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Cost ratio = highest price / lowest price

Table 1
Combination Of Two Nucleoside Reverse Transcriptase Inhibitors And One Non-Nucleoside Reverse Transcriptase Inhibitors

Generic Name	Price (Rs)	Cost Ratio	Cost Range
Lamivudine Tab (150mg) + Zidovudine Tab (300mg)+ Nevirapine Tab (200mg)	225	1.104	225-235
	235		
	233		
Lamivudine Tab (150mg) + Nevirapine Tab (200mg)+ Stavudine Tab	220	1.348	215-290
	290		



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Table 2
Combination Of Two Nucleoside Reverse Transcriptase Inhibitors

Generic Name	Price (Rs)	Cost Ratio	Cost Range
Lamivudine Tab (150mg) + Stavudine Tab	135	1.304	103.5-135
	103.50		
	134		
	135		
	145	1.318	110-145
	110		
	143		
144	3.867	212-820	
820			
240			
205			
274			
470			
212			
275			

Table 3
Combination Of Two Protease Inhibitors

Generic Name	Price (Rs)	Cost Ratio	Cost Range
Lopinavir Cap + Ritonavir Cap	500	1.33	375-500
	375		
	500		



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CONCLUSION

The United Nations General Assembly special session on HIV/AIDS committed countries to reduce the proportion of HIV-infected infants worldwide by 20% by 2005 and 50% by 2010. Achieving this requires increased access to treatment of HIV positive patient^[3]. Generally, potent antiretroviral therapy can significantly improve the clinical course of HIV infection, but its use has been very limited due to its cost^[8]. Different brands of anti-retroviral combination drugs are available in the Indian market. The cost range of drugs varies widely. For example in case of combination therapy of Zidovudine and Lamivudine the cost ratio was 3.86. This indicates that the costliest brand of Zidovudine and Lamivudine is four times more expensive than their cheapest brand. If zidovudine (150 mg) + lamivudine (300 mg) is to be taken twice a day, for 5 days, the cost ranges from Rs 212-820. If the physician prescribes the costliest brand of zidovudine (150 mg) + lamivudine (300 mg) the patient has to spend Rs.,4920 more every month. Thus physicians should be familiar with the cost of antiretroviral drugs during prescription. This can be educated through continuous medical education programs for physician and pharmacists. The cost effective treatment is also possible through doctors prescribing the drugs in consultation with the pharmacist in the hospital.

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**A STUDY ON PRESCRIPTION PATTERN AND COST ANALYSIS OF
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