

# **Costing Public Provision of Antiretroviral Therapy in India<sup>1</sup>**

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## **Costing Public Provision of Antiretroviral Therapy in India**

### **Abstract**

India's initiative to provide structured antiretroviral therapy has raised hope among people living with HIV/AIDS to lead a better productive life. However provision of ART has significant financial implications. This paper attempts to estimate the unit cost of providing first line ART in India and using this estimate ascertain the financial requirements of public funded ART programme in India over a period of 5 years under two different scenarios. The cost estimates works out to be Rs. 911 per patient-month with provision of first line therapy only. It is estimated that over the period of 5 years, 250 ART centres will have to be established in India among high risk districts and these centres will act as a 'hub' for rest of the districts. Assuming that the programme will set up its own testing and ART centres, a budgetary provision of Rs. 12016 million will be required to put 3 lakh people under ART by end of five year. On an alternate scenario, assuming that the programme will outsource the key monitoring facilities to the existing private set up, a budgetary provision of Rs. 10249 million only will be required to cover the same population. Considering the cost difference, it is argued that the programme can put in place an effective public private partnership mechanism in implementation of high value items like provision of ART in countries like India.

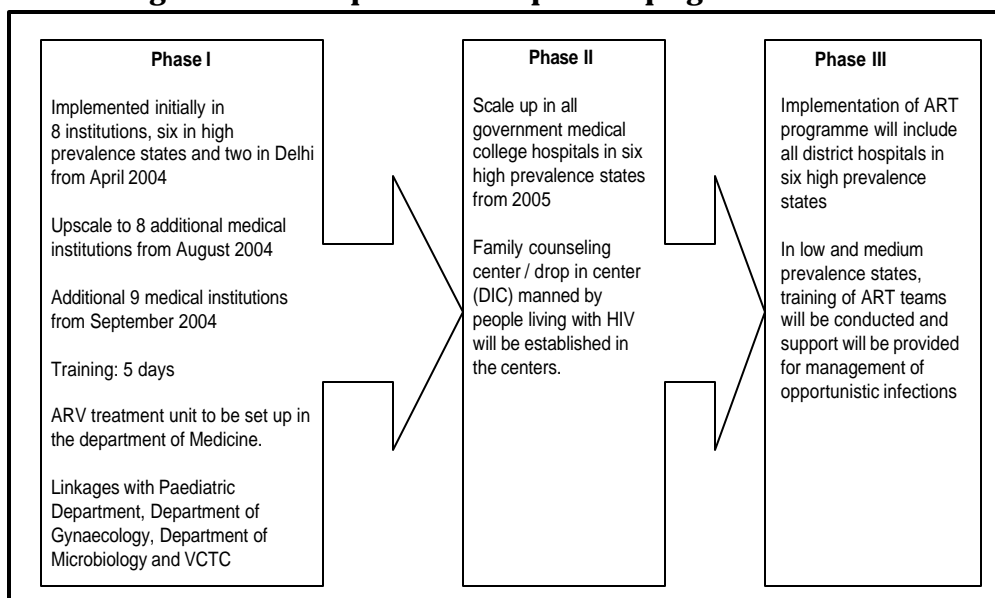
# Costing Public Provision of Antiretroviral Therapy in India

## 1. Introduction

In 2004 National AIDS Control Organisation (NACO) of India implemented a programme to place 100,000 AIDS cases in selected states on structured antiretroviral therapy (ART). This intervention is considered to be a critical component of a comprehensive program to combat HIV/AIDS, along with prevention, improvement of health care infrastructure and care and support programmes. According to NACO there are approximately 5.206 million HIV cases in India by end of 2005 contributing to two-thirds of HIV cases in the whole of Asia. Although antiretroviral therapy is no cure for HIV/AIDS, effective antiretroviral regimens inhibit efficient replication of HIV and reduce viremia to undetectable levels. Lower frequency of opportunistic infections among the infected person resulted into more productive life for a person living with HIV/AIDS.

The first phase of the national programme on structured ART was started in 8 tertiary level government institutions in six high prevalence states and the national capital of India. In the second phase, the programme proposed to include 25 tertiary level healthcare institutions in the country. The third phase of the programme would cover district level hospitals. Figure 1 depicts the plan for a phased scale up of the ART programme in India. According to this plan, thirty CD4/CD8 cell count centres were to be set-up in India for the purpose of monitoring patients on ART. The programme intended to cover 25,000 patients by the end of 2004-05 and extend ART facilities to 100,000 patients by the end of 2007.

**Figure 1: Plan for phased scale up of ART programme in India**



## 2. Rationale and Study Objective

The free ART programme in India was supported by a grant of US \$165 million from Global Fund on AIDS, TB and Malaria which aims to provide antiretroviral treatment in the public sector and through public-private partnerships for 1,00,000 people living with AIDS over a five year period. According to earlier estimates, a full course of first line fixed dose combination of ARV drugs would cost a patient approximately Rs. 1200 to 1500 a month. It was estimated that cost of monitoring the patient with laboratory tests would increase the cost per patient to about Rs. 2,000 a month (NACO 2004). Before the introduction of ART programme in India, World Bank had commissioned a study to ascertain the cost and consequence of implementing free ART programme in India (Over et. al. 2004). The study estimated an annual cost of \$600 per person for implementing the structured ART programme in India. However, following the implementation of the programme, no comprehensive estimate is available in India on how much does it cost to implement free ART programme. This is also necessitated given the reduction in cost of drugs and test kits. This necessitated having proper unit cost estimation in order to understand the cost needed for implementing the ART programme in India. Unit cost estimation can help in having a broader and evidence based framework for financial planning of the programme. In order to have a broad analysis of costs involved in treating HIV positive people with ART in India a costing exercise was conducted in the ART centre at BJ Medical College in Ahmedabad city of Gujarat. The objective of the study was to calculate resources used by the ART unit at the Civil Hospital, Ahmedabad. The study uses incremental costing approach to estimate financial requirements for scaled-up ART programme

## 3. Set up of the Cost Centre

BJ Medical College Ahmedabad is the premier public medical institution of Gujarat attached to Ahmedabad Civil Hospital. The current bed strength of the hospital is 1189. More than 2000 people visit the OPD of the civil hospital every day. About 75,000 patients receive in-patient care in one year. The hospital has all major speciality departments. The clinical departments are medicine, surgery, gynaecology and obstetrics, ENT, paediatrics, paediatric surgery, psychiatry, skin and VD, burns and plastic surgery, gastrology, gastro surgery, urology, neurology, neuro surgery, tuberculosis, neonatal, cardiac surgery, ayurveda and homeopathy. The hospital is fully financed by the state government budget.

**ART Set-up:** The ART centre at the BJ Medical College, Civil Hospital, Ahmedabad was set-up in January 2005 where as it became operational in April 2005. The centre employs 5 personnel including 2 medical officers on a contract basis. Personnel are also shared with different hospital departments such as medicine, gynaecology, skin and VD, microbiology, paediatrics, community medicine and medico-social work.

- Senior Medical Officer: 1
- Junior Medical Officer: 1
- Laboratory Technician: 1
- Counsellor: 1
- Record Keeper cum Computer Operator: 1

The centre received an annual contingency grant of Rs. 100,000 during the first year of operations. From second year onwards, a contingency grant of Rs. 50,000 will be provided. The grant is meant for the purpose of procurement of a computer, printer, cupboard for storing records/documents, etc., and other routine expenses such as purchase of stationery, mailing of letters, telephone and internet charges. The centre also has a CD4/CD8 cell count unit attached to the BJ Medical College.

From January to December 2005, the centre registered 1283 patients. Out of these, 900 were males, 343 were females and 40 were children. A total of 24 deaths were registered among the patients on ART. However, the baseline CD4 cell count among the 24 patients could not be ascertained. The patients were from different parts of Gujarat. Distribution of the patient profile and ART regimen is given in Table 1.

**Table1: Snapshot of Cases under free ART Centre programme in Gujarat, 2005**

<b>Total Number of Patients</b>	1283
Male	900
Female	343
Child	10
<b>Deaths</b>	24
Male	18
Female	06
<b>Regimen</b>	
D4T30+3TC+NVP	773
D4T30+3TC+EFV	134
D4T40+3TC+NVP	158
D4T40+3TC+EFV	16
ZDV+3TC+NVP	114
ZDV+3TC+EFV	29
Other regimen	13
ESIS	03
Stopped	02
Deaths	24

Source: Compiled from patient record maintained at ART Centre, Civil Hospital, Ahmedabad

For all practical purposes, the ART centre is associated with the Medicine OPD. Patients first report to the Medicine OPD. After assessment of their status, they are referred to the ART centre for treatment. Medical officers in the ART centre examine the patients and suggest treatment. Patients who have to be put on tuberculosis drugs are referred to the TB/Chest department. Similarly patients suffering from other sexually transmitted opportunistic infections are referred to the Skin and Venereal disease department. However, if deemed necessary, the medical officers also prescribe treatment for opportunistic infections to patients based on the need. For laboratory investigations, patients are referred to the microbiology, pathology and radiology department. Drugs for ART are dispensed from the centre to the patients with proper counselling of patients. A counsellor is appointed for the purpose. The centre is operational Monday to Saturday between 9 AM to 1 PM. Details of the centre load and profile is provided in Annexure 1.

#### **4. Costing Framework**

Data for the purpose of estimating costs per patient was collected from Gujarat State AIDS Control Society, Ahmedabad and Civil Hospital, Ahmedabad including the ART

centre, pharmacy and microbiology department. The costs are calculated using the data for the month of November 2005. In order to have a fair picture of the cost involved the cost items were divided into fixed and variable costs. This was then used to estimate financial requirement for implementing ART intervention in India over the next five years.

### **Costing Assumptions**

This paper uses incremental costing approach. The other alternative is to work out costs based on full costing taking into account all costs (both direct and indirect costs) in estimating the cost of service. Holmes and Schroeder (1996) suggested that better management decisions in healthcare organisations could be based on incremental activity based costs rather than using traditional full cost data. Incremental cost approach considers only new and additional resources required by the ART clinic (for example, medicines, laboratory investigations, imaging and additional staffs to manage the programme). Similarly, we do not include costs that are met by other programmes. For example, costs born for treatment of sexually transmitted opportunistic infections and tuberculosis, which receive separate project funding, are not accounted for in costing the ART programme. In this sense, the costs do not describe the cost of treating patients, but only the HIV/AIDS programme costs. The other assumptions of the approach are discussed below.

The costs have been estimated based on ART centre in Gujarat which is having a high patient load and appropriately describes a mix of patient load needing different regimens. However, a multi-centric study would be useful to capture the patient mix appropriately. Costs of various medicines do not vary as they are procured centrally. Only first line therapy is provided in the national programme. The cost of some routine laboratory investigations are ignored here as they are anyway a part of the existing hospital set up. Occurrence of opportunistic infections may also vary across different settings.

Currently there is no mechanism for the follow-up of cases at the community level. A concept of drop-in centre with active involvement of people living with HIV/AIDS and empanelled physicians to monitor, counsel and manage the drug side-effects and opportunistic infections of patients are being considered. Cost of this is not accounted for in the current study.

### **5. Cost Units**

Different cost units used for costing the ART programme are:

- Patient Load
- ART Drug Cost
- Salary of Professionals associated with the ART Centre
- Contingency Grant to the Centre
- Cost of CD4 cell count
- Cost of Laboratory Investigations
- Drugs for Prophylactic and Therapeutic treatment of Opportunistic Infections

**Patient Load and ART Drug Cost:** Patient load for the month of November 2005 was obtained from the ART centre at BJ Medical College (Table 2). Annexure 1 provides details of patient load at the ART centre. Total number of patients alive and on ART

during November 2005 was 848. This figure was used for calculating the unit cost of the programme. Further, since different combination of first line therapy is given based on the patient profile, classification of patient load according to the treatment regimen and their corresponding costs were obtained.

**Table 2: Patient Load and ART Drug: Cost for the Month of November 2005**

Regimen	Number of patients	Number of Children patients	Cost of Drugs
D4T30/3TC/NEV (3 comb)	476	09	177304.50
D4T40/3TC/NEV (3 comb)	109	07	43740.00
ZDV/3TC + NEV (2 comb)	078	03	60483.60
ZDV/3TC + EFV (2 comb)	013	02	19261.60
D4T30/3TC+EFV (2 comb)	080	04	89445.60
D4T40/3TC+EFV (2 comb)	014	02	16631.40
D4T30/3TC+NEV (2 comb)	037	-	15717.60
D4T40/3TC+NEV (2 comb)	006	-	2653.20
Other regimens	008	-	na
<b>Total</b>	<b>821</b>	<b>27</b>	<b>4,25,237.50</b>

**Salary of Professionals associated with the ART Centre:** Salary of professionals contracted for the ART centre was obtained from their salary registers (Table 3). Laboratory technician salary was accounted for in calculating the cost of CD4 cell count.

**Table 3: Salary of Professionals Associated with ART Centre**

Staffs	Salary (Rs.) for one month
Sr. Medical Officer	23,000
Jr. Medical Officer	19,000
Record Keeper cum Computer Operator	6,500
Counsellor	6,500
<b>Total</b>	<b>55,000</b>

**Contingency Grant to the Centre:** In calculating monthly cost of the programme, the actual expenditure incurred from the contingency grant was converted to find the estimate for a month (Table 4).

**Table 4: Other Establishment Costs of the ART Centre (based on contingency provided)**

Expenditure utilisation	Amount (Rs.)
Computer and Printer *	9,400
Stationery	416
ARV books and forms	3590
Speed post and drug dispensing register	255
Furniture *	3,152
Total (Annual)	16,813
<b>Estimate for a month</b>	<b>1,401</b>

\* Cost of computer and furniture was annualised based on their life time.

**Cost of CD4 cell count:** The CD4/8 cell counts are performed by the Microbiology Department. The department performed 310 tests during November month. For calculating the costs of treatment we have assumed that the CD4/8 Count Machine costs Rs. 20 lakhs and it has an average life of five years. The other recurrent costs for conducting the tests are based on following information. The cost of BD FACS Reagents and FACS Flow Sheath Fluids for conducting 500 tests works out to Rs. 2,45,508.50. A laboratory technician fully dedicated to the machine costs Rs. 3,500 per

month. Indirect costs such as administrative overheads related to Vacuity, Needle, Needle cutter, Gloves, Syringes, Hypo chloride solution, Autoclave machine, Refrigerator, Supervisor, routine laboratory technician and staffs salary are not accounted for in the programme cost. Our assumption was that this capacity already exists in the government facility and no additional investments are needed for creating these facilities.

**Cost of Laboratory Investigation:** The common laboratory investigations conducted during initiation of ART, apart from CD4/CD8 counts include Complete Blood Count (CBC), Serum Alanine Transaminase (ALT), Aspartate Transaminase (AST), Serum Creatinine, Blood Glucose, Serum Lipids, HCV, HBsAg, VDRL, USG, X-ray. A discussion with the Sr. Medical Officer of ART Centre at the Civil Hospital revealed that HBsAg, HIV-Elisa, LFT and VDRL are important tests for initiating ART. These tests were done for every patient at baseline. During November 2005, 111 cases registered in the ART centre. Table 5 worked out the cost of monthly laboratory investigation for patients on ART.

**Table 5: Cost of Laboratory Investigations**

Tests	Per patient cost	Total Costs
HBsAg	11.00	1221
HIV-Elisa	23.33	2590
VDRL	40.00	440
LFT	24.00	2664
<b>Total</b>		<b>6915</b>

**Drugs for Prophylactic and Therapeutic Treatment of Opportunistic Infections:**

The ART centre at BJ Medical college maintained a record of commonly occurring opportunistic infections among people on ART. Opportunistic infections like Tuberculosis were referred to TB unit where a separate RNTCP programme for TB control is operational. Hence such costs are not accounted for in calculating cost for ART programme.

**Table 6: Drugs for Prophylactic and Therapeutic treatment of Opportunistic Infections**

Opportunistic Infections Reported	November 2005	Drugs prescribed	Cost
Count of Pulmonary TB	13	Referred to TB unit	
Count of Extra Pulmonary TB	20	Referred to TB unit	
Count of Candidiasis	19	Fluconazol	10241
Count of HSV Infection	2	Acyclovir	910
Count of H. Zoster Infection	6	Acyclovir	5460
Count of Warts		Gention violet	
Count of Toxoplasmosis TG	1	Outside treatment	
Count of Progressive multiple leucoencephalopathy		No treatment	
Count of Crypt meningitis		Amphoteric	
Count of CMV Disease		No treatment	
Count of Syphilis	2	Penicillin Injection	
Count of Pneumocystis Carinii Pneumonia	4	Septtran	
Count of any other	3		
<b>Total</b>			<b>16,611</b>



## 6. Cost of ART Programme

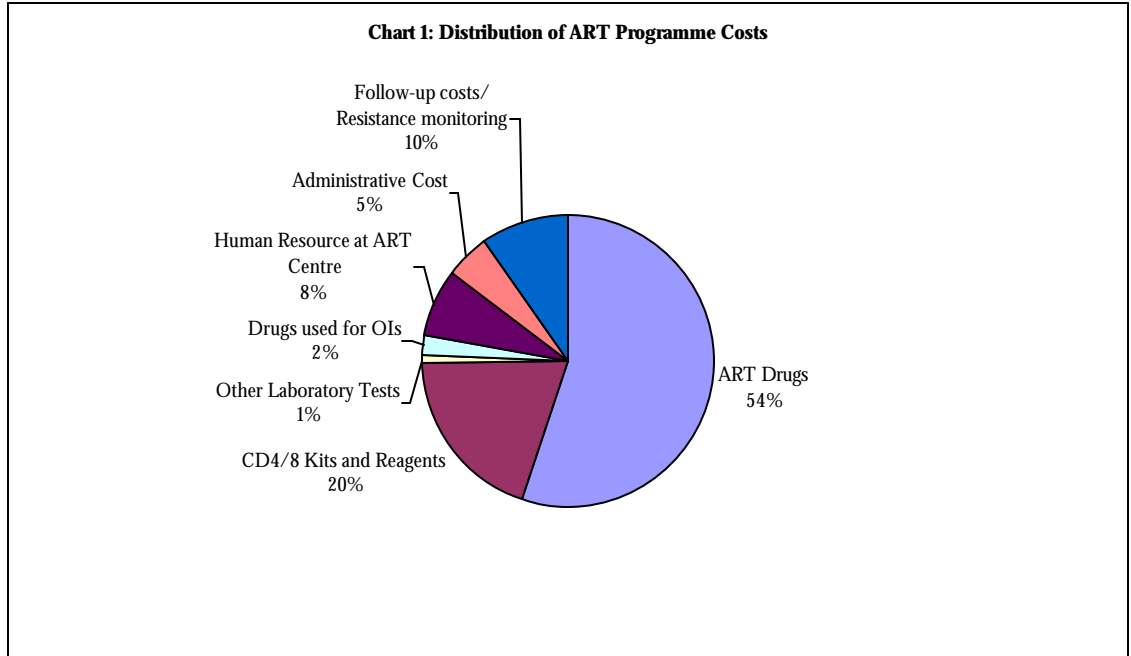
Table 7 presents the total monthly cost and cost per patient month in the programme. The costs were classified into fixed and variable cost.

**Table 7: Summary cost information**

<b>Variable costs</b>	<b>Cost (Rs.)</b>	<b>Cost (Per Patient)*</b>
Drugs	425237	
CD4/8 Regiments	152215	
Other Laboratory Tests	6915	
Drugs used for OIs	16611	
<b>Total variable cost</b>	<b>600979</b>	<b>709</b>
<b>Fixed costs (per month)</b>		
Salary (ART Centre)	55000	
Salary of Laboratory Technician (CD4 Machine)	3500	
Other Establishment costs (ART Centre)	1401	
Depreciation of CD4/8 Machine	33333	
Training cost	3333	
Follow-up costs/ Resistance monitoring	75000	
<b>Total fixed cost</b>	<b>171568</b>	<b>202</b>
<b>Total cost per patient per month</b>	<b>769882</b>	<b>911</b>

\*based on 848 number of patients per month

The above classification of costs will take into account changing patient load as the costs have been segregated into fixed and variable components. The cost estimates are based on the assumption that the patient mix will remain the same, as experienced in the current programme. Chart 1 shows the share of total cost among the programme component. Component wise cost break-up shows that ART drugs (54 per cent) accounts for a major chunk of the programme cost followed by CD 4/8 kits and reagents cost. Human resource at ART centre accounted for a mere 8 per cent of the resource consumed. However, in interpreting the result, care has to be taken for human resource support from other hospital departments which are not taken into account here owing to incremental costing approach followed. Cost towards follow-up and resistance monitoring accounted for 10 per cent of the resource used.



**Cost Function**

The costs described here will vary on different parameters. This may be due to variation in patient load, variation in drugs mix and occurrence of Opportunistic Infections. Incremental Cost is a function of fixed cost and variable cost.

$$\text{Incremental Cost (IC)} = \text{Fixed Cost (FC)} + \text{Variable Cost (VC)}$$

Fixed Cost per month in this case is Rs. 1,71,568.

Hence the cost function works out to

$$\text{IC} = 171568 + 709N$$

*N = Number of patients*

This cost function will change in case of the following:

1. Patient Load varies
2. Drug regimen to the patients is different from the one used in this exercise.
3. Cost for other routine laboratory investigations are taken into account.
4. Occurrence of opportunistic infections varies.
5. Patients have to be put on second line drugs

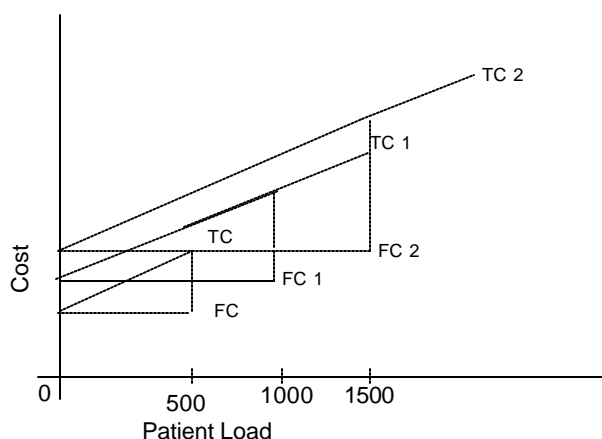
**Deriving the Cost Function Curve**

The cost function curve has been derived based on the following assumptions:

1. One medical officer can handle approximately 500 patients a month.
2. 1500 patients can be handled with minor adjustment in OPD hours, for example opening up evening OPDs.

In the current set up increase in patient load above 1500 patient a month will put significant burden on the existing infrastructure. This will have implications on the number of Medical Officers, Counsellor and CD4 cell count machine. This will increase the fixed cost of the centre.

**Figure2: Cost Function Curve**



## 8. Financial Planning Scenario for ART in NACP III

Unit cost estimations derived above are average figures. These are used to estimate financial requirements for implementing ART intervention. Two sets of scenario are assumed to draw the financial planning scenario in NACP III. Scenario 1 assumed that 250 ART centres have to be established in the country and the programme has to establish CD4 cell count machine to cater to the demand for monitoring the progress of patients under ART. Scenario 2 assumed that the huge private sector in the country has the technology of screening and monitoring viral load of the patient. Under this scenario government programme will have to establish 250 ART centres as in scenario 1, but testing facility, particularly CD4 and viral load count will be outsourced to the private agencies through a partnership agreement. The financial assumptions under the two scenarios are discussed below.

### Scenario 1: Government establish its own ART centres and testing facilities

It is estimated that over the period of five years, 250 ART centres will have to be established among high risk districts, mostly among medical colleges/tertiary hospitals and district hospitals. Assumption is made that in the first year of the programme 144 ART centres will be established and in the subsequent year another 92 ART centres will be established. In year 3 another 14 centres will be established to cover all high prevalence districts. It is envisaged that linking financial requirements to programme target will lead to a much better result.

All high risk districts will have the complete range of care, support and treatment service delivery package and can function as “hub” for other districts surrounding it. Since the needs and epidemiological conditions across geographic areas vary, it is prudent to develop a strategy based on risk factors. For this purpose, it is necessary to establish

some criteria which help define the risk factors based on which the programme strategy is implemented. These need to be effectively networked to make sure that services are available. This pattern of resource requirements ensures better utilisation of resources and at the same time achieves better outcomes. Whereas the concept of “hub and spoke” can enhance efficiencies, its management will be a huge challenge. In order to meet this, three key strategies are proposed: Technology, Mobility and Financing strategy.

- Technology is going to play a major role in effective monitoring and information management at various levels.
- The service providers and implementers of programme will need adequate mobility to ensure effective implementation of the package of service through referral and have acceptable level of integration.
- A concept of demand side financing schemes such as voucher system can improve access to services by partnering with the huge network of private providers.

Against this background, the financial requirements for ART services have been worked out at three levels. These are:

- Estimating capital expenditure and one-time costs required to implement the interventions based on the package of services.
- Estimating recurring fixed cost of intervention based on minimum scale of operations.
- Estimating variable cost of each intervention by linking the requirements with the targets of people needing ART in India.

Table 8 presents a financial projection for NACP III under the national target. Cost of a CD4 machine is assumed to be Rs. 20 lakhs. Fixed costs included salaries of staffs and contingency grants to the centres as per the existing norms.

**Table 8 & Financial Requirements for ART under all costs borne by the programme (Rs. in lakhs)**

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Target Patients	100000	150000	200000	250000	300000	
Number of centres operational	144	236	250	250	250	
Capital Cost	2880	1840	280	0	0	5000
Training cost (one time)	288	184	28	0	0	500
<b>Recurrent cost</b>						
Drugs Lab Tests	8508	12762	17016	21270	25524	85080
Establishment expenses	2330	3818	4045	4045	4045	18283
Resistance monitoring/ follow-up	1296	2124	2250	2250	2250	10170
Contingency	144	236	250	250	250	1130
<b>Total</b>	<b>15446</b>	<b>20964</b>	<b>23869</b>	<b>27815</b>	<b>32069</b>	<b>120163</b>

The total budgetary requirement for the ART programme over the 5 years period works out to Rs. 12016 million. Capital cost is 3.7 per cent of the total ART Programme cost and drugs and lab tests account for about 90 per cent of financial requirements.

### Scenario 2: Government establish ART centre, but testing facilities outsourced

According to NACO, there are approximately 5.206 million HIV cases in India by end of 2005. In absence of public funded ART programme most of the people needing ART go to the private sector for treatment. India has around 200 CD4 cell count machine<sup>2</sup>, with most being in private sector. Figure 3 presents the distribution of CD4 count machine in India by the largest manufacturer of the machine.

In the current scenario it is assumed that the programme will establish 250 ART centres to cater to the population as per national target, but testing facility, particularly CD4 count facility will be outsourced to the private agencies through a partnership agreement. This will save the public fund from the capital cost of setting up and maintaining the machines. Government can enter into partnership with private laboratories where testing facility are available. The programme can consider voucher scheme to provide access to – and increased the use of – high-quality, tailored health services in a non-stigmatising manner to the target groups. This will provide access to appropriate counselling, diagnostic, information and treatment. Indirect expenses, especially transportation cost and loss of wages forms a major deterrent to population from availing health care. The voucher system can provide for transport subsidy in some form for the needy patients.

Under this assumption the incremental cost function can be applied with a slight modification as discussed below .

$$\text{Actual Cost Function: } \quad \text{IC} = 171568 + 709N$$

A margin of 15 per cent is provided in fixed cost towards profit margin for private providers and indirect expenses towards transport subsidy of the patients.

$$\text{Modified Cost Function: } \quad \text{IC} = 197303 + 709N$$

Where:  $N$  = Number of patients

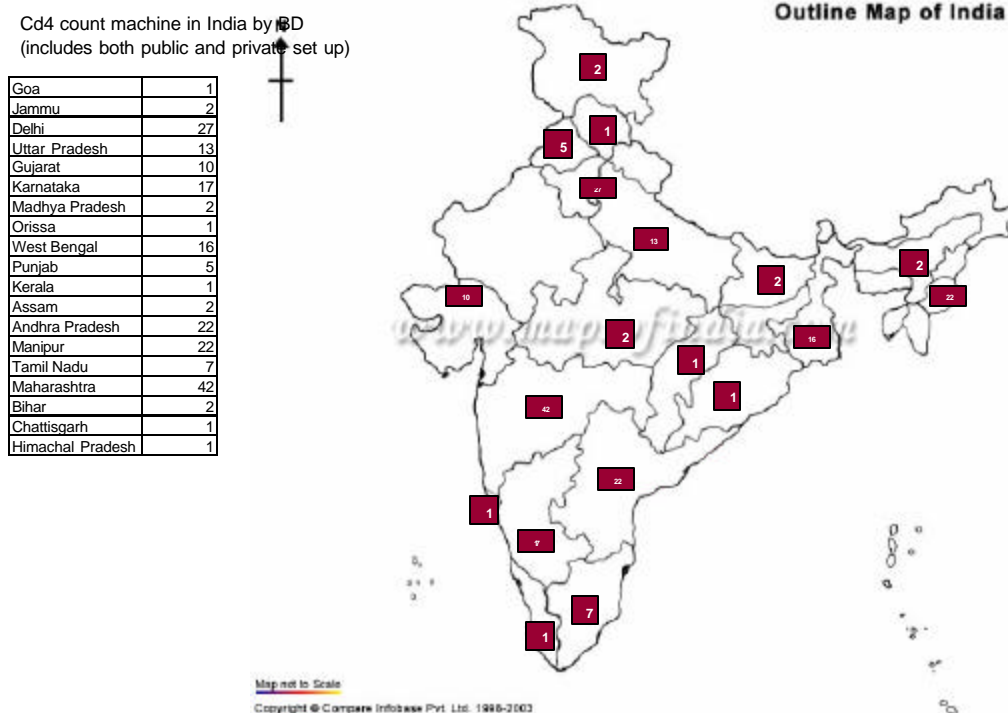
**Table 9: Financial Requirements for ART under testing facilities outsourced**

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Target Patients	100000	150000	200000	250000	300000	
ART Centres	83	125	167	208	250	
Fixed Cost	1973	2960	3946	4933	5919	19730
Variable Cost	8508	12762	17016	21270	25524	85080
<b>Total Cost</b>	<b>10481</b>	<b>15336</b>	<b>20447</b>	<b>25559</b>	<b>30671</b>	<b>102494</b>

Table 9 presents the financial projection for NACP III under the alternate scenario. The total budgetary requirement for the ART programme over the 5 years period works out to Rs. 10249 million. Fixed cost works out to 17 per cent, while variable cost works out to 83 per cent of the total cost.

<sup>2</sup> This is the figure of CD4 machines by BD Biosciences only. BD Biosciences is the major producer of this machine in India. The other being Kooper.

**Figure 3: Distribution of existing CD4 cell count machine in India**



## 7. Conclusion

The unit cost of ART provision in India works out to Rs. 911 or about \$22 per month per client. This is based on incremental costing approach. The cost will move up in a full cost accounting model. However, as several of the cost in a full cost accounting model is contributed from routine hospital budget. Apportioning them becomes a problem. Moreover a full cost model may not be appropriate for making management decision from a programme perspective. Another cost left out from the analysis is the private out of pocket expenditure incurred by the family in availing care. Considering the travel cost, wage loss and nutritional requirement, this cost would work out to a substantial amount; however no quantification of the same is attempted in the current study. From a programme perspective the annual cost of \$264 per client compares favourably with the World Bank (2004) estimate for India at \$600.

Further from a financial planning point of view, two dimensions of providing ART under public programme is worked out over a 5 year period. The cost difference suggests that there is a huge potential to mobilise the existing network of private facilities in the country and save on the tax payers money in provision of antiretroviral therapy in India. Active public private partnership in the programme has a huge scope of success, particularly in a country like India. However, some of the potential risks involved in involving private parties relates to lack of best practice guidelines or evidence on competitive voucher scheme, an ideological objection among policy makers towards working with the private sector, concern that private sector services will cost more than publicly provided services, failure of officials (and even some donors) to see their role as

going beyond the day to day running of government hospitals and clinics, sustainability of voucher scheme and concerns that schemes become susceptible to abuse and black marketing resulting in collusion between healthcare providers and distributors. However, the case of Chiranjivi scheme in Gujarat (Bhat, Singh, Maheshwari and Saha 2006), on partnership with private providers to increase institutional deliveries in the state and decrease in maternal and infant deaths, points that with adequate monitoring and partnership mechanism many of the fears in the system can be minimised.

Phase III of National AIDS control programme in India embrace district based planning system with concept of integrated service delivery package. It is envisaged that the costing approach discussed in this paper can contribute towards working out the package of service in a more evidence based manner. Further a risk categorisation of districts for financial planning could be more rationale than traditional population based resource allocation.

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## Annexure 1

### Patient Load at ART Centre of Ahmedabad for November 2005

<b>PLWHA seeking care at the ART treatment centre</b>	<b>Adult male</b>	<b>Adult female</b>	<b>Children =14 years</b>	<b>Total</b>
Number of new persons registered in HIV care during the month	087	023	01	0111
Cumulative number of persons registered in HIV care at the end of November 2005	814	301	036	1151
Cumulative number of patients ever started on ART	804	294	036	1134
Cumulative number of patients who died since the beginning of the programme	016	005	00	021
Cumulative number of patients who "transferred out"	003	001	00	004
Cumulative number of patients who stopped treatment	000	002	00	002
Cumulative number of patients who are lost to follow-up	101	027	05	133
Total number of patients alive and on ART who did not return to the ART centre (Defaulter)	086	036	04	126
Total number of patients alive and on ART at the end of November 2005	598	223	27	848
Total number of patients alive and both on ART and DOTS (RNTCP)	125	043	11	179