

POINT OF VIEW

DRAFT

HAART Choices in Africa

The Economic Issues of up-scaling antiretroviral treatment

Anita Alban



Fish market in Tanzania, 2002

This Point of View is based on experience from past and ongoing work in the field of HIV/AIDS costing, planning, cost-effectiveness and priority setting in Africa. The paper was first time presented at the 4th World Congress on Health Economics, June 15-18 2003 in San Francisco, USA. The views expressed are solely the views of the author.

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HAART Choices in Africa. The Economic Issues of up-scaling antiretroviral treatment in Africa

By Anita Alban

Background

Approximately 42 million people are currently living with HIV/AIDS globally (UNAIDS, 2002). 95% of the HIV infected are from developing countries – 29.4 million live in Sub-Saharan Africa, the most infected part of the World. The impact on health resources in strained economies in Africa is huge. In low prevalence countries 25% of health resources are being consumed by people with HIV-related diseases and in high prevalence countries more than 60% of health resources at all level of services are being utilised by people with HIV-related diseases. The human resources in the health services are not spared and attrition rates keep increasing without effective human resource policies.

In recent years new resources and initiatives to improve health status in poor populations have been emerging including the Heavily Indebted Poor Country initiatives (HIPC); Stop TB; Roll Back Malaria; and the Global Fund for AIDS, TB and Malaria (GFATM). Within the field of HIV&AIDS the United Nations General Assembly Special Session (UNGASS) on HIV/AIDS in 2001 was the culmination of the previous years global lobbying to include Highly Active Antiretroviral Treatment (HAART) within the HIV/AIDS funding envelope for developing countries. The GFATM established in 2001 was the mechanism to ensure increased global funding for AIDS including HAART treatment as lined out in the Global commitment (UNGASS).

This paper looks into the consequences of this shift in global HIV/AIDS priorities by assessing at country level the costing principles used, the planning process undertaken and the priorities exercised by key stakeholders in the process. The focus is on HAART treatment: how is it being introduced at country level, how is it costed, planned for and prioritised.

The paper focuses on HAART for the general population (adults) and does not discuss priorities among specific target groups such as infected mothers and key development staff (nurses, doctors, teachers).

Objective

This Point of View assesses the economic implications of introducing HAART in low/income countries in Sub-Saharan Africa. It does so by using examples from Tanzania and Zambia.

Introduction

HAART in Sub-Saharan Africa means the introduction and scale-up of high technology drugs with tight monitoring requirements into a low technology environment. The requirements in laboratory service support and skilled and trained manpower are far beyond present routines except for teaching hospitals in most African countries. Today an estimated 30 000 HIV infected people receive HAART in Africa.

Table 1. Average percent continuing with HAART to next year

Year	Average % continuing	Additional years of life	HAART (combination of three medicines) is expensive: the cheapest possible for 1 st regimen drugs are US\$ 408 (WHO price is US\$ 586) per year and 2 nd regimen drugs are USD 1081 (WHO price is USD 1135). The HIV infected persons who tolerate HAART will over the years need new drugs as described in table 1: Of those who start on 1 st regimen HAART only
1	76%	1	
2	61%	2	
3	53%	3	
4	32%	4	
5	16%	5	
Average	47%	2.4	

Source: http://www.futuresgroup.com/Goals_model

16% will still be able to tolerate the original (cheapest) regimen after five years.

The costing of HAART is often optimistic and does not distinguish between what is needed for 1st regimen and 2nd regimen drugs which can lead to serious under-budgeting and costing of laboratory equipment often leaves something to be desired.

The balance between care and prevention is an ongoing discussion in priority setting of HIV interventions in Africa (Alban, 2002). The recent report: Access to HIV Prevention. Closing the Gap from the Global HIV Prevention Working Group, HPWG (May 2003) found that current HIV prevention spending in 2002 totalled \$1.9 billion, far short of the \$5.7 billion estimated to be needed annually by 2005, and the \$6.6 billion that will be needed by 2007.

The HPWG report marks that most people at greatest risk do not have access to proven prevention interventions, and access varies widely depending on the region and the intervention. According to the Working Group access to treatment is even more limited.

Access to priority prevention services, global estimates

- 12% of people have access to voluntary HIV counselling and testing
- 19% of injecting drug users have access to harm reduction programs
- 24% of people at high risk have access to AIDS education
- 42% of people in need have access to condoms
- 5% of pregnant women at risk have access to prevention of mother/to/child transmission

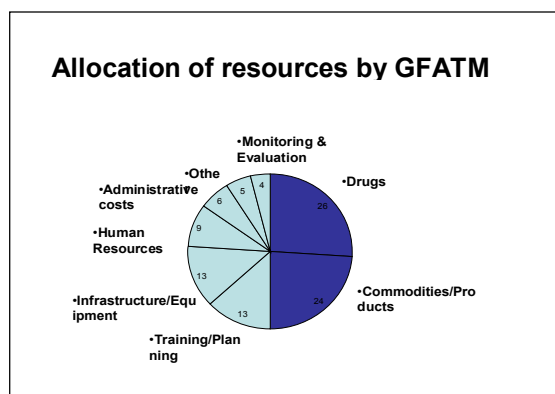
Source: *The HIV Prevention Working Group, 2003*

The report concludes that careful integration of prevention and treatment services will help ensure those who test positive are quickly linked to treatment, and that those in treatment have the tools necessary to protect others from infection. Finally, the Working Group stresses that “prevention scale-up must be a central priority in every region, focusing on especially

cost-effective, high-impact interventions”. *At the global level the consensus on how to balance care and prevention resources thus remains undecided.*

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The Global Fund has until now concluded the resource allocation of its resources over two rounds. The allocation of resources shows that Africa has received 61% and HIV/AIDS proposals 57% of the total (approved) resources = US\$ 494 million.



Drugs and commodities represent the two largest expenditures for HIV&AIDS with 48% and 13% for infrastructure and equipment, while human resources have been allocated 9%. - see box. According to the GFATM the funds have strengthened HAART programmes with 86% and provision of HAART treatment has increased by 76% - while opportunistic infections programmes and medications have increased with 62 and 50% respectively.

Source GFTAM, 2003

The funds from the GFATM have increased the overall funding to HIV/AIDS substantially and have not been discriminatory to HAART programmes. Other players (several bi-lateral donors, the Clinton Foundation, Gates Foundation) have also increased their contributions to HIV/AIDS. This development has made investments in HIV/AIDS one of the largest growing regional programmes in Africa. However, the provision of HAART drugs in Africa takes more than new money as this paper points out.

Materials and methods

The assessment is based on recent studies of the HIV priority setting, planning and costing process in [Tanzania](#) involving three visits AND a desk study of [Zambia](#) using HIV Strategic Plans, available government material and application for the Global Fund of AIDS, TB and Malaria. Recent general documents and material on HIV/AIDS priority setting issues have been included when appropriate for the discussion.

Results

Costing

In 2001 parallel to the UNGASS an article in Science¹ calculated the need for HIV/AIDS resources in Africa at US\$ 4.7 billion in 2003 covering and US\$ 9.2 billion in 2005 – half of those to be consumed by Africa. Of the US\$ 4.7 billion needed for Africa in 2005 approx. US\$ 1.6 billion is for HAART to cover 2.2 million people living with HIV/AIDS (on average US\$ 726 per person). However, costs calculations based on global figures might not necessarily match unit costs derived from country studies. In the example below the calculation of the unit costs of HAART in Tanzania arrives at US\$ 696 (WHO drug cost) and US\$ 543 (Indian drug cost) in 2005. The Science article calculates US\$ 140 per person per year for HAART monitoring. If monitoring costs for HAART is added to the drug costs for Tanzania the total sum based on WHO price calculation is US\$ 836 and the Indian drug price calculation arrives at US\$ 683. Comparative to an average cost of HAART of

¹ Schwartlander B. et al. Ressource Needs for HIV/AIDS. Science, 2001. Vol. 292, Issue 5526: 2434-2436

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US\$ 726 per person, the optimistic low price based on Indian cost prices – not yet seen in Africa – comes closest while the costs of HAART in Tanzania based on WHO prices are US\$ 110 above. Experience of the costs of monitoring (laboratory equipment, staff time of doctors, nurses and pharmacists) is pending. However, it should be stressed that the cost will be high per person if a substantial number of people receiving HAART are not included in the country programmes since the investments in laboratory equipment and training is substantial comparative to the present level of total health resources. As it is today the investments in upgrading the health system in Tanzania has been costed at US\$ 13.1 million over 5 years. If the coverage reached after five years is 10 000 people receiving HAART the extra cost per person is US\$ 1310 – if the number of persons on HAART after five years is covering 30 000 people (a number national and international experts regards as feasible) the monitoring cost per person is US\$ 436 – far higher than the estimated US\$ 140 in the Science article that calculated with a much higher coverage.

Table 2. Calculations of cost of HAART drugs for 10 000 people including average cost

	2003	2004	2005	2006	2007	Total
No/coverage:	10000	10000	10000	10000	10000	50000
1st regimen	90%@586	85%@586	80%@586	75%@586	75%@586	
2nd regimen	10%@1135	15%@1135	20%@1135	25%@1135	25%@1135	
Cost, US\$	6409000	6683500	6958000	7232500	7232500	34515500
Average cost	641	668	696	723	723	

Care and support, HAART, India drug prices

	2003	2004	2005	2006	2007	Total
No/coverage:	10000	10000	10000	10000	10000	50000
1st regimen	90%@408	85%@408	80%@408	75%@408	75%@408	
2nd regimen	10%@1081	15%@1081	20%@1081	25%@1081	25%@1081	
Cost, US\$	4753000	5089500	5370000	5762500	5762500	26737500
Average cost	475	509	543	576	576	

Table2 is a simplified model taking into account that people shift drug regimen over time. The total cost of providing drugs for 10 000 people living with HIV/AIDS (PLWHA) is increasing over the years as the number of people who can tolerate 1st regimen drugs decreases. If the WHO prices are used the total sum of providing HAART for 10 000 people over five years in Tanzania is US\$ 34.5 million and if the lowest of the lowest price from India is used the total cost is US\$ 26.7 million. Consensus among an HIV expert panel in Tanzania in February 2003 revealed that it would only be possible to scale up to a coverage of 7 500 PLWHA in 2007 due to the necessity of building system capacity. The cost of treating 7 500 people with HAART in 2007 (2003 prices) was calculated at US\$ 4.3 - US\$ 5.4 million per year¹.

The costing of HAART in Zambia was carried out 2–3 years back² and included drugs for US\$ 158 million as a best estimate scenario. When the costing was carried out US\$ 8000 per person per year was set for HAART, which was realistic at the time. The aimed coverage was set at 50% of PLWHA, 10% in 2001 and 30% in 2002. Since then Zambia has changed its aim to a more realistic approach (need and capacity wise) in order to reach 3000 PLWHA in 2002 and 8000 PLWHA in 2005 (3 public health facilities (pilots) in 2003 and 8 centres in 2005). These figures are included in

¹ Alban and Kingori: Costing of Tanzania HIV Strategic Plan, February 2003

² Bail and Mwikisia: Costing the Zambia National HIV/AIDS Strategic Framework 2001-2003, October 2000

the GFATM Fact Sheet for Zambia on HIV/AIDS to the GFATM, May 2003. The cost of this up-scaling is not known since the transparency of the GFATM applications do not allow for such insights.

Planning

The absorption capacity of the health sector is to a large extent dependant on the available infrastructure. Comparatively to other countries in Africa Tanzania has a reasonable number of health staff although the number keeps decreasing: The total number of health staff decreased from 67 000 in 1994/1995 to 54 200 in 2001/2002¹. However, this is not an expression of HIV/AIDS but rather the result of the civil servant employment freeze. Today the staff per population is 3.4 nurses per 10,000 population and 1.7 doctors per 10,000 population on average (Dar Es Salaam has 4.9 nurse and 2.2 doctors per 10,000 population respectively). The recent publication by Kurowski et al. focuses on Human Resources for Health¹ in mainland Tanzania and arrives at the following general conclusions on national and international efforts to scale up health systems:

- Human resource availability is a key determinant of the pace of scaling up
- The scaling up of training capacities should precede the scaling up of health services
- Countries with insufficient human resource availability will have to prioritise interventions based on the quantity and quality of human resources required for service provision.

The study reveals that HIV/AIDS related services would demand the largest proportion of human resource, approx. 40% and that the future human resource availability is grossly insufficient to meet the human resource requirements necessary to scale up priority interventions such as voluntary counselling and testing (VCT), sexually transmitted Infections (STI) syndromic management, palliative care, prevention of opportunistic infections and treatment of opportunistic infections. The study provides a number of scenarios for future resource requirements in the health sector in Tanzania and concludes that significant increases in service coverage will result in substantial imbalances between human resource requirements and human resource availability.

There is no similar study for Zambia but data from both countries on human resource availability is included in Table 3.

Table 3. Examples of Human Resource availability

No of staff per 10 000 HIV infected	Zambia Tanzania	
	Doctors	7,23
Med. Officer	13,40	}
Nurses	75,92	74,16
Pharm. Staff	0,84	2,16
Lab. Staff	3,24	9,79

Although Zambia spends US\$ 23 per capita in health and Tanzania only spends US\$ 8 (HDR, 2002), the human resources per 10000 HIV infected people are higher for all health cadres in Tanzania except for nurses which is at par. The conclusion of the report from Kurowski et al indicates that it will be even more difficult for Zambia to implement a large upscale of HIV interventions including HAART.

Sources: Kurowsky et al. , 2003 and Central Board of Health, Zambia, 2001

¹ Kurowski et al. *Human Resources for Health: Requirements and availability in the context of Scaling-up priority interventions. Tanzania and Chad. DFID, January 2003*

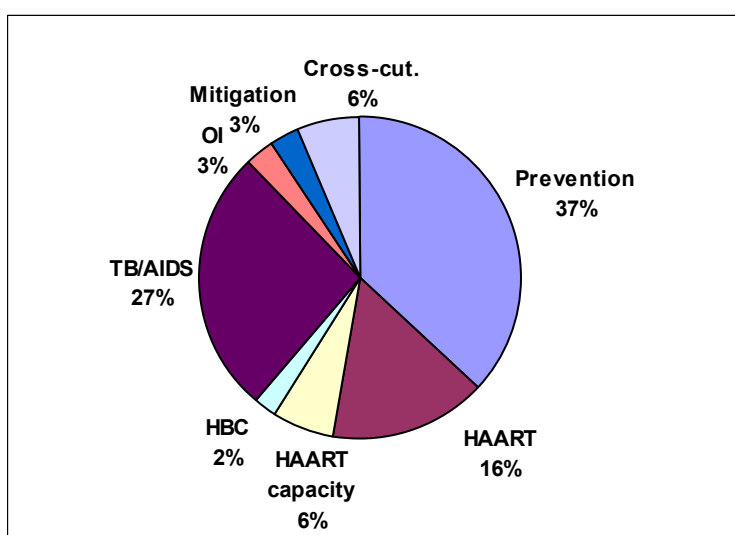
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The small numbers of doctors in Zambia of 723 (300 from Cuba) is especially worrying since HAART with the present technology demands high qualified health staff for monitoring drug resistance and toxicity.

Priority setting

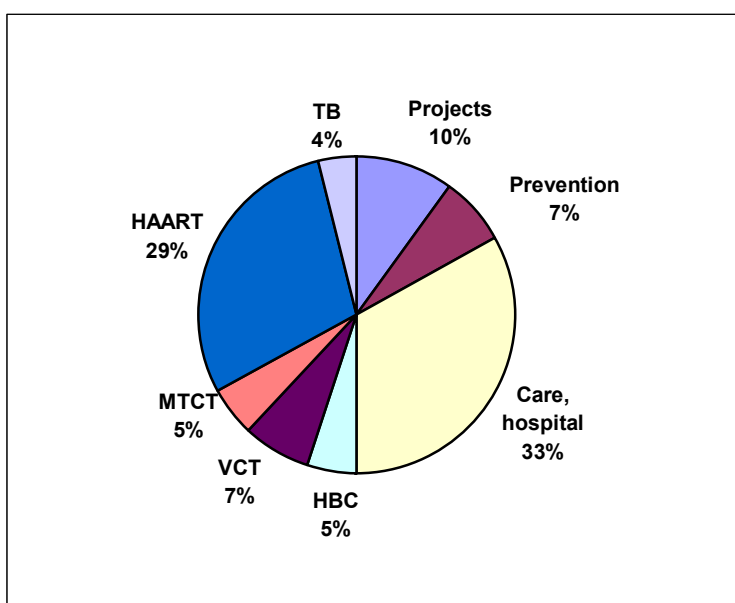
Priority setting defined as resource allocation looks different from country to country depending on the costing principle adapted and the strategic emphasis on resource mobilisation including the prospect of achieving external funding (Alban, 2002). The HIV priorities as they appear in the National Strategic Plans in Tanzania and Zambia are presented in Figure 1 and 2. It should be born in mind that for Zambia these priorities have been radically changed since both the cost of drugs and not least the coverage of HAART has decreased significantly. The resource allocation for Tanzania is included in the recent HIV Strategic Plan 2003-2007 and later incorporated into the Mid-Term Expenditure Framework, MTEF, which provide it macroeconomic legitimacy.

Figure 1. Tanzania HIV priorities



The Tanzania priorities cover 5 years of expenditures and The HAART capacity covers US\$ 13.1 million and the 16% allocated for HAART covers HAART for both mothers participating in the Prevention of Mother To Child Transmission, PMTCT, programme and HAART for up to 7500 PLWHA from the general population in 2007. The TB/AIDS component is the largest component at all and might diminish due to implementing capacity. All prevention and cross cutting programmes (incl. VCT) constitutes 43% of the total resource allocation.

Figure 2. Zambia HIV priorities



The Zambia priorities have changed and the application to the GFATM has substantially decreased the resources for HAART. A revised HIV Strategic Framework is not available from Zambia at present and the resource allocation on the various programmes are to a large extent dictated by the success of mobilising resources from the GFATM. In the first round of applications to the GFATM has been granted US\$ 21.2 million(2003-2005).

Tanzania has not yet had a HIV proposal approved from the GFATM and presently resources for HIV intervention services are stretched. Even in a low cost scenario extra resources will be needed in the range of US\$3.4-20 million/year over the next four years. If the government does not manage to mobilise more resources (and these are not ear marked for certain HIV interventions or in kind such as test kits or drugs) it will face to choose either to slow down the up-scaling process and/or make choices based on which interventions will be the most efficient to halt the HIV epidemic in Tanzania. Table 4 shows the relative cost-effectiveness of a range of HIV interventions in Africa.

Table 4. Cost-effectiveness of selected HIV/AIDS interventions, Africa

HIV/AIDS activities	Cost per HIV averted US\$ 2000	Cost per DALY US\$ 2000
Commercial Sex Worker, peer education (1)	79-160	4-7
Prevention of Mother to Child Transmission (1)	20-341**	1-12
Treatment of STI (1)	271	12
Voluntary Counselling and Testing (1)	393-482	18-22
AIDS vaccine, standard* (2)	210-1410	NA
HAART, Senegal and Ivory Coast (1)	NA	1100
TB, DOTS treatment (1)	NA	2-4
Community Based Care	NA	77

*A standard vaccine program has 65% coverage of adults after 5 years, 50% efficacy, 10 years ** single dose niverapine, targeted

(1): Creese, Floyd, Alban, Guinness. *Lancet*, 2002, Vol. 359: 1635-42

(2): Stover, Garnett, Seitz, Forsythe. *The World Bank*, March 2002

If the goal of HIV interventions is to halt the epidemic the possibilities of up-scaling targeted prevention interventions should be exhausted before less efficient interventions are scaled up. The HIV interventions that provide most value for money are commercial sex worker (CSW) interventions, extended STI, condom distribution and VCT services. As table 4 shows many care services are relative cost-effective such as TB DOTS home care. From a strict efficiency point of view, all resources should go to a prevention package until sufficient resources have been fundraised. However, this is neither practicable (the health service provides for all sick people) nor possible (only a small proportion of people are HIV tested). The ongoing political pressure in the African countries, the UN system and some African and International NGOs to substantial upscale HAART in Africa emphasizes the role of the care agenda, albeit sometimes in an unbalanced way.

Provision of HAART remains a core priority issue. Even with the lowest price for treatment (Indian prices not yet available in Africa) the costs are outside the range of ordinary Tanzanians and Zambians if not provided at a subsidised price. The priorities in the Thematic Teams developing the HIV Strategy for the health sector in Tanzania revealed that the workplace interventions should include post-exposure prophylaxis (PEP) as a first priority (work hazard), and second priority

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should be given to infected mothers included in the PMTCT programme (as it evolves) and lastly the general public should have access to subsidised HAART.

To demonstrate the importance of cost-effectiveness considerations into the HIV National Strategic Plans, two different choice scenarios to allocate an additional US\$ 10 million was developed in Priorities for AIDS Interventions in Africa (Alban, 2002). One has a split of 50/50, the other has a split of 30/70 on care and prevention:

1. **50% care/50% prevention gains 212 800 DALYs**
2. **30% care/70% prevention gains 344 310 DALYs**

[The care package includes home based care support (10%) and HAART (40/20%) and the prevention package includes Voluntary Counselling and Testing (10/20%); STI treatment (10/20%); other prevention (20%); and prevention of Mother To Child Transmission (10%)].

Preliminary conclusion

- Costing of HAART treatment in countries is often underestimated
- Coverage is reached based on [what should be](#)
- The soft balance between HAART and other care interventions OR the balance between HIV care and prevention is decided by the preferences of the donors
- The financial constraint is diminishing from the HIV field
- The operational constraints are emerging but not yet being included in the planning
- The future formula of the priority setting process needs to include [what can be done](#) with more resources available to combat HIV in Africa

WHO has set a target for the up-scaling of HAART in Africa to cover 2.2 million HIV infected people in 2005. The decision to do so was a morale one: “The world recognizes the pressing moral, social, political and economic need to expand access to antiretroviral therapy to many more millions of people living with HIV/AIDS as soon as practicable” (WHO Guidelines, 2002) and the figure was based on the calculations in Science, 2001. If the lessons learnt in Tanzania and Zambia are anything to go by the WHO target is indeed an optimistic one. A recent World Bank organised consultation reasoned that unless a solution is found of the recent TRIPS agreement whereby prices of new expensive drugs become a good deal lower than those prevailing at the moment, increased utilisation of drugs such as HAART is unlikely to be feasible and sustainable, in spite of the efforts of various global initiatives (World Bank. Working Together to Accelerate Progress Towards the Health MDGs. Consultation, February 2002). In 2005 it seems realistic to assume that Africa can reach a doubling of HAART coverage from 30 000 to 60 000 HIV infected persons. The ongoing discussion on reducing the price of drugs to match the developing countries’ capacity to pay is only one of several pressing implementation problems. If the WHO target to cover 2.2 million people is to be reached in Africa before 2010 the infrastructure and not least the human capacities must seriously be addressed by decisions makers. Funds are becoming increasingly available in Africa for HIV/AIDS and resources mobilised based on vast coverage matching need rather than implementation capacity.

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The current global avoidance of discussing the thin balance of priorities between HIV care and prevention is not helpful to decision makers in Africa. The challenges ahead include on one side a priority setting process based on realistic costing, cost/effectiveness considerations and absorption capacity but also more hard issues such as how much external money can poor countries receive as grants before the macro economic frameworks collapses – see discussion in *The Lancet*, 2002 and 2003: "Global Fund money won't increase health spending, says Uganda", 28 October 2002; "Uganda stands firm on health spending freeze", 6 December 2002; and "Uganda and the Global Fund sign grant agreement. The government has decided how to use the fund's money without destabilising its budgets", 14 March 2003.

The total health budget in Tanzania was US\$ 178.6 million (more than half was donor funded) in 2002/03

The total health budget in Zambia was US\$ 156 million (40% was donor funded) in 2000 / the Global Fund grant for 2003/04-2004/05 will add extra US\$ 10.1 million per year equivalent to 6 % of the total health budget.

Important links and references:

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Schwartzlander et al. Resource Needs for HIV/AIDS. Science. Vol. 292, Issue 5526, 2434-2436

The Global Fund to fight AIDS, Tuberculosis and Malaria: <http://www.globalfundatm.org>