

How Do AIDS Control Program Managers Make Resource Allocation Decisions?

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Although estimates show that the total global need to fight HIV/AIDS ranges between US\$1.4 billion and US\$2.2 billion, only about US\$550 million was spent in 1996 worldwide.¹ It is unrealistic to expect increases of 300 to 500 percent in either national budgets or in the budgets of international donors. Thus the question becomes, how can the scarce resources available be allocated most effectively?

The purpose of this project is to improve the resource allocation process for HIV/AIDS prevention and care activities. This will be accomplished by developing, testing, and disseminating tools and materials to assist National AIDS Control Program Managers (NACP) in making resource allocation decisions. There are four main steps in this project:

1. *Conduct exploratory research.* Interviews with NACP Managers, in order to ascertain how decisions are made currently, and what tools they think might be useful.
2. *Conduct literature review.* Analysis of existing information on the cost-effectiveness of prevention and treatment interventions, along with information about current resource allocations as described in various national strategic plans.
3. *Develop tools and materials.* These materials could include advocacy booklets, spreadsheet tools, simulation models, and other workshop materials.
4. *Test and disseminate tools.*

The first step, exploratory research, consisted of interviewing selected NACP Managers, according to an interview protocol. The protocol had an introductory statement discussing the purpose of the project and assuring confidentiality of all responses. The broad topics that were discussed in the interview included:

- *Resources available to the NACP.* This included topics such as sources of funding, how the budget is determined, and advocacy practices.
- *Allocation of available resources.* Questions were asked regarding flexibility of the allocation process, and for which activities was the NACP responsible.
- *Information/tools/activities for future use.* In particular, the managers were asked whether they would use a resource allocation model, including cost-effectiveness analyses, and how?
- *Potential cost-effectiveness data.* The question of whether cost-effectiveness data existed that could be used in an analysis was explored.

The countries to be interviewed were selected based on two main criteria: the severity of the epidemic, and the extent to which program efforts are determined by donor funds. The countries where interviews were completed are listed below in Table 1. It should be noted that, although most of the interviews completed the interview protocol, a few of the interviews were less detailed, due to time constraints of the respondent. All of the available information is incorporated into the results presented here.

TABLE 1
Interviews Completed

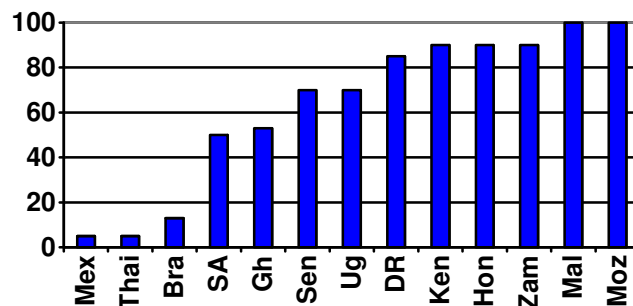
	Donor-driven	Not Donor-driven
Less Affected	Dominican Republic Ghana Honduras Senegal	Mexico
Severely Affected	Cote d'Ivoire Kenya Malawi Mozambique Uganda Zambia	Brazil South Africa Thailand

RESULT #1: The level of autonomy in planning is directly related to the amount of local funding.

One strong conclusion resulting from the answers to the survey is that the amount of autonomy that National AIDS Programs have in allocating resources is related to whether or not their funding sources are local or from international donors. This conclusion is based on responses to several questions. First, respondents were asked to estimate the percentage of their funding derived from donor sources (see Figure 1):

As can be seen in Figure 1, Mexico, Thailand, and Brazil are the three countries least dependent on support from international donors. Mexico and Thailand each obtain approximately five percent of total funding from donors, while Brazil estimates that about 13 percent of total funding is derived from international

Figure 1
Donor Funding (%)



donors. South Africa and Ghana estimated that about half of their funding is from international donors, while estimates for international support in Senegal, Uganda, and the Dominican Republic range between 70 and 85 percent of total funding. Finally, the countries with the highest amount of donor funding are Kenya, Honduras, Zambia, Malawi, and Mozambique, with support varying between 90 and 100 percent.

A series of questions was then asked to discover the decision making process the program goes through to allocate its financial resources. These questions included asking who must approve budget allocations, how much flexibility in allocation the manager perceives, and probes as to whether fixed costs account for most of the expenditure, or whether the manager has discretion between the various programs.

Qualitative analysis examining the correlation between donor funding and allocation flexibility indicates that as the percentage of funding provided by international donors increases, the level of autonomy in decision making for program managers decreases. For example, the respondents from Mexico, Thailand, and Brazil each stated that they felt they had flexibility in deciding where funds should be allocated, although some constraints were present from budget commitments in previous years. This is in marked contrast to countries such as Zambia, Malawi, and Mozambique, where respondents said that donors have significant influence on which activities are pursued. Furthermore, many countries reliant on international donors stated that if an activity is not funded by the donors, then it is not done, further evidence of lack of autonomy in resource allocation decisions. The one exception to this finding is the case of Uganda; even though about 70 percent of Uganda's funding is derived from donor sources, the program there feels it has a great deal of input into the resource allocation process. Donors may be willing to allow the Uganda autonomy in decision making due to its extensive experience and effectiveness in its AIDS program efforts.

RESULT #2: Programs do not use cost-effectiveness information generally, although other information is used to allocate resources.

In general, most countries do not use specific cost-effectiveness outcomes in evaluating program outcomes or in the strategic planning process. This result is based on a two-stage question: first, respondents were asked whether cost-effectiveness outcomes were utilized in evaluations generally; second, they were given a list of specific outcomes from which to select those utilized. The list included:

- | | |
|--|----------------------------------|
| Cost per educational session conducted | Cost per HIV infection averted |
| Cost per educator trained | Cost per STD effectively treated |
| Cost per condom distributed | Cost per DALY saved |
| Cost per unit of blood screened | Benefit-cost ratio |
| | Other |

Most respondents could not report using any cost-effectiveness outcomes in the unprompted question. After being prompted with the list of possible outcomes, most still did not report using any of these outcomes to evaluate their programs, or in the strategic planning process. Some countries used one or two outcomes, such as cost per educator trained, or cost per unit of blood screened, but did not translate these cost-effectiveness measures into cost per HIV infection averted or cost per DALY saved. The exceptions to this result were Brazil, Thailand, and Uganda, all of which used cost-effectiveness measures both in formulating their strategic plans and in the evaluation of program performance. It should be noted that the reason many countries did not use cost-effectiveness information was because the relevant data did not exist for their country.

Although most programs did not use cost-effectiveness measures in their planning and evaluation processes, the programs did use as much information as they had available, particularly in the strategic planning process. International research results, such as the Mwanza STD trial results, were mentioned spontaneously by almost all respondents as being quite instrumental in the decision making process. Respondents also mentioned that general epidemiological data, such as surveillance site data, were crucial to the planning process. Other country-specific research was utilized, such as socioeconomic impact studies or results from behavioral research, when available. Finally, most respondents did report spontaneously using the WHO/UN strategic planning guidelines in their strategic planning process.

Box #1:
Specific Information Used by Program Managers

1. International research results (e.g., Mwanza STD trial)
2. Country-specific epidemiological data
3. Country-specific socioeconomic impact studies, when available
4. Other country-specific research results, especially behavioral research

RESULT #3: Inertia is strong; past allocation patterns are an important determinant of current expenditures.

When asked to describe the resource allocation process, most program managers discussed both the existence of fixed costs, as well as prior commitments in previous years. In general, the spending pattern in the previous year is a major determinant of spending patterns in the current year. Fixed costs account for the majority of overall expenditures; salaries and other overhead expenditures such as office expenses predominate over other expenses. Furthermore, services for the current year are generally fixed at or above the previous year's level. For example, if a certain number of condoms were distributed the prior year, the same or a greater amount of condoms need to be distributed in the current year. If a certain number of people were counseled and tested at testing centers, then the same number or a greater number are targeted for the current year. Thus current expenditures are determined by past allocation patterns, because of fixed costs that carry through each year, as well as previous levels of programs. In Thailand, for example, the manager said that 80 percent of expenditures in a current budget is based on the previous year's budget.

RESULT #4: Other considerations (political, legal, ethical) can override economic considerations in determining overall resource allocation patterns.

Economic issues, such as cost-effectiveness figures, are not the only factors to be considered in the allocation of resources for HIV/AIDS. Issues become increasingly complex as the HIV/AIDS epidemic grows. Other considerations include: political considerations, as various interest groups become more vocal in protesting the status quo; legal considerations, as in the constitutional right to universal health care that exists in certain countries; and ethical considerations, as in the moral right to health care for a person living with HIV/AIDS. These considerations will sometimes outweigh the economic calculations determining the most cost-effective resource allocation pattern.

***Box #2:
Non-economic Considerations May
Outweigh Economic Considerations***

1. Political considerations (e.g., *not* instituting an MTCT program)
2. Legal considerations (e.g., constitutional guarantee of health care access)
3. Ethical considerations (e.g., the government's moral responsibility for health care)

There are some examples of how these other considerations have affected resource allocation patterns in the countries that were interviewed for this project. For example, in Brazil, a political decision was made to provide anti-retroviral (ARV) therapy to all AIDS patients. This decision was made despite the fact that this policy is not the most cost-effective policy; in fact, the cost of ARV therapy in Brazil is projected to increase from US\$40 million in 1996 to US\$820 million by 2000, representing a significant proportion of the overall health budget. Not only is the cost of this program high, but the effectiveness is low: ARV therapy appears to improve the quality of life and extend the life expectancy for a PWA for a limited time period only. Another example of access to ARV therapy involving a political decision is in Cote d'Ivoire, a first-phase country in the UNAIDS "Access to Drugs" initiative. Although the provision of ARV therapy is viewed there as expensive and incomplete, the program is pursued so that, once the cost declines, the logistics will have been worked through.

In contrast to the decisions regarding ARV therapy, where a policy is followed even though the costs substantially outweigh the benefits, the government of South Africa made a decision not to offer preventive treatment in a Mother-to-Child Transmission (MTCT) program. This decision was made despite research findings that MTCT programs are cost-effective in South Africa. Thus in this case, other considerations outweighed purely economic considerations.

Finally, a counter-example in these interviews where cost-effectiveness considerations outweighed other considerations in the political decision making process is the case of Thailand. In 1994-95, a cost-effectiveness study that examined AZT treatment concluded that AZT was not a cost-effective treatment for adults but was cost-effective for preventing mother to child transmission. Based on this evidence, the AIDS Division

decided to spend newly available money on MTCT prevention and stop subsidizing AZT for adults

To summarize, these other issues – political, legal, ethical – sometimes take priority over economic issues in the resource allocation process. These issues need to be considered when designing a resource allocation model, as they will form the basis of the constraints that must be taken into account in the model. For example, if a country has made a decision to provide ARV therapy to all AIDS patients, then the model must reflect that decision, even though providing ARV therapy will not be the most cost-effective allocation of resources.

RESULT #5: Everyone performs advocacy activities, and would like more tools to assist in this process.

All of those interviewed stated that advocacy activities form an important part of their responsibilities. Advocacy activities are undertaken to reach legislators, donors, colleagues, and NGOs, both domestic and international. For those countries where national funding forms an important part of their overall budget, materials to lobby

Box #3:
Types of tools that managers would like to use

1. AIM model
2. MTCT model
3. HAART model
4. AVERT model
5. Socioeconomic impact study
6. Media packet

legislators were mentioned as particularly important. In these cases, the programs generally need to present materials to colleagues within the Ministry of Health, then to the Ministry of Finance, and finally to the general legislature. At each point along the way, advocacy materials are utilized. When donor funding is a more important source, many times materials are presented to possible donors, who then choose a certain set of interventions for which they will be responsible. Thus the set of materials needed in this setting needs to be targeted

to the possible donors. Tools that managers mentioned specifically as useful in this advocacy process include models such as the AIDS Impact Model (AIM), a Maternal-to-Child-Transmission model (MTCT), a model examining the consequences of Highly Active Anti-Retroviral Therapy (HAART), the AVERT model linking behavior change to HIV infections averted, a socioeconomic impact study that is specific to their country, and a media packet to use when undertaking advocacy activities.

RESULT #6: The key priority-setting exercise is now the National Strategic Planning exercise.

As this project began, the objective was to develop tools for National AIDS Control Programs to allocate their resources in a cost-effective way. As the interviews proceeded, it became clear very quickly that the decision making process was taking place one step before the funding reached the programmatic level of the NACP, at the strategic planning level. The NACP, of course, is itself heavily involved in the strategic planning process. Almost all of the countries interviewed have undertaken a national strategic planning exercise, and utilize the results in setting the priorities for use of funds. In some cases, contributions from donors are tied to the strategic plan, as well.

The strategic planning process appears to be a very well-defined process. It includes participation from all sectors, including various sectors of the national government, international donors, national and international NGOs, the private sector, community organizations, and people affected by HIV/AIDS. Almost all of the countries specifically mention utilizing the strategic planning guidelines from UNAIDS in carrying out the process. The activities undertaken as suggested by the guidelines include performing a situation analysis, a response analysis, and finally undergoing the strategic plan formulation. These are the first three modules of the UNAIDS strategic planning process. Documentation for the fourth module, “Resource mobilization,” has not been released as of yet.ⁱⁱ

Thus the priorities and strategies chosen for the NACP are based on the situation analysis and response analysis that are disseminated at the national strategic planning workshop. Therefore the key opportunity to affect resource allocation efforts is during this planning process, where the decisions are made. Any tools designed to assist in allocating funds should be targeted at this national strategic planning process.

RESULT #7: The final tools that are developed must be accessible to participants in the strategic planning process.

A number of respondents interviewed volunteered, unprompted, that many of the simulation models that are currently available are too complex, and thus are not useful, including those respondents from the Dominican Republic, Kenya, Malawi, South Africa, and Thailand. In fact, one respondent said, “It’s like driving a fancy car along a bumpy road,” that is, the models have too many fancy characteristics that are not relevant to the everyday questions and issues that arise when running their programs. Thus the final resource allocation model that is developed must either be simple enough for people without considerable statistical or computer modeling skills to utilize, or someone must be trained in using the model and attend the strategic planning exercise.

Existing Allocation Patterns

In addition to interviewing NACP managers, further exploratory research was undertaken to examine actual resource allocation patterns as described by some national strategic plans, in order to evaluate whether or not consistent patterns could be found. In order for a strategic plan to be included in the analysis, it had to contain budgetary figures, preferably as detailed as possible. Strategic plans from nineteen different countries were identified; some relevant details of each plan are listed in Table 2 below, including the

Country	Years of plan	Number of activities	Original currency	Comments
Bangladesh	1998-2002	10	Taka & US \$	Has donor money
Brazil	1998	5	US \$	Classification performed by Brazil, except moved HIV testing to prevention
Central African Republic	1995-1999	238	CFAs	Old; in thousands of CFAs
China	1996-2000	5	Yuan per year	Has percentage allocations only, with suggested minimum and maximum
Congo (DRC)	1988-1992	14	US \$	Old
El Salvador	1999-2000	26	Pesos	Part of PASCA project
Gabon	1989-1993	43	US \$	Old
Guatemala	1999-2003	34	US \$	Part of PASCA project
Honduras	1998-2001	98	US \$	Part of PASCA project
India	1999-2001	85	US \$	Although national government is said to be included, appears to be donor money only
Kenya	2000-2004	217	Kshs	Very detailed plan; provisional budget figures
Malawi	2000-2004	198	US \$	Very detailed plan
Mozambique	2000-2002	34	Meticais & US \$	
Nicaragua	2000-2004	39	US \$	Part of PASCA project
Senegal	2001-2005	74	CFAs	In millions of CFAs
South Africa	1994-1995	23	Rands	Old; has both regional and national budget figures
Thailand	2001	10	Baht	Classification performed by World Bank, with some modifications for this paper
Uganda	2000/1-2005/6	174	US \$	Very detailed
Vietnam	1994-2000	7	US \$	Budget for 1994-95 only; has percentage allocations only

years of the plan, the number of activities listed in the plan, the original currency of the budget figures, and other comments specific to each country. Many of these strategic plans were constructed with the assistance of UNAIDS and their guidelines, including the plans that are part of the Central American HIV/AIDS Project (PASCA).

The number of activities listed in the plan is an indication of how detailed the plan is; most plans contain specific activities, organized by objectives, with a proposed budget and funding source associated with implementing the activity. When activities are available at a sufficiently disaggregated level, we categorize them into various groups, including Administration, Advocacy, Care, Mitigation, Prevention, and Research. Some countries, however, do not contain a list of detailed activities; when this occurs, we classify the budget into the various categories as much as possible. In some cases, certain types of activities are combined; for example, administrative and advocacy activities are combined in Bangladesh, Thailand, and Brazil. Note that, as pointed out in the table, the classifications performed by the Brazilian government and by the World Bank for Thailand were modified somewhat to ensure consistency with the other classifications in this paper. For example, all voluntary counseling and testing here is classified as “Prevention,” including purchases of HIV tests, while all programs to prevent mother-to-child transmission of HIV are classified also as “Prevention.” Any activities related to human rights, stigma reduction, or gender issues are classified under “Advocacy.”

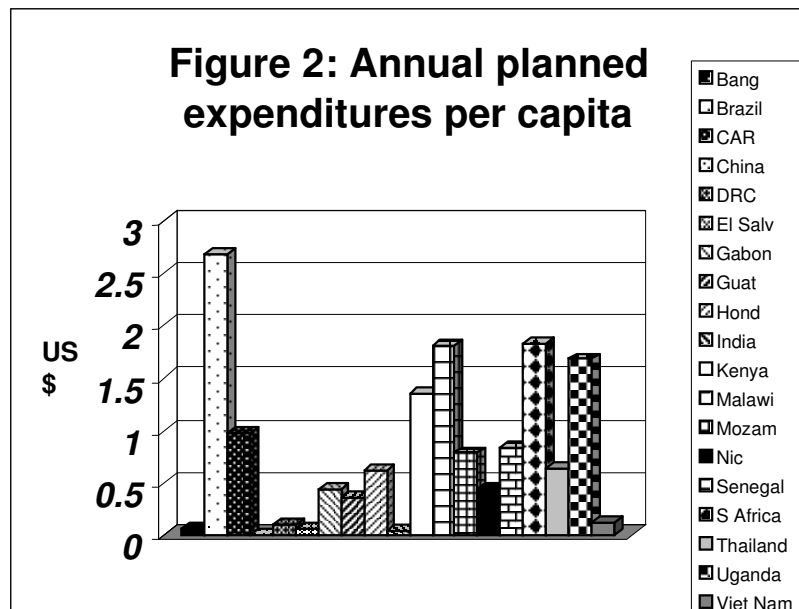
After activities are classified into various categories, we calculate the annualized funds devoted to each of the activities. Since the number of years varies for each strategic plan, the total budget figures were divided by the number of years to calculate the annualized budget for each country. Plans that were originally in national currency terms are translated into US dollars using exchange rate information from the IMF International Financial Statistics for the initial year during which the plan was developed. For example, the data from the South Africa plan were translated from Rands to US dollars by utilizing the average exchange rate for 1994, the initial year of the plan. Note that some countries plan to undertake certain activities, such as baseline surveys, during one year only, while other activities, such as voluntary counseling and testing, will take place during all of the years in a plan. Annualized figures include only one-fifth of each scheduled activity, regardless of the time frame over which they take place.

The resulting allocation picture is then analyzed by comparing the following data across the nineteen countries: expenditures per capita, expenditures per number of people living with HIV/AIDS (PLWH/A), expenditures as a percentage of the total Ministry of Health (MOH) budget, and expenditures by category. The timeframe of the additional data are keyed to the beginning date of each strategic plan; for example, population figures for 1998 for Bangladesh are utilized, while population figures for Gabon are from 1989. When a plan begins in the year 2000, the additional data used are from 1999. Finally, in addition to the aggregate analysis presented here, a detailed analysis for each individual country, including the additional background data utilized in the analysis, is available in Appendix A. Sources for these additional data utilized, as well as the calculations, are discussed in Appendix B.

There are a few caveats to be remembered while examining these budgets:

- First, the expenditures in the plans are “budgeted” or “planned” expenditures, rather than actual expenditures. Although the activities were agreed upon through a consensus process, and included senior people from throughout the population of stakeholders in each country, the actual activities and budgets associated with the activities may be different than what was budgeted originally. For example, the strategic plan for Vietnam had a total budget figure of US\$17.9 million for two years, 1994-95. In fact, total actual expenditures for that time was around US\$8 million.
- Second, the categorization of each activity is fairly arbitrary, based entirely on our judgement, as these classifications are not usually available in the strategic plans. Conclusions could be very different, should the expenditures be re-classified into other categories.
- Third, some of these plans are quite old, such as Gabon and South Africa. Strategies for these countries will certainly have changed since these plans were published. In addition, the budgetary figures are not in current terms, that is, they are not corrected for inflation, and therefore may appear low.
- Finally, in some plans not all of the activities have a budget associated with them – this is true of India in particular. Thus the allocation picture might change should all activities be assigned funding.

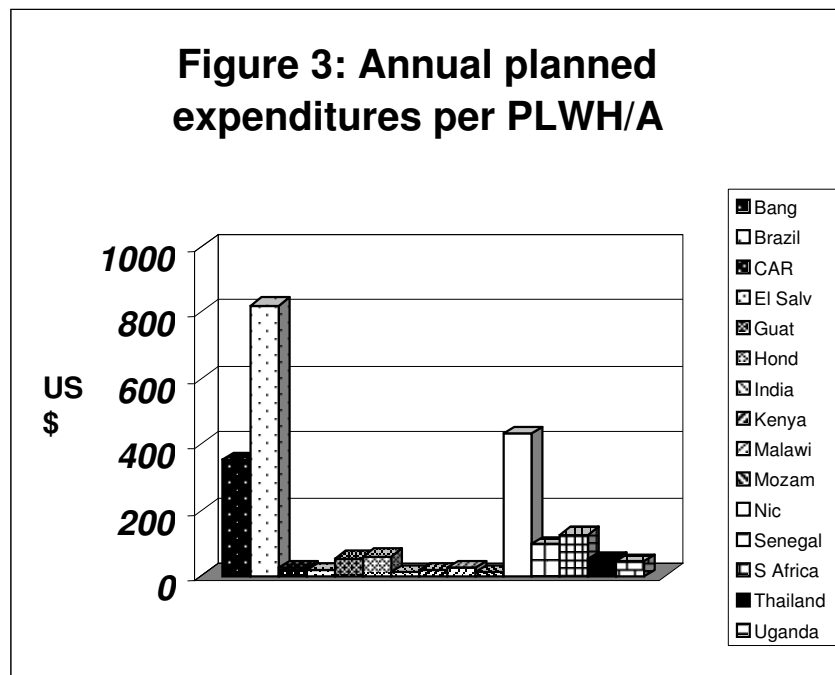
The figure below shows the total annualized expenditures for the nineteen countries on a per capita basis:



The country that has the highest expenditure on a per capita basis is Brazil, which spent US\$2.69 per person on HIV/AIDS activities in 1998. The next (informal) group of

countries, all of which spent or plan to spend between US\$1.35 and US\$1.84 per person per year, consists of Kenya, Malawi, South Africa, and Uganda. Note that for three of these countries, Kenya, Malawi, and Uganda, much of the money will come from donor sources. The third set of countries contain the Central African Republic (CAR), Gabon (although these first two plans are quite dated), Guatemala, Honduras, Mozambique, Nicaragua, Senegal, and Thailand. Each of these countries has planned expenditures of between US\$0.36 and US\$0.82 per capita per year. Finally, the last group of countries has planned budgets of between US\$0.0005 and US\$0.12, and consists of the remainder of the countries: Bangladesh, China, Democratic Republic of the Congo (DRC), El Salvador, India, and Viet Nam. Note that three of these countries, Bangladesh, China, and India, each have quite large populations, as well as a less pronounced HIV/AIDS epidemic, accounting for the lower expenditures per capita.

Since the progress of the HIV/AIDS epidemic varies by country, a more appropriate way of analyzing expenditures is to examine planned expenditures divided by the number of people living with HIV/AIDS (PLWH/A) in each country, as seen in Figure 3:



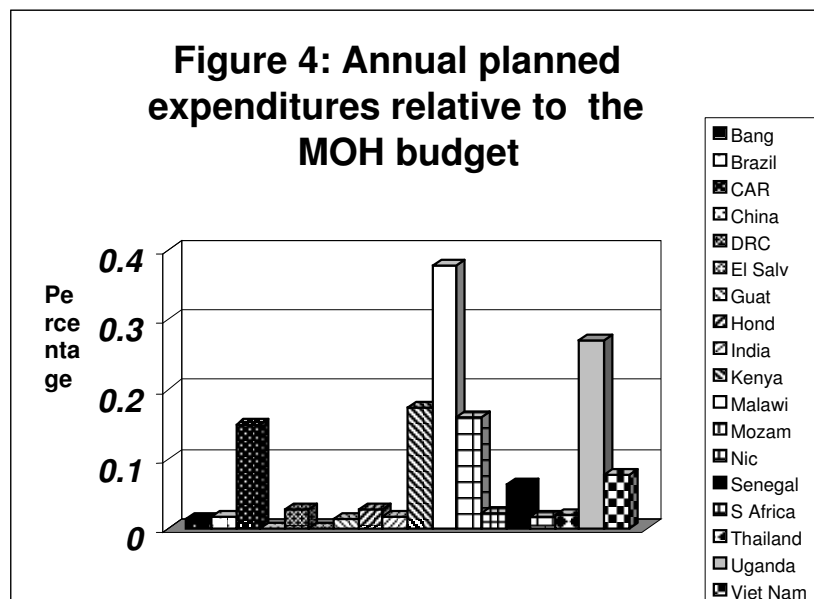
The conclusions here change dramatically. Brazil remains the leader in expenditures here, spending over US\$800 per year for each PLWH/A. Note that this is probably due to Brazil's decision to provide ARV therapy for all AIDS patients. Nicaragua is in second place in this graph, spending approximately US\$400 annually per PLWH/A. This is due to the relatively low number of PLWH/A in Nicaragua, 4,900, as estimated by UNAIDS for the end of 1999. Bangladesh now holds third place, planning to spend about US\$350 per PLWH/A beginning in 1998. This result is also due to the relatively low number of people estimated to have HIV/AIDS there at the end of 1997, about 21,000. Note that

UNAIDS estimates that the number of PLWH/A in Bangladesh at the end of 1999 dropped to 13,000 from its 1997 estimate.

The annual amount of planned expenditures per PLWH/A for the other countries ranges from a low of around US\$11 to a high of US\$125. South Africa planned to spend about US\$125 per PLWH/A in 1994; recall, however, that South Africa's budget is not in current terms, and the government estimated that there were only about 565,000 PLWH/A at that time. Those countries planning to spend between US\$45 and US\$100 per PLWH/A, in descending order, are Senegal, Honduras, Guatemala, Thailand, and Uganda. Finally, those countries planning to spend US\$25 or less per PLWH/A, in descending order, are CAR, Malawi, Kenya, El Salvador, Mozambique, and India.

Note that data on PLWH/A were not available either from UNAIDS or their respective strategic plans for China, DRC, Gabon, or Viet Nam, due to the age of the strategic plans, and as such these countries are not included in this graph.

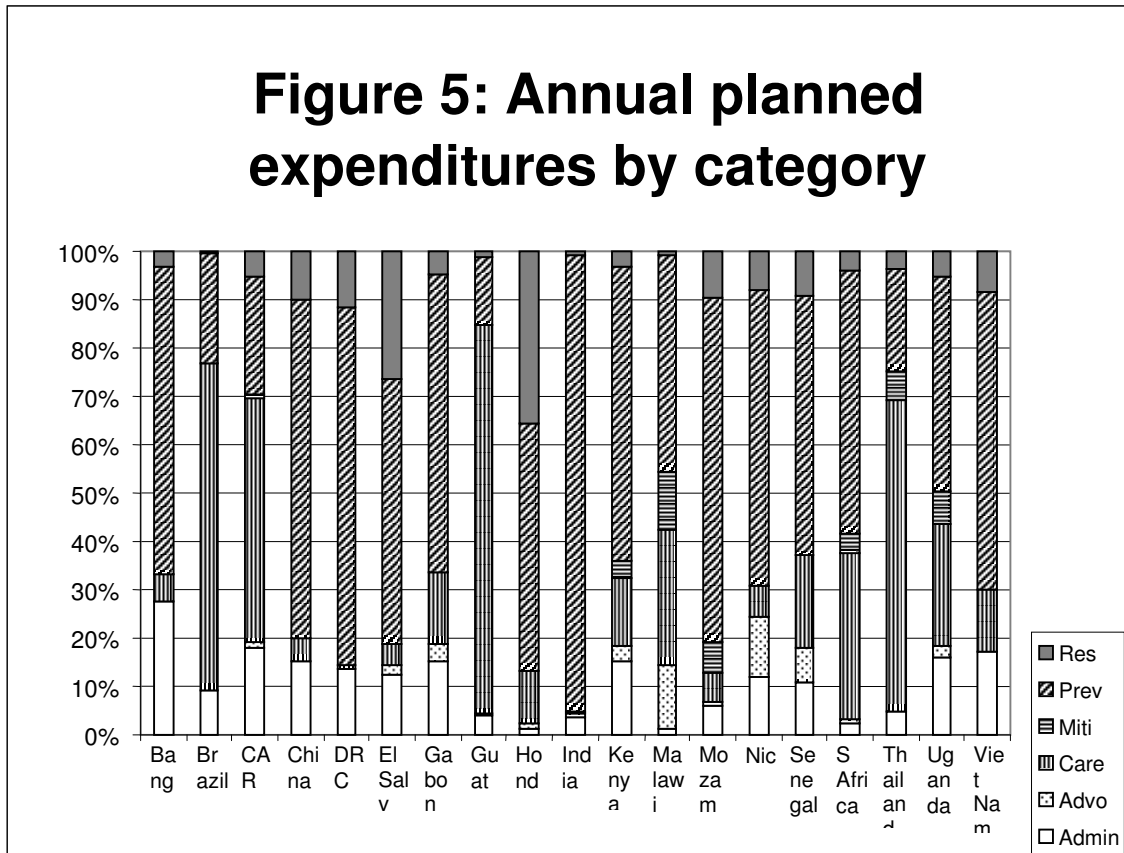
A final perspective with which to analyze these expenditures is to examine the amount of expenditures relative to the budget of the Ministry of Health (MOH). Note that this figure is not the same as the percentage of the MOH budget used by the HIV/AIDS program, because much of the HIV/AIDS funding comes from donors (see Figure 4):



As Figure 4 illustrates, the countries with the largest planned expenditures relative to their overall MOH budget are those countries with large donor monies: Malawi at 38%, Uganda at 27%, Kenya at 17%, and Mozambique at 16%. The amount of HIV/AIDS expenditures planned by CAR is also quite high relative to their MOH budget, at 15%. All of the other countries have planned expenditures less than 10% of the overall MOH budget, with Viet Nam at 8%, Senegal at 6%, and the other countries varying between

0.004% (China) and 2.7% (DRC and Honduras). Note that results for Gabon are not presented here, as data for MOH expenditures were not available for the necessary year.

The final graph in this section presents the annual planned expenditures by category for each of the nineteen countries:



Recall that three of the countries, Bangladesh, Brazil, and Thailand have administrative and advocacy activities combined.

In general, the plans seem to be quite different, although some similarities are apparent. As can be seen in Figure 5, most countries devote a substantial portion of their budgets to prevention activities, but this varies between 21% and 94% overall. India has the highest percentage spent on prevention interventions, 94%, but this is driven by five large projects funded by donors, which account for most of the donor expenditures in India. Recall that it is not clear whether or not national government expenditures are included in the strategic plan analyzed here for India. Otherwise, for the most part, the proportion of expenditures planned for prevention activities ranges from between 45% and 70% of total expenditures. Some countries with fairly advanced epidemics still spend a significant proportion of their budgets on prevention activities, such as Kenya (61%) and Mozambique (71%). Other countries with more advanced epidemics spend somewhat

less, such as Uganda (44%) and Thailand (21%). In general, countries with less severe epidemics plan to spend between 50-60% of their overall HIV/AIDS budgets on prevention activities, such as El Salvador (54%), Senegal (54%), and Viet Nam (61%). Guatemala budgets only 14% of total expenditures for prevention activities.

When proportionately less is spent on prevention, and the epidemic is more advanced, a relatively higher proportion appears to be devoted to care activities, such as in Uganda (25%) and Thailand (65%). Most countries with less severe epidemics have minimal care expenditures of between 0.1% and 6%, such as Bangladesh, China, DRC, El Salvador, India, and Nicaragua. There are two exceptions to this: first, Brazil spent 67% of its total budget in 1998 on care activities, even though the epidemic is less severe there. This is due to their decision to provide ARV therapy to all AIDS patients, and the resulting expense. Second, Guatemala has 81% of its total budget scheduled for care activities.

Most countries have either quite limited or no mitigation activities, which include activities such as orphan care and income-generating activities. Again, this may be related to the stage of the epidemic in each country; those countries with more advanced epidemics have begun to devote some of their expenditures to mitigation, such as Kenya (4%), Malawi (12%), Mozambique (7%), Thailand (6%), and Uganda (7%). The other countries, except for South Africa (4%), have either less than 1% or 0% spent on mitigation activities.

Advocacy activities, when available as a separate category, vary for the most part between 1% and 3% of the overall budget (CAR, El Salvador, Honduras, Kenya, Mozambique, South Africa, and Uganda). There are exceptions on both the lower and upper ends of this range; certain countries devote less than 1% or 0% for advocacy purposes (China, DRC, Guatemala, India, and Viet Nam), while others have much larger proportions of their planned expenditures focussed on advocacy activities. For example, Malawi spends 13% of its total budget on advocacy, Nicaragua budgets 12% of overall expenditures for advocacy, and Senegal has apportioned 7% of its budget for advocacy activities. Again, there appears to be a wide range of percentages among the countries for this category.

The percentage of total expenditures on administration also varies widely by country. Some countries spend a minimal amount on administrative activities, with Guatemala at 3%, Honduras at 1%, India at 3.7%, Malawi at 1%, Mozambique at 6%, and South Africa at 2%. The percentage of administrative expenditures in the total for other countries ranges between 11% and 18% (CAR, China, DRC, El Salvador, Gabon, Kenya, Nicaragua, Senegal, Uganda, and Viet Nam). Even when administrative and advocacy activities are combined into one category, the range is wide, with Bangladesh devoting 28%, Brazil spending 9%, and Thailand budgeting 4.7% of its total budget to administration/advocacy purposes.

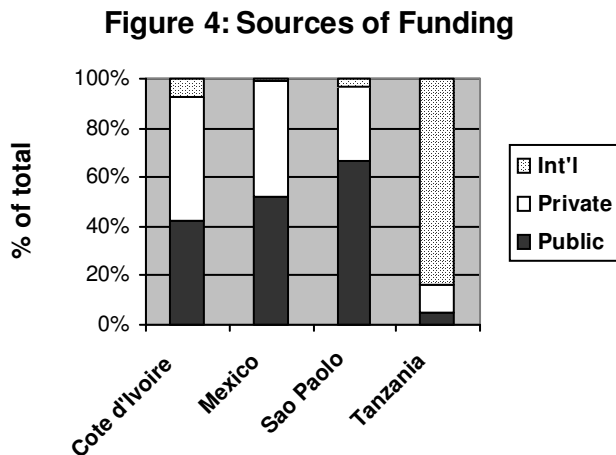
Finally, countries can be grouped into three different groups, according to the relative amount of expenditures on research. The first group spends five percent or less on research, and includes Bangladesh (3%), Brazil (0.2%), CAR (5%), Gabon (4.6%),

Guatemala (1%), India (0.7%), Kenya (3%), Malawi (0.9%), South Africa (4%), Thailand (3.7%), and Uganda (5%). The second group spends between 8% and 11% on research, and includes DRC (11%), Mozambique (10%), Nicaragua (8%), Senegal (9%), and Viet Nam (8%). Finally, there are two outliers: El Salvador, which budgets 26% of total expenditures for research, and Honduras, which plans to spend 35% of its total budget on research. Interestingly, although Malawi expends less than 1% of its total budget for research, research activities are thoroughly integrated into its plan. Every set of activities begins with a research study to understand the background of the issues; each study is just not very expensive.

Why are these plans so different? There are a number of possible explanations:

- Donor monies are generally available for a certain type of activity; plans may be tied to donor objectives.
- The plans are responding to the different needs of the countries – higher care budgets for those most affected, lower for those less affected.
- Past expenditures help determine future expenditures, and as such these are tied to past objectives. It may also be the case that if there are certain constraints built into the system, expenditures then must be made, and funding for anything beyond these expenditures is difficult.
- Certain activities are deemed “necessary,” without knowledge of effectiveness.
- Actual budgets and allocations could be somewhat ad hoc.

These results would seem to suggest that a resource allocation model, with various cost-effectiveness parameters built in, would be of assistance in allocating funds to specific projects and categories of intervention.

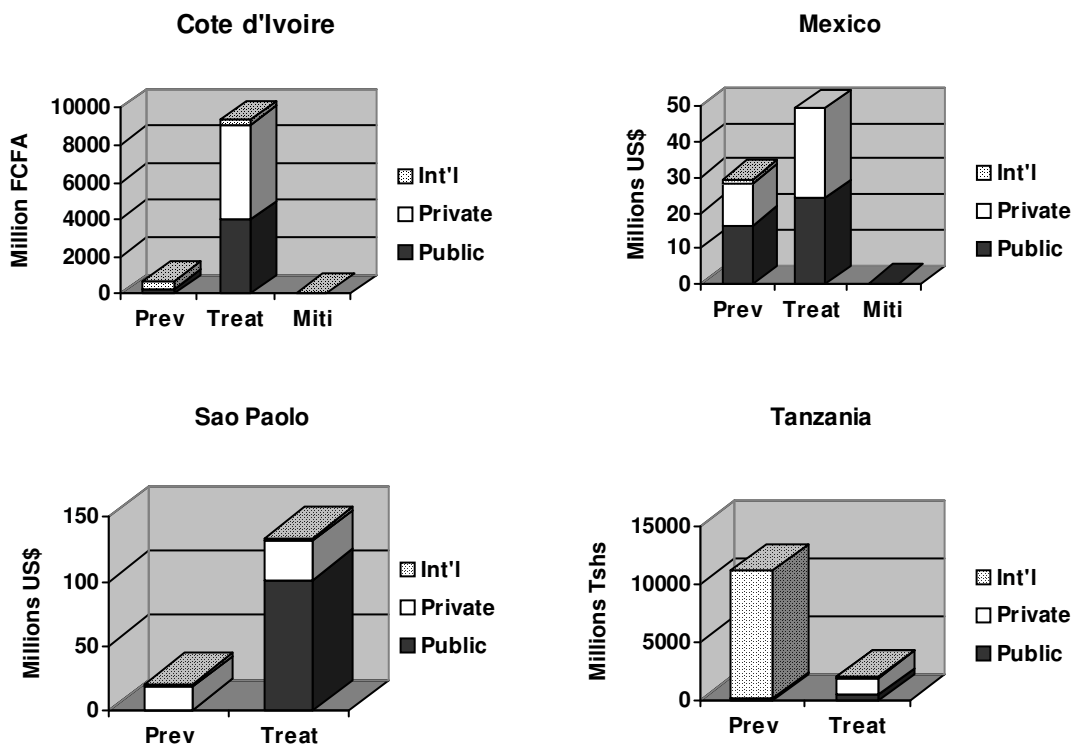


Other evidence about funding and resource allocation patterns can be examined based on background papers written for the World Bank’s publication, *Confronting AIDS*.ⁱⁱⁱ Figure 6 shows the source of funding for HIV/AIDS activities in four areas: Cote d’Ivoire, Mexico, the state of Sao Paolo in Brazil, and Tanzania. The figures indicate that both public and private national funding sources are significant in overall funding for three of the four areas, Cote d’Ivoire, Sao Paolo, and Mexico. In the other country,

Tanzania, 84 percent of the funding for HIV/AIDS is from international sources. This is in contrast to Cote d’Ivoire, with 7.7 percent of overall funds derived from international sources, Sao Paolo with only 3 percent, and Mexico, where only 1.1 percent of total funds is obtained from international sources.

These funding patterns can be examined further by analyzing allocation patterns according to category of expenditure and source of funding, as shown in Figure 7 below. The vast majority of Cote d'Ivoire's expenditures are concentrated in the treatment category, most of which is financed by national sources, both public and private. The funds that are spent on prevention and mitigation activities are provided for the most part by international donors. In Mexico, in contrast, about one-third of total expenditures occur in prevention activities, while about two-thirds is spent on treatment; mitigation activities form a very small percentage of overall expenditures, but of course, the need for mitigation activities less in Mexico. The small amount of international funding that does exist in Mexico is focussed on prevention activities. There is also not much international funding in Sao Paolo; the funding that does exist is split between prevention and treatment expenditures. The majority of expenditures in Sao Paolo is related to treatment and care activities. Finally, in Tanzania, in contrast to the other three areas, most spending takes place in prevention activities, with only a small percentage devoted to treatment programs. This is in spite of the fact that the AIDS epidemic in Tanzania is the most advanced of the four areas examined. Note that mitigation activities are not included for either Sao Paolo or Tanzania here because they were not categorized in the papers.

Figure 7



noticeable in the case of Tanzania, where almost all of the international monies, which make up the bulk of the funding there, contribute to prevention activities. Second, in the

other three areas under examination, Cote d'Ivoire, Mexico, and Sao Paolo, where international funding does not play as large a role as in Tanzania, the governments and the private sectors spend a significantly higher proportion of their overall budgets on treatment, compared to prevention activities.

There are three main conclusions from examining interviews with National AIDS Control Program managers and resource allocation patterns as indicated by budgets and expenditures in different countries:

- *The resource allocation process could be improved upon.* There is little evidence from the interviews, strategic plans or existing expenditure patterns that cost-effectiveness information is used extensively or that resource allocation is based on a good understanding of what is required to achieve overall goals.^{iv}
- *The target audience for any tools to be developed will be those participating in the national strategic planning process.* It is during this process that priorities are set and agreed upon by all of the different actors in the resource allocation process. Most countries appear to participate in some kind of national priority-setting planning exercise, so tools could be utilized at this time.
- *The models or materials developed need to be accessible to policymakers, or an intermediary needs to be trained.* This was communicated clearly through the interviews, as respondents stated that many of the models are simply too complicated for the decision-makers to utilize easily.

The results of the research above will be used to design a resource allocation model that will be useful for the national strategic planning process. The next steps in this project include:

- *Further exploration of the resource allocation patterns that exist in different countries.* These patterns will be developed and analyzed using special studies and national budgets in various countries. This will yield useful information on the planning process, as well as introduce realism to the cost-effectiveness exercises in the form of constraints. The politics of the resource allocation process itself will also be explored further, through in-depth interviews and existing literature on case studies.
- *Developing materials that will relate activities that are to be undertaken with goals to be achieved.* In most national strategic plans, although the activities to be undertaken are clearly outlined, these activities are not tied to specific prevalence goals the countries want to attain. In this step, we will first use existing models to explore the relationship between prevalence and the interventions that are planned. The models used will include AVERT, SexWork, MTCT, Blood Safety, HAART, and an STD treatment model to be constructed. After initial effectiveness estimates are developed, the results will be compared with those obtained from simulation modeling that consider all interventions at once and over time. The final product of

this effort will be a matrix or similar guide that will link various intervention levels to HIV prevalence.

- *Developing the Resource Allocation Model.* Upon completion of the exercise mapping activities into goals, the matrix that is extracted will be used as the basis for a general resource allocation model. The latest information about cost data and cost-effectiveness findings will be incorporated into the model.

The model will:

- Be easy to use
- Examine both cost per HIV infection and cost per DALY
- Utilize the marginal cost-effectiveness of key interventions
- Include constraints such as budgetary, political, and legal constraints
- Include all essential elements of a comprehensive program
- Have the ability to change assumptions over time
- Indicate directions of change, given existing programs
- Ask questions to develop various “what-if” scenarios

ⁱ Ernberg, G, M Opuni, B Schwartlander, N Walker, D Tarantola, MP Kieffer, *Level and flow of national and international resources for the response to HIV/AIDS, 1996-97* (UNAIDS: April 1999); Broomberg, J, N Soderlund, A Mills, “Economic analysis at the global level: a resource requirement model for HIV prevention in developing countries,” *Health Policy* 38 (1996: 45-65).

ⁱⁱ See UNAIDS, *Guide to the strategic planning process for a national response to HIV/AIDS* (Geneva: 1998), along with the three modules. All are available under the “Key Material” section of the UNAIDS web site.

ⁱⁱⁱ Kone, T, A Silue, J Agness-Soumahoro, RN Bail, DS Shepard, “Expenditures on AIDS in Cote d-Ivoire;” Iunes, R, ACC Campino, J Prottas, and DS Shepard, “Expenditures on HIV/AIDS in the state of Sao Paulo, Brazil;” P Tibandebage, S Wangwe, P Mujinja, RN Bail, and DS Shepard, “Expenditures on HIV/AIDS in Tanzania;” and Izazola, JA, J Saavedra, J Prottas, and DS Shepard, “Expenditures on the treatment and prevention of HIV/AIDS in Mexico,” all in ed. M Ainsworth, L Fransen, M Over, *Confronting AIDS: Evidence from the developing world* (World Bank: 1998).

^{iv} Note that this result is not specific to this paper; a recent study examining the impact of such research on health care decision making in the European Union found very similar results. (Hoffman, C and J-M Graf von der Schulenburg, “The influence of economic evaluation studies on decision making. A European survey,” *Health Policy* 52 (2000): 179-192.)