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The Application of the National Health Accounts Framework to HIV/AIDS in Rwanda

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Partnerships for Health Reform

PHR

Mission

The Partnerships for Health Reform (PHR) Project seeks to improve people's health in low- and middle-income countries by supporting health sector reforms that ensure equitable access to efficient, sustainable, quality health care services. In partnership with local stakeholders, PHR promotes an integrated approach to health reform and builds capacity in the following key areas:

- *better informed and more participatory policy processes in health sector reform*;
- *more equitable and sustainable health financing systems*;
- *improved incentives within health systems to encourage agents to use and deliver efficient and quality health services; and*
- *enhanced organization and management of health care systems and institutions to support specific health sector reforms*.

PHR advances knowledge and methodologies to develop, implement, and monitor health reforms and their impact, and promotes the exchange of information on critical health reform issues.

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Abstract

This paper describes how a National Health Accounts exercise on HIV/AIDS in Rwanda was designed and implemented, what data was captured, and how HIV/AIDS-specific expenditures were determined. The findings regarding expenditures on HIV in Rwanda are both critical and informative, and the process by which data was gathered is also significant. This documentation of the process, challenges, shortcomings, and successes of HIV/AIDS funding in Rwanda will be useful for others seeking to replicate the study elsewhere.

The comparison of HIV/AIDS-related costs (prevention, treatment, and mitigation) within overall health expenditures reveals that AIDS prevention is primarily financed by donor funds, whereas treatment costs place the heaviest financial burden on households. This is because no financial support system exists to facilitate patients' access to care. Thus, the patient's socio-economic background and ability to pay user fees define access to treatment of HIV/AIDS-related diseases. Based on this analysis, the report makes recommendations for policies to improve the financial information process, the sustainability and affordability of health care, and the equity of access to health care in the Rwandan health sector in general and in the HIV/AIDS sector in particular.

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Acronyms

AIDS	Acquired Immune Deficiency Syndrome
CHK	Central Hospital of Kigali
CRIS	*Centre Rwandais d'Information sur le SIDA* (Rwandan Information Center on AIDS
DHS	Demographic and Health Survey
GOR	Government of Rwanda
HIV	Human Immunodeficiency Virus
MOF	Ministry of Finance
MOH	Ministry of Health
NGO	Non-governmental Organizations
NHA	National Health Accounts
ONAPO	*Office National de la Population* (National Population Office)
PHR	Partnerships for Health Reform Project (USAID)
PLWA	People Living with AIDS
PNLS	*Programme National de Lutte Contre le SIDA* (National AIDS Program)
SIS	*Système d'Information Sanitaire* (Health Information System)
STD	Sexually Transmitted Disease
STI	Sexually Transmitted Infection
UNAIDS	United Nations AIDS Program
USAID	United States Agency for International Development
WHO	World Health Organization

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The development and implementation of this first National Health Account (NHA) and HIV/AIDS report involves several institutions. The figures and estimates presented in this report are based primarily on data collected by the staff and officials of the Ministry of Health (MOH), the Ministry of Economics and Finances, and the Audit and Consulting Firm AG & Associates Kigali. A large number of public, church-owned, and private sector organizations and representatives of different international organizations working in Rwanda shared their financial data. The following NHA steering committee team members constantly supported the entire NHA exercise:

- Major Dr. Desire Ndushabandi as the Secretary General of the MOH and President of the NHA steering committee;
- Mr. Emanuel Kabanda as Director of Planning at the MOH and his staff;
- Mr. Patrick Gashagaza, Associate, AG & Associates Kigali; and
- Other members of the steering committee for NHA.

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Executive Summary

In 1999, the Rwandan Ministry of Health (MOH) started the Rwandan National Health Accounts (NHA) activity in collaboration with Partnerships for Health Reform (PHR) Project, World Health Organization (WHO), United Nations AIDS Program (UNAIDS), and United States Agency for International Development (USAID). The NHA provides a comprehensive description of resource flows in a health care system, showing where resources come from and how they are used. A special feature of the Rwanda activity is the adaptation of the NHA framework to study HIV/AIDS-specific expenditures. This information will enable the MOH to design and implement targeted policy interventions for the Rwandan health sector that are aimed at improving financing prevention activities and increasing access to basic health care services for people living with AIDS.

HIV/AIDS has strong social and economic dimensions, and is competing for limited resources with other urgent health care demands such as malaria, diarrhea, and respiratory infections. In 1983 the first AIDS cases were reported in Rwanda. By 2000, Rwanda's HIV prevalence amounted to 11 percent of the adult population (400,000 sero-positive people). In the absence of health insurance in Rwanda, access to AIDS related treatment is determined by patients' ability to pay user-fees.

Results from the NHA analysis show that Rwanda spent $12.70 per capita on health care. Half of this came from donors, 40 percent from private sources, and the remaining 10 percent from the Rwandan government. Roughly 10 percent of total health expenditures was spent on HIV prevention and treatment for those who were HIV positive. Of this 10 percent, household out-of-pocket expenditures made up 93 percent, donor contributions 6 percent, and government financing 1 percent of total HIV/AIDS sources. These figures highlight the severe financial impact of the disease on households with sero-positive members who needed care. This furthers an understanding that the treatment costs for people who have been afflicted with the virus and need care, are borne by the patients and their families. AIDS is emerging as a disease of the poor, which also further impoverishes the poor.

PHR's experience in Rwanda illustrates the versatility of NHA methodology for studying expenditures on prevention and treatment for HIV within the context of overall health care financing, and for promoting the development of information based and targeted policy recommendations.

1. Introduction

As Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS) threatens to undermine the overall development of many countries, policymakers must be strategic in their resource allocation decisions. Countries are faced with the question of how to make the best use of available resources to expand coverage, access, and quality of HIV services while continuing to meet other health demands. A better understanding of public and private financing available for HIV/AIDS and how these funds are expended can assist in designing more effective interventions for dealing with this pandemic.

As part of its USAID (United States Agency for International Development)-sponsored efforts to support health systems strengthening and health financing reform, the Partnerships for Health Reform (PHR) Project launched an initiative to advance the development and use of National Health Accounts (NHA) as a policy tool throughout eastern and southern Africa. NHA provides an accounting framework for estimating the flows of funds from financing sources to fiscal intermediaries, and from those intermediaries to service providers. Because NHA tracks all expenditure flows across a health system, and links the sources of funds to service providers and to the ultimate use of funds, it can answer questions like: Who pays? How much? For what? The flow of funds that NHA depicts is critical to policymakers who seek to identify health system problems and opportunities for improvement, to develop and select the optimum allocation strategy, and to monitor impact and adjust policies.

Recognizing that a quantitative picture of the flow from sources to uses for HIV/AIDS services could be a critical tool for both donors and national governments, USAID provided the PHR Project with funding to adapt and expand the NHA framework to capture HIV/AIDS specific expenditures. The biggest difference between earlier studies and this one is the level of breakdown of the money flow. NHA takes a holistic view and traces the flow of resources at the level of financing sources, and the uses via the intermediary financing agents for the entire health sector in a country; whereas, other studies estimated disbursement of funds at a more aggregate level. Also, earlier studies estimating expenditures on HIV have relied on secondary data analysis and lack of information on out-of-pocket expenditure affects the accuracy of these estimates. The NHA framework used here is different because it has standard methodology for classifying expenditures and is designed to capture both private and public expenditures on HIV/AIDS through both secondary data analysis and primary data collection. Further, understanding the estimates for HIV/AIDS expenditures will help develop resource allocation policies within the context of broader health system.

1.1 Objectives

The purpose of this paper is to describe how this exercise determining disease-specific expenditures in Rwanda was designed, implemented and, ultimately, what data was captured as a result. Though the actual findings regarding expenditures on HIV in Rwanda are both critical and informative, the process by which the data was gathered is also significant. The authors hope that this paper documenting the process, challenges, shortcomings, and successes will be useful for others seeking to replicate the study. In this paper, researchers address the following:

- how the sub-sector approach using the NHA framework can be a tool to estimate and track disease specific expenditures over time;

- what data the NHA HIV/AIDS exercise was able to capture, to what degree, and how it compares with other methodologies designed to capture the same information;

- what challenges were faced, what lessons learned, and recommendations for future replication of this exercise; and

- how the NHA HIV/AIDS exercise can assist in policy formulation.

The purpose of collecting, analyzing, and presenting data on HIV/AIDS expenditures is to provide policymakers with the tools necessary to make more effective policy decisions in the future. NHA estimates can significantly influence policy. The actual emphasis of spending—whether on drugs, ambulatory clinics, counseling, or other end uses—becomes clearly visible, and changes can more easily be made to optimize the allocation of funds to different functions.

2. Methodology

The NHA methodology is an approach estimating funding flows in national health expenditures. It emphasizes systematic analysis: the development of standardized definitions of the uses of funds, and the tracking of flows of funds from sources through intermediaries to end uses. It attempts to account for all expenditures by looking not only at public sector financing, but also at the private sector, including households, firms, and non-governmental organizations (NGOs). The methodology also avoids double-counting funds, since not only sources and end uses are analyzed, but also the intermediaries through whom the funding is channeled to providers. It is especially useful in developing countries, which tend to have pluralistic health care systems where financing comes from multiple sources and where providers may receive payment from more than one source (Berman 1996.

The NHA methodology is used to estimate expenditures on HIV/AIDS in Rwanda for 1998 and 1999. The NHA methodology has been designed to address some of the weaknesses of earlier studies. In addition, researchers looked beyond official HIV/AIDS-specific projects funded by the Ministry of Health to projects under other ministries, such as Education and Justice. Most importantly, primary data collection to capture household expenditures took place. PHR utilized survey information, interviews with donors and government officials, and on-site reviews of records. By "triangulating" the data sources—comparing data obtained from different sources and accounting for discrepancies—we were able to ensure a greater reliability and validity in the data.

An NHA steering committee headed by the secretary general of the MOH with representatives from the MOH, the Ministry of Finance (MOF), and the National Bank of Rwanda was established. PHR and WHO provided guidance and oversaw the NHA process. The committee discussed findings in regular meetings and assisted with their interpretation. A systematic and extensive data collection activity was undertaken. Guidelines were developed to verify the consistency and validity of the data. Data from the MOH health information system (*Système d'Information Sanitaire,* SIS) were used to document health centers' utilization and financial situation. In addition, a set of questionnaires were developed and sent to relevant entities (MOF, international organizations, public and private firms). Questionnaires were sent to these sources with the exception of private households. At present, the Rwandan government is in the process of fielding a household survey and a demographic health survey. Results from these surveys will be available in the year 2001. In the interim, the household expenditures on health care were approximated using available sources of data reported by health care providers, firms, insurance companies, and pharmacies. The data collected and analyzed by the NHA team was then regularly disseminated to the steering committee members for feedback. Further, several training workshops were conducted to provide technical assistance to the team members to continue the NHA process on an on-going basis. The above stated methodology is the general process used for the NHA exercise for the entire health sector. The HIV/AIDS sub-sector level NHA was developed along the same procedural lines and included a separate household survey for HIV/AIDS expenses.

2.1 Data Collection

Listed below are the basic stages of the NHA HIV/AIDS exercise. The full methodology can be found in Annex A.

2.1.1 Identification and Inventory of Information Sources and Defining HIV Expenditures

Before data collection began, an exhaustive inventory of public and private sector organizations and agencies involved in HIV/AIDS-related activities was created. At the same time, "HIV/AIDS-related activities" were defined and described in order to consistently disaggregate HIV/AIDS expenditures from other expenditures. For the purposes of this activity, researchers defined HIV/AIDS expenditures as those that have direct impact on the prevention, management, and treatment of HIV/AIDS. A comprehensive list of the types of activities, which were considered to be "HIV/AIDS-related," is included in the methodology (Annex A).

2.1.2 Development of Overall NHA Surveys: Incorporating HIV/AIDS

As part of the broader NHA exercise and prepayment work, primary data was collected from government ministries, NGOs, insurance companies, hospitals, large employers, and pharmaceutical companies. Relevant questions on HIV/AIDS spending and utilization were incorporated into the surveys. PHR also collaborated with Macro International and the National Population Office (*Office National de la Population*, ONAPO) to integrate questions regarding expenditures on HIV/AIDS into the Demographic and Health Survey (DHS) survey, which is currently being administered in Rwanda. Estimates will be updated once the DHS survey data becomes available.

In order to obtain data on donor expenditures, reports on how much donors disbursed to different health system activities were requested from the donor agencies and the Rwanda government, which included a section on HIV/AIDS specific assistance. To verify the information provided, researchers double-checked the amounts reported as given by the donor, with the amounts reported received by the government. Researchers did experience difficulty in reconciling some of the numbers as indicated by the donor agencies and those provided by the ministry. Some donors failed to provide a report on HIV/AIDS assistance.

2.1.3 Obtaining Reports of Government Expenditures on HIV/AIDS-Related Activities

Government ministries in Rwanda were requested to provide information on national expenditures on HIV/AIDS programs. Determining expenditures by the National AIDS Program (*Programme National de Lutte Contre le SIDA*, PNLS) was a relatively straightforward exercise, although identification of the sources of funds for PNLS was more problematic. Determining HIV/AIDS-specific expenditures by other government sectors (e.g., Education, Justice) at both the national and peripheral level proved to be a challenge. One of the factors that made obtaining information difficult was that health budgets were integrated and not broken down by disease specific line items. Further, the lack of accounting data collection systems served as a barrier to accessing accurate information.

2.1.4 HIV/AIDS Household Surveys

NHA is particularly informative because of its ability to capture information on household expenditures on health that can then be compared with other funding sources for health. To capture household spending, PHR developed questionnaires based on a previous survey instrument (Kagera Health and Development Suvery Household Questionnaire, Wave 2) used for measuring health and development in Tanzania. The survey was designed to gather information on the use of health care and expenditures on health care by both inpatient and outpatient individuals who were informed of

their sero-positive status. The PHR questionnaire was structured to extract information on: the number of times sero-positive members visited a health provider to get treatment for certain symptoms; the number and cost of medications purchased, including traditional medication; the number of days spent in the hospital; the number of days of work missed; and methods the family used to replace lost income, including taking on more debt and selling possessions.

In the fall 1999, a first version of the household questionnaire developed by PHR was presented to the NHA steering committee. The questionnaire was modified after receiving input and additional questions from the PNLS, UNAIDS Kigali, and AIDSMARK/Population Services International. The questionnaire was then pre-tested by social workers on 20 patients at the Rwandan Information Center on AIDS (*Centre Rwandais d'Information sur le SIDA*, CRIS), an HIV meeting and counseling center in Kigali.

Interviews were conducted in four health facilities: the Central Hospital of Kigali, an outpatient health center of Bilyogo in Kigali, a consultation center in Kigali (CRIS), and the AIDS association in Butare. Social assistants who had established personal relationships with the patient conducted interviews. Complete findings from the outpatient survey were produced as a separate PHR report (Nandakumar et al., 2000).

2.1.5 Estimation of Health Facility Expenditures on Prevention, Management, and Treatment of HIV/AIDS

In order to estimate primary, secondary, and tertiary health facility expenditures, PHR researchers had anticipated analyzing monthly statistical reports on utilization, expenditures, and revenues from all district hospitals and health centers issued by Rwanda's Health Information System. Researchers hoped that major hospital and clinical records would also provide data to determine the number of HIV-positive patients admitted to these facilities, how many out-patient consultations were provided, how many patients were diagnosed with HIV/AIDS during their stay, how many died of AIDS (or a specified set of AIDS-related infections), the frequency of their hospital visits, the length of their stay(s) in the hospital, and the cost of their treatment. Researchers intended to obtain facility-level information on prevention and sexually transmitted disease (STD) management through interviews and reviews of facility records. However, it was discovered that in Rwanda such data is not available, as routine testing for the virus does not take place. Further, when patients are tested they are often not informed of their sero-status. And because AIDS tests in these facilities are not free, poorer patients will often choose not to pay for testing when they have a difficult time meeting their other daily needs.

The hospitals received the NHA questionnaire with specific HIV/AIDS questions on use and expenditures. However, none of the hospitals collects any information specific to HIV/AIDS, a finding that again stresses the need for the development of a comprehensive information management system in Rwanda.

Another objective not realized in the PHR methodology, was the goal of estimating NGO and private sector organizations' expenditures on HIV/AIDS-related activities. Of the 22 physicians surveyed, only six responded to the questionnaire. Private practitioners generally reported difficulties in identifying utilization, cost, and financing information for sero-positive patients.

2.1.6 Estimating the Costs of HIV/AIDS Treatment

The Central Hospital Kigali (CHK) is the primary referral hospital in Rwanda that provides AIDS-related care as well as care of symptomatic infections to sero-positive patients. Expenditure

data on AIDS-related care was collected by three means: NHA questionnaire with relevant AIDS questions, personal interviews with physicians and hospital administrators, and perusal of accounting records.

2.1.7 Estimation of Pharmaceutical Expenditures

Information on pharmaceutical expenditures was obtained primarily via questions on the household and provider surveys. Provider reports on drug expenditures were also reviewed during on-site visits by researchers. To help triangulate data, PHR contacted drug importing agencies and Rwandan customs to verify information on drugs.

2.2 Limitations and Challenges

Collecting expenditure data in Rwanda proved to be a challenge, especially with the lack of record keeping and management information systems. Many challenges to the methodology were anticipated, and all of them were realized during the study.

Endemic to most developing countries, the biggest impediment to conducting NHA analysis is the paucity of data and the consistency and validity of existing data. Lack or shortage of organized data information systems has warranted alternative methods of calculation of expenditures. Such calculations are based on technically sound assumptions to facilitate the process. Should the actual data become available, the calculations generated based on assumptions will be updated.

Some of the major limitations are enumerated below; these may vary depending on the country experience.

- *Availability, quality, validity, and reliability of data:* When such a comprehensive analysis is undertaken for the first time in a given country, lack of accurate and appropriate data is the primary barrier faced. Financial management and accounting systems that can collect information on costs, distribution of expenditures by function, and establish links between costs and utilization do not exist. The absence of such infrastructure to track the flow of data impedes extensive analysis. In particular, obtaining HIV/AIDS-related expenditure data was very difficult, as the existing system does not isolate those costs. Data is kept in the format that meets the needs of MOF and audit agencies, which tends to be by line item, while expenditure by type of function for MOH is usually not captured.

- *Funds from donors flow directly to MOH central, districts, facilities, and NGOs.* Therefore the tracking of these funds by MOH is not facilitated, nor can it be monitored. As a result, little exchange of information occurs between MOH and donors. As per the NHA findings, the MOH could account for only 3 percent of all donor assistance. Other data sources were used to reconcile and verify any discrepancies in the data.

- *Lack of trained personnel:* Lack of sophisticated management information systems also implies a lack of trained personnel who can facilitate the process of data collection, database maintenance, and analysis.

- *Nonconventional accounting systems:* Often conventional accounting systems are not followed, resulting in a lack of transparency in tracking the flow of funds. Also, a lack of standard definitions and codes of budgetary items, functions, and services across different agencies and ministries can pose a challenge to estimating the flow of funds.

- *Proxy conditions:* Since many HIV-positive individuals are unaware that they are infected, it might be helpful to look at treatment expenditures on "proxy" conditions for HIV, such as tuberculosis, STDs, or pneumonia. However, determining which proxy conditions to consider, as well as the rates of actual HIV infection among those being treated for these proxy conditions, will require the input of local experts. There may be a significant amount of statistical "noise" that blurs the accuracy of such estimates. Appropriately separating out expenditures on these proxies versus expenditures on HIV/AIDS may prove unfeasible.

- *Lack of support for NHA:* Often the support for an open and transparent accounting system is lacking for political as well as logistical reasons. The NHA exercise requires inter-ministerial and inter-agency cooperation, which may not always be possible. Decisions makers must be educated on the value of NHA and the benefit of making decisions based on data. Support for the NHA activity must be encouraged on an on-going basis.

- *Institutionalization:* Ideally, this type of data collection effort should be institutionalized within the national government and be implemented on an ongoing basis. The first step towards institutionalization would be to make budgetary and line item allocations for full time staff to work on the NHA on a continual basis. Next, a core technical team with interdisciplinary backgrounds from various ministries (such as finance, health, military, etc.) should be assembled to conduct the analysis and interpret results. Finally, the most critical step is to identify an appropriate physical location for the NHA team. In the Rwandan case, however, funds are not available under this scope of work to produce a plan for, or ensure the institutionalization of, an HIV/AIDS satellite NHA account. Institutionalization can only be considered within the context of other existing NHA activities. For example, in Rwanda, an inter-ministerial group already exists which is working jointly on the NHA exercise.

- *Centralized control:* Even though a decision was made to decentralize the planning process in Rwanda to the district level, there are currently no systems in place or any infrastructure to support decision making at the district level. The highly centralized and controlled system of disbursements has resulted in the absence of tracking expenditure data at district or facility levels.

3. Background

UNAIDS estimated in June 2000 that 34.3 million people around the world were living with HIV/AIDS (UNAIDS 2000a). Of these, almost 90 percent live in sub-Saharan Africa and the developing countries of Asia. In Rwanda, as in the rest of sub-Saharan Africa, the AIDS epidemic poses a severe threat to human development as it overburdens health systems, deteriorates family structures, and further impoverishes the poor. AIDS is also a public health threat that is competing for limited resources with other urgent health care demands such as malaria, diarrhea, and respiratory infections.

3.1 Socio-economic Background

The tumultuous time of genocide, war and displacement of individuals during the mid-1990's had severe consequences on every aspect of Rwandan life. In 1994, during the ethnic war, between 500,000 and 1 million people were killed, and nearly one-third of the population was displaced (World Bank 1998). During this time of conflict, poverty was further accentuated, as the number of poor households experienced a sharp increase from 53 percent in 1993 to more than 70 percent in 1997. The consequences of conflict and increased poverty levels have resulted in a Rwandan population that can be described as young and poor. Of the population of nearly 8 million people, almost half are under the age of twenty, and nearly three-fourths live below the poverty line (World Bank 1998).

Poverty in Rwanda is further compounded first by an agriculturally based economy, and second by the amount of internal and external debts faced by the Government of Rwanda (GOR) (Republic of Rwanda 1998b). Approximately 90 percent of the population are active in agriculture, the least productive and most labor intensive sector, producing a little more than one-third (36 percent) of the country's gross domestic product (GDP). Although coffee and tea remain the principal export crops, most agricultural production is still subsistence agriculture, primarily for household or community consumption. The industry and manufacturing sector constitutes about 22 percent of GDP and employs 2 percent of the population, whereas 7 percent of the labor force works in the service sector producing 42 percent of GDP in 1998. Rwanda's external and domestic debt rose rapidly from just under $400 million in 1985 to about $1 billion in 1996, and to $1.4 billion in total debt stocks (including arrears) by the end of 1998, equivalent to 72 percent of GDP. In order to service these debts, the GOR spent $6.80 per capita in 1998, while spending only $0.50 on health.

In 1998, per capita GDP in Rwanda was $252, which is well below 1990 GDP ($270). The GDP growth rate was 9.6 percent in 1998, and average annual growth projections are slowing down to 6.8 percent for 1999 to 2003 (World Bank 1999). Since 1994, Rwanda's economy has been recuperating mainly due to external resource inflow, and less due to the recovery of productive capacity, such as exporting. Today, poor households' average income is further below the poverty line than before the genocide in 1994. This decline in living standards coupled with rapid population growth will increase the demand for social services such as health and education, and increasingly strain the limited resources of the government. This only reinforces the need to develop and implement policies that will increase access to basic health services to the poor and vulnerable populations.

Sadly enough, the already large number of unaccompanied children caused by the war in 1994 is expected to increase, and life expectancy—already at a low level of 48 years—might decline due to the disease. The limited financial and human resource situation in the health sector will be

additionally challenged by the increased demand for care caused by infected individuals and increased health care cost related to it.

3.2 Health Sector

The genocide in 1994 severely damaged the health infrastructure of the country. Since then recovery has been largely funded and supported by international organizations providing humanitarian and development assistance for both infrastructure and reconstruction of the health sector. The Rwandan government's contribution to health has remained at a low level of 2.5 percent of recurrent government expenditures. This is below pre-war levels of between 4 and 8 percent (Republic of Rwanda 1999c). About half of the overall health care expenditures are financed by donors, 40 percent by out-of-pocket expenditures incurred by households and the remainder by the government.

After 1996, providers in public and church facilities reintroduced fees for health services and drugs at the pre-war level. These fees had been suspended for humanitarian reasons from 1994-96. In 1998, only two insurance companies covered health care. Employers either contract providers directly or offer care in their own health facilities. The Rwandan government, working in collaboration with religious organizations, remains the major provider of health services, especially in rural areas. The role of for-profit private providers is still limited but growing, mostly in urban areas. Although the Rwandan MOH created an extensive network of health facilities in collaboration with international organizations, shortage of public funds and weak management have caused drug and service prices to increase and patient utilization to drop. In 1998, consultations at health centers averaged 0.28 visits per capita (SIS). Rural populations are probably seeking care either in the traditional sector or at pharmacies, and some may be foregoing needed care due to inability to pay.

Communicable diseases dominate Rwanda’s burden of illness. The 1998 MOH Annual Report reveals that of the 2.3 million patient contacts for curative care services, 88 percent were for malaria, fever, intestinal diseases, respiratory infections, pneumonia, and skin lesions. A population-based nutrition survey revealed that almost half (43 percent) of Rwandan boys and girls younger than five years were suffering from nutritional stunting (Republic of Rwanda 1999d). Lower income families bear a greater proportion of the burden of disease.

The combined effect of the socio-economic situation, low consultation rates, and the high prevalence of malaria, diarrhea, and respiratory infections have contributed to high rates of childhood malnutrition and mortality. Rwandans are most likely to die from poverty-related preventable diseases and infections such as malaria, fever, diarrhea, respiratory infections, and AIDS.

3.3 HIV/AIDS in Rwanda

The first AIDS cases in Rwanda were identified in 1983 (Republic of Rwanda 1998a), and the epidemic has spread rapidly and widely since then. Currently, almost 11 percent of the adult population are infected with the virus (**USAID and Family Health International** 1999). Prevalence rates among pregnant women are even higher. In 1996, 28 percent of pregnant women in urban antenatal clinics tested positive for HIV (**USAID and Family Health International** 1999). Although prevalence rates in urban areas have remained quite high since the late 1980s, there has been a rapid and troubling increase in prevalence from 1.3 percent in 1986 to 10.8 percent in 1997 in rural areas (Republic of Rwanda 1998a). Even more sobering, an estimated 120,000 children had been orphaned by the disease by 1997 (UNAIDS/WHO 1998) and, by the year 2000, nearly 400,000 adults and children were living with HIV/AIDS (UNAIDS 2000b).

Unlike many other countries in sub-Saharan Africa, Rwanda officially and openly recognized the HIV/AIDS problem quite early on. The PNLS was established in 1987, and a surveillance system was set up in 1989 to monitor the epidemic. However, the period of war and genocide severely disrupted these activities. Among other tragic consequences, Rwanda lost much qualified manpower that had managed and implemented social programs (World Bank 1998).

In 1996, the surveillance system was reestablished, and several sentinel posts were set up in antenatal clinics to collect data on the sero-prevalence rate among pregnant women. A national survey was implemented in 1997 by the PNLS to determine the prevalence of HIV in the population, assess demographic variations in the HIV infection rates, determine the effect of migration on the epidemiological profile of HIV infection, and provide postwar baseline data for planning HIV/AIDS control strategies. The following are some of the key findings from the population study conducted by PNLS (Republic of Rwanda 1998a):

- Approximately 11 percent of the population were identified as HIV positive.
- Prevalence among the general population in rural areas had increased from 1.3 percent in 1996 to 10.8 percent in 1997; nearly matching prevalence rates previously seen in urban areas.
- Highest prevalence rates were found in the population that is the most economically productive: rates of 20 percent were found among women in age groups 25-34, and among respondents working in the service sector (16-19 percent).
- Individuals with a history of sexually transmitted infections (STIs), were two to three times more likely to be infected with the virus than those without an experience with STIs. Both rural and urban areas in Rwanda reported relatively high prevalence of STDs, indicating widespread STDs and HIV in the country. Females were up to two times more likely to be infected than men.
- Some 70 percent of commercial sex workers tested sero-positive and only 10 percent of them practiced protected sex, with clients determining the use or non-use of condoms.
- Wife inheritance after a sibling death and wife sharing among siblings is still practiced in parts of rural Rwanda, contributing to the spread of the virus.
- Community studies revealed that AIDS is highly stigmatized in the population, with 60 percent of the respondents saying they would not associate with a person who has AIDS.
- Due to information, education, and communication (IEC) campaigns, knowledge of HIV/AIDS is estimated to be quite high, but significant behavior change is not documented and condom use remains low.

In 1997, PNLS began a restructuring process to adopt a decentralized approach to fight the epidemic. It was expected that a legal framework to institutionalize the program would be instituted by the fall of 2000. The PNLS focuses on coordination, monitoring, and evaluation of HIV prevention, resource mobilization, and surveillance (Republic of Rwanda 1998a).

In 1998, a new, multi-sectoral strategy (1998-2001) was drafted. It was designed to further involve NGOs, private, and public organizations, and to facilitate sectoral responses to the epidemic, providing health regions with the task of translating the national plan into regional prevention action plans. Sectoral responses have already been developed by the military, youth, and people living with AIDS (PLWA). Other sectors are in the process of developing action plans.

The priorities articulated in the strategic plan (1998-2001) include:

- reducing STI prevalence in the population;
- reducing the number of people who depend on sex for their livelihood;
- providing more counseling and testing services in district hospitals;
- incorporating HIV/AIDS education into curricula for all ages;
- mobilizing NGOs and community-based organizations to implement STI/HIV/AIDS prevention activities;
- reducing mother-to-child transmissions; and
- promoting cultural norms that reduce risk to HIV transmissions.

4. Key Findings

4.1 Summary Statistics

As depicted in Table 1, total expenditures for health care in Rwanda in 1998 amount to FRw 32 billion (USD 100 million) and per capita expenditures to FRw 4,019 (USD 12.7). The total expenditure on health is 5 percent of GDP, a proportion comparable to other low-income countries. However, half of Rwanda's health expenditures are paid for by international organizations, which is relatively high for a low-income country, placing Rwanda in a situation of extreme dependence. Public and private sources account for the remaining 10 and 40 percent of health care financing, respectively.

Table 1. Summary Statistics for NHA AIDS in Rwanda (1998)

Estimated Population Living with AIDS (1999)	400,000 adults	
Prevalence Rate Adults (1999)	11 percent	
Total Health Expenditures (NHA 1998)	USD 99,931,321	
Per Capita Health Expenditure (NHA 1998)	USD 12.7	
Total AIDS-related Health Expenditures	USD 9,941,308	
Percent of Total Health Expenditures Spent on AIDS	10 %	
Of Total Public Health Expenditures	1 %	
Of Total Private Health Expenditures	29 %	
Of Total Donor Health Expenditures	1 %	
Sources of Funds Distribution:	Total health (NHA 1998)	AIDS-related funds
Public	10%	1%
Private	40%	93%
International Organizations	50%	6%
Uses of Funds		
MOH Facilities	66%	
NGO or Church Facilties	30%	
Private Facilities	4%	
Total AIDS Expenditures as Percent of Nominal GDP		0.5%

Source: UNAIDS 2000a, Schneider et al. 1999

4.2 Flow of HIV/AIDS Funds

The following two matrices present the flow of funds for HIV/AIDS in Rwanda, first from sources to financing agents (Table 2), and then from financing agents to service uses (Table 3). Only a few financing agents with AIDS-related activities could be identified in NHA 1998; they include the MOH and PNLS. The major financing intermediaries are households' out-of-pocket payments (93.5 percent), followed by the PNLS (4.5 percent). AIDS-specific donor amounts were used to report donations to PNLS and local NGOs. Generally, donors did not identify how much of their overall

health sources went to AIDS and related activities, so the amount reported by donors is probably an underestimation.

4.2.1 Sources of AIDS Funds

Compared to the overall health sources reported in NHA, only 10 percent were targeted to HIV/AIDS-related activities. In the absence of insurance coverage, households spend overall almost one-third of their health expenditures on AIDS and HIV/AIDS-related treatment. These proportions are smaller for the government, which provides 1 percent, and for donors, which spend 1 percent of their overall health expenditures on AIDS and HIV/AIDS-related activities. Whereas donor and government HIV/AIDS sources are mainly consumed by HIV/AIDS preventive activities, household sources are used to pay for treatment of AIDS and opportunistic infections of the 11 percent of the population that is HIV-positive. As shown in Figure 1, a disproportional 93 percent of total HIV/AIDS sources was contributed by household out-of-pocket spending. Additional sources came from donors (6 percent) and the government (1 percent). Due to the limited identification of donor spending on HIV/AIDS-related activities, it is assumed that HIV/AIDS-related donor contributions are underestimated.

Households' high proportional contribution to AIDS, amounting to 29 percent of their total health spending, reveals the great financial impact of the disease. From 1998 to 2000, households' HIV/AIDS-related expenditures have increased due to the availability of more expensive treatments, such as antiretroviral therapy.

Table 2. HIV/AIDS Sources to Financing Agents 1998-99 (in '000 FRw and '000 USD)

	Sources				
Financing Agents	**MOF**	**Donors**	**Households (1999)**	**Total FRw**	**Percent**
Ministry of Health	27,878			27,878	0.9%
PNLS		141,091		141,091	4.5%
Local NGOs and Churches		35,119		35,119	1.1%
Out-of-pocket Households			2,947,308	2,947,307	93.5%
Total HIV/AIDS Sources: FRw	27,878	176,210	2,947,308	3,151,395	**100.0%**
Total HIV/AIDS Sources: USD	88	556	9,297	9,941	
Percent Distribution	0.9%	5.6%	93.5%	100.0%	
Percent of Total Health Resources	1.0%	1.1%	28.6%	9.9%	

Figure 1. Sources of Funds

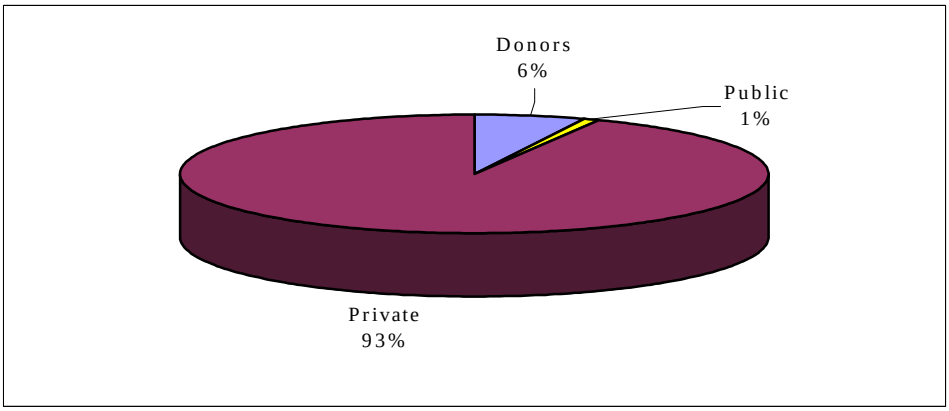

Table 3 describes the flow of funds from financing agents to service providers. Local NGOs' HIV/AIDS monies could not be identified. The PNLS reported expenditures in an amount greater than their resources, pointing to some discrepancies.

Table 3. HIV/AIDS Financing Agents to Uses 1998-99 (in '000 FRw and '000 USD)

	Financing Agents					
Uses	**MOH**	**PNLS**	**Local NGOs Churches**	**Out-of-Pocket Households (1999)**	**Total FRw**	**Percent**
MOH Programs	27,878	155,905			183,783	5.8%
MOH Referral Hospital				934,319	934,319	29.6%
MOH Health Ctr.				945,300	945,300	30.0%
Church Heath Ctr.				945,300	945,300	30.0%
Private Clinics				122,388	122,388	3.9%
Unaccount. Funds		-14,814	35,119		20,305	0.6%
Total FRw	**27,878**	**141,091**	**35,119**	**2,947,307**	**3,151,395**	**100.0%**
Total USD	**88**	**445**	**111**	**9,297**	**9,941**	
Percent	0.9%	4.5%	1.1%	93.5%	100.0%	

The household contribution of 93.5 percent of all HIV/AIDS money can be tracked to treatment of the disease and opportunistic infections. It is assumed that the remaining 6.5 percent contributed by the MOH, PNLS, and local NGOs was used mostly to finance preventive activities and other non-treatment costs. These proportions may be slightly skewed due to incomplete data from donor sources as well as from financing agents.

4.2.2 Uses of AIDS Funds: Prevention and Treatment

Generally, the different sources, financing agents, and users of health monies could not identify in their NHA questionnaires how much they spent on preventive AIDS programs. Households spent 2.9 billion francs on treatment for AIDS and HIV/AIDS-related diseases, while public and international donors financed the remaining preventive care costs. Table 4 reveals that 14 percent of all HIV/AIDS funds were used to treat the disease, another 79 percent to treat opportunistic infections, and the remaining 6.5 percent were spent on non-treatment related, preventive activities organized by the MOH, PNLS, and local NGOs. Researchers assume that the actual amount spent on preventive care was considerably larger. However, the financial data available did not permit a greater understanding of the use of overall HIV/AIDS monies.

Table 4. Treatment and Preventive Uses of AIDS Funds in 1998/99

Treatment and Non-Treatment Uses	FRw	USD	Percent
AIDS treatment (antiretroviral) paid by patients	453,288,000	1,225,130	14.3%
HIV/AIDS related treatment paid by patients	2,494,018,750	8,072,368	79.2%
Non-treatment related costs (preventive use)	204,087,760	643,810	6.5%
Total AIDS/HIV Uses	3,151,394,510	9,941,308	100%

To summarize, the NHA 1998 results show that the Rwandan health sector is largely financed by foreign assistance (50 percent of overall spending) and by household out-of-pocket payments (40 percent). This allows total health spending as a percent of GDP to reach levels comparable to those in Uganda and other sub-Saharan countries. The government contribution to health in terms of overall spending (2.5 percent) and in terms of total health expenditures (10 percent), remains at a low level. Despite high levels of foreign support, the Rwandan population reports poor access to health care and poorer health status than people living in neighboring countries. This highlights potential inequities and inefficiencies in the health system. The private sector accounts for 24 percent of health spending and serves approximately 10 percent of the population, those able to pay the high user fees. Public and church-owned health centers serve about 90 percent of the population, but receive only about 11 percent of all health financing. Almost one-third of funds for health is spent for care in public and private hospitals. About 10 percent of overall health funds were spent on HIV/AIDS prevention and treatment. Household's contribution to the overall AIDS monies is exceptionally large, accounting for 93 percent of total AIDS funds.

The limited financial data available in the public and private health sector emphasizes the need to develop and implement financial management information systems at all levels of the health sector, with the objective of collecting accounting data to document and evaluate the flow of health funds.

4.3 Role of Service Providers and Donors

4.3.1 Ministry of Health and Government Programs

Table 5 shows line item spending as reported by the two public financing intermediaries, the MOH and PNLS. The largest HIV/AIDS-related expenditure component was travel costs (27 percent) reported by PNLS, followed by operational maintenance (23 percent), office supply (19 percent), personnel (16 percent), and other operational supplies (15 percent). According to their NHA questionnaires, the two agents did not finance any drugs to treat AIDS and HIV/AIDS-related diseases in 1998.

Table 5. AIDS Spending as Reported by Financing Agents in 1998

	Financing Agents				
Line Items	**MOH**	**PNLS**	**Total FRw**	**Total USD**	**Percent**
Personnel cost	13,201,298	16,942,346	30,143,644	95,090	16%
Travel		49,573,719	49,573,719	156,384	27%
Drugs		-	-	-	0%
Supplies					
Operations	14,676,306	13,118,093	27,794,399	87,679	15%
Office		34,727,864	34,727,864	109,552	19%
Maintenance		41,543,237	41,543,237	131,051	23%
TOTAL FRw	**27,877,604**	**155,905,259**	**183,782,863**	**579,757**	**100%**
TOTAL USD	**87,942**	**491,815**	**579,757**		

Source: NHA,1998, GOR

One can note differences between the amounts spent as reported by the financing agent PNLS and the corresponding amounts reported by donors. These discrepancies underline the importance of improving financial reporting systems at all levels to track resource allocation and use.

4.3.2 International Organizations

Donors did not identify the amount spent on AIDS and HIV/AIDS-related activities in their NHA questionnaires. However, four donors reported support of almost USD 0.5 million to the PNLS in 1998. See Table 6.

Table 6. Donor AIDS Funding to PNLS in 1998

FROM DONORS TO PNLS	Total FRw	Total USD
WHO	59,999,858	189,274
Belgian Cooperation	43,114,536	136,008
U.N. Fund for Population Activities	34,806,600	109,800
Population Services International	3,170,000	10,000
TOTAL	**141,090,994**	**445,082**

Source: NHA, 1998, International Organizations

Table 7 shows donor sources by line item. Almost half of the donor funds (43 percent) that went to PNLS were targeted to finance administrative support to the program. Another 27 percent were used for PNLS salaries. According to NHA data from 1998, donors provide little support to drugs and consumables for the PNLS. Thus, at least 98 percent of donor resources were used to finance preventive activities.

Table 7. Donor AIDS Funding to PNLS, by Function, 1998

Function	Total FRw	Total USD	Percent
Administrative Support	59,999,858	189,274	43%
Salary	37,662,453	118,809	27%
Training	3,170,000	10,000	2%
Drugs	1,141,200	3,600	1%
Consumable Supplies	2,092,200	6,600	1%
Maintenance	317,000	1,000	<1%
Building	6,974,000	22,000	5%
Equipment	2,982,336	9,408	2%
Other	26,751,947	84,391	19%
Total	141,090,994	445,082	100%

Source: NHA 1998, International Organizations

A clear understanding of AIDS spending in Rwanda will only be achieved by increasing financial information systems and management capacity over different ministries. Financial information received by donors is incomplete, as donors tended not to specify AIDS and related spending. Thus, researchers assume that a significant amount of donor support provided to Rwanda's PNLS was not accounted for in the 1998 NHA HIV/AIDS report.

4.3.3 Private Practitioners

Of the 22 physicians to whom questionnaires were sent, six completed and returned the questionnaire. Among them, two offer HIV testing and four have a counseling service available for sero-positive patients. In 1998, three physicians consulted 213 sero-positive patients in 991 visits, resulting in an average of 4.6 consultations per patient. Two of the three physicians that responded to HIV questions estimated a revenue of FRw 304,000 for treating 75 sero-positive patients in 245 consultations, resulting in an average revenue of FRw 4,053 (USD 12.8) per patient or FRw 1,241 (USD 3.9) per consultation.

Private practitioners generally reported difficulties in identifying utilization, cost, and financing information for sero-positive patients, citing as reasons that assumed HIV-positive status is not always confirmed, that HIV-related treatment and financial amounts are not reported separately, and that private practitioners do not submit monthly epidemiological reports to the MOH.

4.4 Households with Sero-positive Individuals

The proportion of health spending by people living with AIDS (PLWAs) in 1999 corresponds to 66 percent of all 1998 household health expenditures as reported in NHA. PLWA sought care mainly in public and church-owned health centers and public hospitals. Due to the limited access to sophisticated treatment, few AIDS patients are likely to seek care in the more expensive private sector, where high-priced antiretroviral therapy is administered. Overall household spending on health increases with access to expensive therapies.

The household survey of sero-positive individuals reveals that the impact of HIV/AIDS on quality of life is quite severe. Table 8 shows that 73 percent of households were either unable to meet the food needs of the household or met them with difficulty.

Table 8. Ability to Meet Basic Needs of Household

Category	Very Well	Well	With Difficulty	Unable
Food	6.4%	20.4%	55.8%	17.4%
Housing	9.8%	32.4%	34.6%	23.2%
Education	2.9%	11.6%	44.9%	40.6%
Clothing	1.7%	15.9%	62.6%	19.7%

Source: PHR, HIV/AIDS Household Survey of Sero-positive Individuals

Table 9 shows that 55 percent of the respondents reported at least one visit to a health facility in the month previous to their interview for the household survey. Almost 30 percent reported one visit, 14 percent two visits, and the remaining 11 percent three visits.

Table 9. Percent Distribution of Sample by Number of Visits

Number of Visits	Number of Persons	Percent
0	156	45%
1	105	30%
2	47	14%
3	40	11%
Total	**348**	**100%**

4.4.1 Utilization of Outpatient Services

The annual per capita use rate for the sample is approximately 10.92 outpatient visits (Table 10). This compares with a per capita use rate of 0.28 outpatient visits for the general population in health centers (SIS, 1998). Some interesting findings emerge from these results. While women formed a greater proportion of the sample, males used more health services per capita than females. Those living in urban areas used over ten times the number of visits as those in rural areas, probably reflecting both lack of access and the inability to pay for the latter. Those who were married used more health care than the widowed. The lowest use rates were for those who were either single or divorced. This could reflect health status as well as ability to pay. Not surprisingly, those in the highest expenditure quintile (5) had twice as many visits per capita compared to those in the lowest expenditure quintile (1). Similarly, the lowest level of health care use was found among those who had only primary education. While these findings cannot be generalized to the entire population that is HIV positive, it is clear that once individuals who are HIV positive decide to enroll with a health facility or counseling center, they become high users of health care services.

Table 10. Annual Per Capita Use Rate for Outpatient Visits

Category	Males	Females	Total Sample
Total Sample	12.68	10.61	10.92
Place of Residence			
Urban	13.06	34.89	26.45
Rural	6.00	2.34	2.45
Age Groups			
Less than 25	0.00	7.64	7.64
26-35	17.14	10.07	10.73
36-45	12.00	11.68	11.74
46 and older	9.60	11.43	10.67
Marital Status			
Single	11.08	6.83	7.61
Married	15.13	12.52	13.83
Widowed	11.08	11.54	11.51
Divorced/Separated	8.00	8.31	8.25
Co-Habitant	12.00	12.00	12.00
Expenditure Quintiles			
Quintile 1	4.00	8.63	8.19
Quintile 2	21.60	10.76	11.62
Quintile 3	9.33	8.89	8.95
Quintile 4	14.67	10.59	11.20
Quintile 5	18.86	15.75	16.45
Level of Education			
Primary	11.45	11.14	11.18
Post Primary	29.33	20.14	22.38
Secondary and Higher	18.00	15.60	17.00

4.4.2 Expenditures on Outpatient Health Services

Table 11 shows that annual per capita health expenditures by the respondents in the sample was USD 63, constituting a significant proportion of total household expenditures, and considerably higher than the average household per capita health expenditure of USD 12.7. Looking at the pattern on expenditures, we see that males not only use more health services per capita, they also spend 2.6 times as much as females. Those living in urban areas spent nearly three times per capita as those living in rural areas. Individuals in the highest expenditure quintile spent over 13 times that spent by individuals in the lowest expenditure quintile and those who were married spent three times as much per capita as those who were widowed. Thus, as with male utilization, those living in urban areas, those with higher incomes, and the married spent much more on a per capita basis for health services when ill.

Table 11. Annual Per Capita Expenditures in 1999

	Total FRw Per Capita	USD
Total Sample	**22,175**	**63**
Gender		
Females	17,724	51
Males	46,780	134
Place of Residence		**-**
Urban	15,821	45
Rural	5,384	15
Expenditure Quintiles	**FRw**	**USD**
Quintile 1	6,302	18
Quintile 2	5,645	16
Quintile 3	10,287	29
Quintile 4	13,379	38
Quintile 5	84,813	242
Age Groups		
Less than 25	17,534	50
26-35	17,960	51
36-45	27,145	78
46 and older	22,527	64
Marital Status		
Single	11,961	34
Married	63,735	182
Widowed	20,998	60
Divorced/Separated	4,950	14
Co-Habitant	4,013	11
Level of Education		
Primary	22,980	66
Post Primary	77,092	220
Secondary and Higher	53,640	153

Note: Exchange Rate USD 1 = FRw 350

4.4.3 Hospital Treatment and Cost of Sero-positive Patients in Rwanda

Hospitals did not report information on HIV-specific treatment and finances, though all hospitals in Rwanda provide care to PLWAs with opportunistic infections. Testing is not done on a regular basis. Thus, the majority of PLWAs hospitalized are assumed to be positive because of their overall health situation but their status is not always confirmed by an HIV-test. At the Central Hospital of Kigali, three physicians specialized in AIDS and provided care for sero-positive patients in 1999. The physicians in charge of sero-positive patients were interviewed, and patient registers of sero-positive patients were consulted to validate expert information.

Table 12 shows that PLWAs at the CHK hospital are medically classified into four categories, depending on the disease progression. Patients classified in the third and fourth disease category suffer from opportunistic infections, and are more likely to need hospitalization.

Table 12. Medical Classification of PLWAs at the CHK

Category	Symptoms	Place of Treatment
1	Assymptomatic	None
2	Weight loss < 10% of body weight, respiratory infections, etc.	Outpatient
3	Weight loss > 10% of body weight, diarrhea > 1 month, fever > 1 month, candidose, tuberculosis, etc.	Out and inpatient
4	Taxoplasmose cerebrale, pneumopathies, herpes, mycosis, candidosis, tuberculosis, lymphome, Kaposi sarcom, encephalopathie, etc.	Out and inpatient

Source: Interview with Dr. Abel Kagame, CHK, June 2000

Overall, the CHK has about 185,400 hospital nights available per year. In 1998, the CHK counted overall 515 beds, 24,459 hospitalizations, a 99 percent occupation rate, and 90,362 ambulatory consultations. In 1999, the CHK hospitalized about 800 patients in AIDS progression category 3, and about 1,7 00 in category 4, with approximately 125,000 nights hospitalized, occupying 67 percent of the overall hospital bed capacity. (See Table 13.) About 13 percent of the 800 patients in category 3 died during their hospital stay, and 18 percent among the 1,700 patients in category 4.

Table 13. Patient Load Of Sero-positive Patients At CHK in 1999

Disease Category	Number of Patients	Avg. Length of Stay	Nights Hospitalized	Percent of Available Nights Occupied by AIDS Patients
3	800	30	24,000	13
4	1,700	60	102,000	55
TOTAL	2,500	50	125,000	67

Source: Interview with Dr. Abel Kagame, CHK, June 2000

As the main referral hospital, CHK classifies patients into four price categories with respect to their socio-economic background. Applying the PLWA classification of four socio-economic groups reveals that, of the hospital's annual 2,500 AIDS hospitalizations, 1 percent are classified in the highest socio-economic group, 11 percent in the second group (middle class), and 88 percent of the hospital's AIDS patients are poor. The following tables describe patients' treatment, unit prices and total out-of-pocket health expenditure for a hospital stay when advanced in disease categories 3 and 4. Patients that are advanced in their third and fourth category of disease progression are very likely diagnosed with tuberculosis, and need to be hospitalized for about 50 days.

Table 14 shows that few patients are able to pay the higher prices to be hospitalized in the CHKs private department, where an overnight stay in a single room costs FRw 10,000 and in a two-bed room FRw 5,000. For NHA purposes it is assumed that overall, 25 high income group AIDS patients accessed the hospital private department in 1999. Of them, 10 had a single and 15 a two-bed room, resulting in per-patient payments of FRw 500,000 for 50 nights (at FRw 10,000 per night), and FRw 250,000 (at FRw 5,000 per night), respectively. High-income patients receive more extensive radiology, laboratory, and drugs at higher prices, resulting in higher total spending, compared to middle income and poor patients. Costs reported in Table 14 do not include expenditures on

antiretroviral therapy. This cost will be accounted for in section 4.5.1 on expenditures for outpatient care.

Table 14. Treatment and Average Cost of Hospitalized High Income AIDS Patients at CHK

Inpatient Service	Unit Costs in Single Room	Unit Costs in Two-Bedroom	Total Payments from 25 Patients per Year
Number of patients per year	10 patients	15 patients	From 25 patients
Overnight stay 50 nights	FRw 10,000 per night	FRw 5,000 per night	FRw 8,750,000
Drugs (excl. tripel therapy)	100,000 per stay	100,000 per stay	FRw 2,500,000
Radiology image	FRw 5,000 per stay	FRw 5,000 per stay	FRw 125,000
Total cost for hospital stay	FRw 605,000 per patient per stay	FRw 355,000 per patient per stay	FRw 11,375,000 for 25 patients

Source: Price information from CHK accounting department, July 2000

Table 15 shows that on average, a middle class patient will have to pay about FRw 86,850 (USD 234) for a 50 day hospitalization at a referral hospital. During the hospital stay, blood is usually taken once and sputum three times. Patients hospitalized are X-rayed once. There is a daily physician consultation of about seven minutes per visit, and a nurse will spend about 40 minutes per day per sero-positive patient. Drug therapy depends on a patient's need, ability to pay, and access to financial support systems. Patients usually receive antibiotic treatment for one week, paracetamol, 1 1/2 liter of perfusion per day and other drugs.

Table 15. Treatment and Average Cost of Hospitalized Middle Income AIDS Patients in CHK

Services per Hospitalization	Use per Hospitalization	Unit Cost	Total Cost per Hospitalization
Overnight stays	50	FRw 500	FRw 25,000
Radiology image	1	FRw 5,000	FRw 5,000
Physician consultation 7 min.	50	FRw 33	FRw 1,650
Nurse time 40 min.	50	FRw 104	FRw 5,200
Drug treatment	Avg. estimate		FRw 50,000
Total cost for hospital stay			FRw 86,850 per patient

Source: Interview with Dr. Abel Kagame, CHK, June 2000

Poor patients hospitalized will receive minimal treatment. The hospital's social department financially supports poor patients' treatment bill. During the month of July 1999, 97 patients were counted in one of the hospital's internal medicine wards, where lowest price paying patients are hospitalized. Of these 97 patients, 60 received an HIV test (62 percent), and among them, 27 patients (45 percent) tested positive. The out-of-pocket amount for poor patients will be FRw 3,000 for 10 hospital days including drugs, diagnostic tests and care. The poor contribute on average FRw 15,000 for drugs and their 50 days hospital stay (Table 16). The costs of about FRw 70,000 (USD 189) not paid for by the poor are covered by the hospital with donor funds. Once discharged, patients will continue to have above average out-of-pocket health care costs.

Table 16. Total Patient Revenue from Hospitalized Patients in 1999

Socio-Economic Category	Number of Patients	Ave. Patient Payment per Hospitalization	Total Patient Payments for Hospitalization
1) High	25	FRw 455,000	FRw 11,375,000
2) Middle	275	FRw 86,850	FRw 23,883,750
3) Poor	2,200	FRw 15,000	FRw 33,000,000
Total	2,500		FRw 68,258,750

4.4.4 Outpatient AIDS Care for Symptoms and Opportunistic Infections

As indicated in Table 17, as patients are required to pay out-of-pocket, patients from different socio-economic backgrounds have access to different outpatient care services. The following section investigates the out-of-pocket costs for patients receiving antiretroviral drug therapy. A more detailed household survey describes use and expenditures for outpatient care for low-income groups (Nandakumar, 2000). Household survey results reveal that PLWA's in the two highest expenditure quintiles reported annual per capita expenditures of FRw 13,379 for outpatient care. This per capita value will be used as an estimate for the middle-income, group's per capita outpatient spending. Similarly, for group three, household survey's lowest expenditure quintile information will be used to determine annual per capita outpatient spending. This amount was FRw 6,302 per capita per year.

Table 17. Out-of-Pocket Expenditures for AIDS Patients

Group	Place of Treatment	Number of PLWAs	% of PLWAs Who Use Treatment	Average Price Paid per Patient Episode	Total Out-of-Pocket Payment by PLWAs per Year FRw	In Percent of Total Patient Spending
1.	**Outpatient**: Physicians in referral hospitals and private sector	About 202 patients (0.05% of all PLWA)	100%	FRw 2,244,000	FRw 453,288,000	15.4%
	Inpatient: Physicians in referral hospitals and private sector	About 202 patients (0.05% of all PLWA)	25 of 202 patients (12%)	FRw 455,000 per hospitalization	FRw 11,375,000	0.4%
2.	**Outpatient**: Physicians in referral hospitals and private sector	About 40,000 patients (10% of all PLWA)	100%	FRw 13,379 annual per capita spending	FRw 535,160,000	18.2%
	Inpatient: Physicians in referral hospitals and private sector	About 40,000 patients (10% of all PLWA)	275 of 40,000 patients (0.7%)	FRw 86,850 per hospitalization	FRw 23,883,750	0.8%
3.	**Outpatient**: Nurses in public and church-owned health centers	About 300,000 PLWA (about 75% of all PLWA)	100%	FRw 6,302 annual per capita spending	FRw 1,890,600,000	64.1%
	Inpatient: Physicians in district and referral hospitals	About 300,000 PLWA (about 75% of all PLWA)	2,200 of 300,000 patients (0.7%)	FRw 15,000	FRw 33,000,000	1.1%
4.	Traditional healers	Unknown number, estimate of +50,000 PLWA	Not known	Not known	Not known	
			TOTAL Patient Revenue		**FRw 2,947,306,750**	**100%**

4.4.5 Antiretroviral Drug Treatment

Antiretroviral drug therapy was introduced in Rwanda in 1999. Patient access to treatment is limited by ability to pay high out-of-pocket costs. Since January 1999, 202 PLWAs have received antiretroviral therapy. The following table shows that over a one-year period, a patient receiving antiretroviral therapy who is not hospitalized and sees his physician monthly will spend about FRw 2,244,000 (USD 6,065) on his treatment. In addition to drug costs, patients will have to pay for laboratory tests, mounting to FRw 72,000 per patient for a period of six months, and about FRw 3,000 per consultation in private practice. Table 18 shows the total out-of-pocket spending of all 202 PLWAs who had access to antiretroviral treatment.

Table 18. Out-of-Pocket Expenditure for Antiretroviral Therapy in 2000

Annual Antiretroviral Treatment	Out-of-Pocket Costs per Patient per Year FRw	Total Out-of-Pocket Costs for 202 PWLA per Year in FRw	Total Out-of-Pocket Costs for 202 PWLA per Year in USD	Percent Distribution
Antiretroviral drug	FRw 2,064,000	FRw 416,928,000	USD 1,126,756	92%
Laboratory tests	FRw 144,000	FRw 29,088,000	USD 78,578	6%
Physician consultations	FRw 36,000	FRw 7,272,000	USD 19,594	2%
Total Treatment Cost	FRw 2,244,000	FRw 453,288,000	USD 1,225,130	100%

Source: Interview with Dr. Abel Kagame, CHK, June 2000

Note: Exchange Rate: USD 1 = FRw 370 in mid-year 2000

Of these 202 PLWAs with access to antiretroviral therapy, 148 received their drugs at public referral hospitals (73 percent), whereas the remaining 54 were treated in private physician clinics (27 percent). Thus, of the overall patient out-of-pocket amount of FRw 453,288,000 (USD 1,225,130) shown in the above table, 73 percent is spent in referral hospitals, corresponding to an annual total amount of FRw 330,900,240 (USD 894,345). The remaining 27 percent of PLWAs pay annually FRw 122,387,760 (USD 330,785) to private practitioners for antiretroviral drug treatment.

5. Conclusions

NHA points to several weaknesses in the equity and efficiency of HIV/AIDS funding:

- Approximately 10 percent of all health monies were used to target prevention and treatment of the HIV virus in 1999, an illness affecting at least 11 percent of the adult population.

- Of total funds that entered the health sector targeted for HIV/AIDS in 1999, approximately 6.5 percent went to non-treatment related and prevention activities, 14.3 percent was used for antiretroviral treatment (for 202 patients), and the remaining 79 percent was used to pay for treatment of symptoms and related infections (for about 400,000 patients).

- The household contribution to total HIV/AIDS is disproportionately high, representing 93.5 percent of all AIDS spending in 1999. Donors contributed 5.6 and the GOR 1 percent of spending on HIV/AIDS.

- In the absence of insurance coverage for the treatment of symptoms and opportunistic infections caused by the virus, households' access to care is determined by their ability to pay user fees. Treatment with antiretroviral therapy was limited to the 202 PLWAs of the highest income groups in 1999.

- The availability of HIV/AIDS utilization and finance data is limited by the following two facts:

  - Few health facilities provide HIV testing, inform patients about test results, and collect HIV/AIDS-related utilization and financial information in an accurate documentation system.

  - There is a lack of a comprehensive financial management system within the MOH and its programs, which would allow planning, management and evaluation of financial resources invested in alleviating the HIV/AIDS situation in Rwanda.

6. Recommendations

Researchers provide two sets of recommendations as a result of this exercise. The first set of recommendations is process oriented and will be useful for future replications of such satellite accounts. The second set is more policy oriented, with policy implications identified from the results.

6.1 Process Oriented Recommendations for Future Replication

- **Availability of Data:** A pressing need for data and information systems exists in almost all the developing countries. Availability of quality, reliable and valid data is at the core of the NHA exercise. Data management systems and tracking systems have to be instituted which will facilitate monitoring of the flow of the funds from one entity to the other. The need for data is universal for the NHA exercise and any evidence based decision-making process, hence implementing such systems is the first step.

- **Improvement in the Accounting Systems:** Often, developing countries tend to have archaic accounting systems and need upgrading. Conventional accounting and budget systems need to be developed at the national level with standardized definitions.

- **Capacity Building:**

  - Upgrading and implementing sophisticated accounting and management information systems, gives rise to a need for trained personnel to institute and maintain data systems, develop and maintain databases, and to conduct analysis. To fulfill such need, training programs for the personnel have to designed and coordinated.

  - Local capacity has to be built for data analysis, and for translating quantitative findings into a policy context (i.e., interpreting the results for policy action).

- **Institutionalization of NHA:** The satellite accounts that are generated rely extensively on the NHA framework, therefore it is imperative the NHA is conducted on an annual basis. The three basic steps for the institutionalization are: 1) allocation of resources/budget, 2) allocation of personnel, preferably interdisciplinary team from different ministries, and 3) an official place for the NHA team to operate from.

- **Coordination with Donors:** A need exists to implement a system that will coordinate donor contributions more effectively. One of the biggest difficulties faced during the data collection process was estimating the donor amounts. Some coordination at the MOH that tracks the donor amounts and the activities they finance would facilitate the NHA exercise considerably. This recommendation also has policy implications.

6.2 General Policy Recommendations

The overall NHA findings can be interpreted in the policy context as follows:

- **Accessibility and Equity of Care:** The results imply a wide disparity between those who can access care easily and those who cannot. This underlines the need for a policy that enhances accessibility to care for all citizens, including those who live in remote areas and those in lower income groups. Such a policy should also take into account ways to improve physical accessibility to care and make it more equitable. Currently, almost 14 percent of AIDS expenditures are incurred on anti-retroviral treatment for only 202 AIDS patients. Policies need to be implemented that will narrow the gap between those who can access such care and those who cannot.

- **Better Resource Allocation:** Improve resource allocation for the health sector nationally as well as with in the health sector:

  - Increase allocation for preventive activities;
  - Implement information , education, and communication programs; and
  - Identify most cost effective interventions and introduce them.

- **Coordination with Donors:** Better coordination between the MOH and donors will help MOH to avoid replication of activities by different donors and implementation of its own programs only where donor involvement is lacking.

Annex A: Methodology

Estimating Expenditures on HIV/AIDS in Rwanda Using a National Health Accounts Framework: Methodology and Challenges

by A.K. Nandakumar
Laurel Hatt
Manjiri Bhawalkar

Estimating the sources and end uses of expenditures on HIV/AIDS is essential to improving the allocation of resources for combating the epidemic. The challenges of collecting this type of information, however, are not to be underestimated. This memo will outline a proposed methodology for adapting the National Health Accounts framework to estimate sources and uses of funding for HIV/AIDS in Rwanda.

1. Aims and Objectives

Under this scope of work, we aim to:

- identify current gaps in information on the sources and uses of funding for HIV/AIDS-related activities in Rwanda;
- determine, in conjunction with on-site experts, the definition of HIV/AIDS services to be considered in this study;
- train individuals in Rwanda to collect and analyze HIV/AIDS funding sources and expenditures using the NHA methodology;
- inventory the agencies and organizations involved in HIV/AIDS activities;
- utilize a national health accounts (NHA) framework to quantify and evaluate the existing funding sources for and expenditures on the prevention, management, and treatment of HIV/AIDS in Rwanda; and
- make recommendations for ongoing data collection and analysis that will build assessing expenditures on HIV/AIDS into the regular NHA accounts activity.

2. Background on HIV/AIDS in Rwanda

UNAIDS estimated in December 1998 that 33.4 million people around the world were living with HIV/AIDS.[1] Of these, almost 90 percent live in sub-Saharan Africa and the developing countries of Asia**.**

[1]UNAIDS, AIDS Epidemic Update, December 1998.

In Rwanda, as in the rest of sub-Saharan Africa, the AIDS epidemic poses a severe threat to human development.

The first AIDS cases in Rwanda were identified in 1983.[2] Since then, the epidemic has spread rapidly and widely. Currently, almost 13 percent of the adult population are infected with the virus.[3] Prevalence rates among pregnant women are even higher. In 1996, 28 percent of pregnant women in urban antenatal clinics tested positive for HIV.[4] Although prevalence rates in urban areas have remained quite high since the late 1980s, in rural areas there has been a rapid and troubling increase in prevalence from 1.3 percent in 1986 to 10.8 percent in 1997.[5] Even more sobering, an estimated 120,000 children had been orphaned by the disease by 1997.[6]

Unlike many other countries in sub-Saharan Africa, Rwanda officially and openly recognized the HIV/AIDS problem quite early on. The National AIDS Control Programme (*Programme National de Lutte Contre le SIDA*, or PNLS) was established in 1987, and a surveillance system was set up in 1989 to monitor the epidemic. However, the period of war, genocide, and population displacement in the mid 1990s severely disrupted these activities. Between 500,000 and one million people were killed during the ethnic war in 1994, and nearly one-third of the population was displaced. Among other tragic consequences, Rwanda lost much qualified manpower that had managed and implemented social programs.[7]

In 1996, the surveillance system was reestablished, and several sentinel posts were set up in antenatal clinics to collect data on the sero-prevalence rate among pregnant women. A national survey was implemented in 1997 by the PNLS to determine the prevalence of HIV in the population, assess demographic variations in the HIV infection rates, assess the effect of migration on the epidemiological profile of HIV infection, and provide postwar baseline data for planning HIV/AIDS control strategies. The PNLS was reorganized and decentralized in 1997. A new, multisectoral strategy was drafted in 1998, involving NGOs and other private and public organizations in the struggle to control the epidemic.

The priorities of the most recent PNLS strategic plan include, among other goals, reducing STD prevalence in the population; reducing the number of people who depend on sex for their livelihood; providing more counseling and testing services in district hospitals; incorporating HIV/AIDS education into curricula for all ages; mobilizing NGOs and community-based organizations to implement

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[2]Republique Rwandaise, Ministry of Health, Programme National de Lutte Contre le SIDA. October 1998. *The Rwanda National HIV/STD/AIDS Strategic Plan Framework for the MTPIII Period 1998-2001.*
[3]USAID and Family Health International. April 1999. *Rwanda and HIV/AIDS.*
[4]*Ibid*.
[5]Republique Rwandaise, Ministry of Health, Programme National de Lutte Contre le SIDA. October 1998. *The Rwanda National HIV/STD/AIDS Strategic Plan Framework for the MTPIII Period 1998-2001.*
[6]UNAIDS and WHO. June 1998. *Epidemiological Fact Sheet on HIV/AIDS and Sexually Transmitted Diseases: Rwanda.*
[7]World Bank. June 19, 1998. *Rwanda Poverty Note, Rebuilding an Equitable Society: Poverty and Poverty Reduction after the Genocide.* Report No. 17792-RW, p. vi.

STD/HIV/AIDS-prevention activities; reducing mother-to-child transmissions; and promoting cultural norms that reduce risk to HIV transmissions.

Given the rapid spread of the disease in Rwanda, especially to rural areas, and the lack of reliable financial data on the expenditures on HIV/AIDS, including the economic burden to households, the current exercise will provide essential information to policymakers and providers as they plan for future HIV/AIDS prevention, management, and treatment efforts.

3. Recent Work on Estimating HIV/AIDS-Related Expenditures

In preparation for this new data collection effort, we reviewed existing literature on estimating HIV/AIDS-related expenditures. Most studies fell into one of three categories: 1) estimates of public expenditures on HIV/AIDS that relied primarily on secondary data; 2) studies of the socio-economic impact of HIV/AIDS on households; and 3) studies of the cost-effectiveness of particular interventions. Below we will briefly discuss several studies in the first category as they have the most relevance to the current effort.

A project was undertaken by the UNAIDS Programme, in conjunction with the Harvard School of Public Health, to track the level and flow of resources for the response to HIV/AIDS in developing countries and countries in transition, for the years 1996-97. Relying predominantly on mailed questionnaires, the researchers requested information on HIV/AIDS expenditures from sixty-four developing countries and countries in transition, along with official development assistance agencies around the world, and several multilateral funding organizations. Although the study provided useful, comparable cross-national data, researchers were unable to obtain data from all of the funding agencies queried. In some cases, significant discrepancies emerged between the amounts international organizations claimed to have donated and the amounts national governments claimed to have received. Data on expenditures in the private sector, including household, employer, and NGO expenditures, were not captured by the study.

Shepard et al.[8] have described a different methodology for estimating HIV/AIDS expenditures, an approach that has been implemented in five developing countries. Data were collected through review of financial reports on public expenditures and government budgets. In addition, workshops were held with local experts to obtain their estimates of treatment costs for a person with HIV/AIDS; these costs were then multiplied by the number of infected individuals to estimate national treatment costs. The percentage breakdown of private versus public expenditures was taken directly from an analysis of total health expenditures around the world, conducted by Murray, Govindaraj, and Musgrove using 1990 data.[9] However, subsequent studies have shown that this global analysis greatly underestimated private expenditures on health, especially for particular types of health interventions. The accuracy of Shepard's results for private sector HIV/AIDS expenditures is therefore questionable.

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[8]Donald Shepard et al. 1998. "Levels and determinants of expenditures on HIV/AIDS in five developing countries," in *Confronting AIDS: Evidence from the developing world: Selected background papers.* New York: Oxford University Press for the World Bank.

[9]C.J.L. Murray, R. Govindaraj, and P. Musgrove, "National Health Expenditures: A Global Analysis," in *Bulletin of the WHO,* 72:623-37.

In general, the studies had several drawbacks, which we hope to address in our methodology. A comprehensive picture of *total* expenditures on HIV/AIDS has not yet been drawn. These studies have looked at different pieces of the picture, such as *public* expenditures, or expenditures in one region of a country. Some studies have focused on expenditures without demonstrating linkages to the original funding sources. Most notably, there has been little analysis of household or private sector expenditures.

However, a methodology for comprehensively estimating HIV/AIDS expenditures was put forward at a recent SIDALAC (Regional Initiative for HIV/AIDS Control in Latin America and the Caribbean) conference in Mexico City.[10] In many ways similar to the National Health Accounts methodology (described in further detail below), the SIDALAC methodology recommends constructing several matrices to show how public and private financial resources flow from funding sources, to "agents" or intermediaries (such as a provincial Ministry of Health), and finally to end uses (such as a hospital providing HIV testing). The methodology also clearly defined the boundaries of HIV/AIDS-related expenditures—what exactly would be considered HIV/AIDS-related and what expenditures would be excluded. Though the methodology would still benefit from further detail as to *how* the data would be collected in the field, we found many aspects useful as we developed our own methodology.

The Partnerships for Health Reform (PHR) project sponsored by USAID is currently working in Rwanda on the development of National Health Accounts (NHA). Through its Regional Initiatives on National Health Accounts project, PHR has also organized workshops to encourage the use of a common NHA methodology across several participating countries. The NHA projects in these nations help their governments track overall source and uses of health monies, as funding is transferred from donor agencies, government ministries, private firms and households, through intermediaries, to various end uses. We propose to utilize the National Health Accounts framework to estimate sources and uses of funds for HIV/AIDS specifically. This represents a new application of the NHA methodology in that it attempts to estimate program-specific health expenditures, as opposed to total national health expenditures.

4. Our Proposal: Utilize the National Health Accounts Methodology

The National Health Accounts (NHA) methodology is an approach to estimating funding flows in national health expenditures**.** It emphasizes *systematic* analysis: the development of standardized definitions of the uses of funds, and the tracking of flows of funds from sources through intermediaries to end uses. It attempts to account for all expenditures by looking not only at public sector financing, but also at the private sector, including households, firms, and non-governmental organizations. The methodology also avoids double-counting funds, since not only sources and end uses are analyzed, but also the intermediaries through which the funding is channeled to providers. It is especially useful in developing countries, which tend to have pluralistic health care systems where finance comes from multiple sources and where providers may receive payment from more than one source.[11]

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[10] SIDALAC (Regional Initiative for HIV/AIDS Control in Latin America and the Caribbean). April 1999. *National Spending on HIV/AIDS*, paper presented at the Mexican Foundation for Health Conference.

[11] Peter Berman. 1996. *National Health Accounts in Developing Countries: Appropriate Methods and Recent Applications*. Boston, MA: Harvard University.

This project will utilize the NHA methodology to estimate expenditures on HIV/AIDS in Rwanda over a one-year period. The NHA methodology will attempt to address some of the weaknesses of the studies described above. For example, unlike the UNAIDS/Harvard project described above that relied only on mailed questionnaires, we intend to utilize survey information, interviews with donors and government officials, and on-site reviews of records. By "triangulating" our data sources—comparing data obtained from different sources and accounting for discrepancies—we will ensure greater reliability and validity in the data. We will look beyond official HIV/AIDS-specific projects funded by the Ministry of Health to projects under other ministries, such as Education and Social Welfare. Most importantly, in Rwanda we will utilize a primary data collection effort to capture private expenditures from firms, households, and NGOs. Questionnaires will be sent to hospitals and insurance companies, and an in-person survey on household expenditures will be conducted.

The study will provide actual expenditure data as well as other sources of data on HIV/AIDS spending. In addition, one of the most potentially useful results of our study will be a comprehensive list of all government and non-governmental agencies that both finance and/or provide services relating to HIV/AIDS in Rwanda. Such a list is currently unavailable, which makes even local, informal attempts to estimate expenditures very challenging. The UNAIDS program in Rwanda is presently working to coordinate the UN agencies who are active in HIV/AIDS there, as well as to document best practices in the country. Our enumeration of agencies should prove useful to them as well.

We also intend to draw upon the strengths of the SIDALAC methodology. We will share our methodology with the SIDALAC group in order to contribute to a better understanding of the applicability of the NHA framework to analyzing expenditures by disease category. Our work will be done in collaboration with the country offices of UNAIDS and the government of Rwanda. Lists of contacts and data sources, methodology, and questionnaires, will be developed and reviewed jointly to assure that these will be used on an ongoing basis by those institutions. We will also discuss with these institutions the results of our research, in the hopes that they may spur concrete policy applications in each country.

5. Potential Policy Applications

The purpose of collecting, analyzing, and presenting data on HIV/AIDS expenditures is to provide policymakers with the tools to make more effective policy decisions in the future**.** National health accounts estimates can significantly influence policy**.** The actual emphasis of spending—whether on drugs, ambulatory clinics, counseling, or other end uses—becomes clearly visible, and changes can more easily be made to optimize the allocation of funds to different functions**.**

Given the limited funding and time frame for this project, we cannot ensure that the results of this data collection effort will translate into direct policy changes. Developing and facilitating concrete policy applications is a project in and of itself. However, we foresee the following as potential uses to which the data from this project could be put. In Rwanda, according to the PNLS Strategic Plan for the 1998-2001 period, the PNLS intends to:

1. Coordinate, monitor, and evaluate HIV prevention activities.
2. Provide epidemiological surveillance for STDs/HIV.
3. Provide advocacy and resource mobilization.

The NHA results from this project will equip the Rwandan government and others working on HIV/AIDS issues with valuable knowledge that ties directly into this strategic plan, knowledge which could inform the discussion of and assist in the development of policies to address points one and three in particular. Some specific examples might include:

- quantifying and highlighting expenditures on HIV/AIDS by households;
- identifying unmet needs for HIV/AIDS treatment and prevention services in households;
- determining the extent of Rwanda's dependence on external assistance for HIV/AIDS-related activities;
- assisting the PNLS in program planning for future activities;
- assisting the Ministry of Health, other government agencies, and donor organizations in planning HIV/AIDS funding allocations for Rwanda;
- facilitating dialogue between the Government of Rwanda and donors on the extent of funding for HIV/AIDS activities.

In addition, the inventory of agencies and organizations in Rwanda that spend money on HIV/AIDS activities, and the list of sources of data on these expenditures, will help policymakers and aid organizations keep track of all of the agents involved in HIV/AIDS programming as well as gather data on their expenditures. This should facilitate a more coordinated national HIV/AIDS effort in the future.

6. Limitations and Challenges

We should note several challenges that we will face in this project and our planned efforts to overcome these challenges.

- *Inventory:* Currently, neither the Rwandan government nor the on-site UNAIDS program has a comprehensive list of all the agencies and organizations working on HIV/AIDS activities. Constructing this list will be our first priority, and will require an intensive initial research effort.

- *Data collection:* Since this type of analysis has never been done before to this level of detail, we may face difficulties in obtaining data, especially in the private sector. Budgets may not be broken down by the type of activity being funded (i.e., in many cases there will not be line items for HIV/AIDS expenditures and substantial estimation will have to be done). Innovative efforts will be needed to fill data gaps, and any non-availability of data might impair the level of detail to which the analysis can be conducted.

- *Allocation of expenditures:* Disaggregation of costs among HIV/AIDS expenditures and other health expenditures will pose a significant challenge. Many organizations do not separate out expenditures by disease categories. We will have to rely greatly on expert advice on site to pro-rate health expenditures appropriately.

- *Proxy conditions:* Since many HIV positive individuals are unaware that they are infected, it might be

helpful to look at treatment expenditures on "proxy" conditions for HIV, such as tuberculosis, persistent diarrhea, or pneumonia. However, determining which proxy conditions to consider, as well as the rates of actual HIV infection among those being treated for these proxy conditions, will require the input of local experts. There may be a significant amount of statistical "noise" that blurs the accuracy of such estimates. Appropriately separating out expenditures on these proxies versus expenditures on HIV/AIDS may prove unfeasible.

- *Institutionalization:* Ideally, this type of data collection effort would be institutionalized within the Rwandan government to be implemented on an ongoing basis. However, under this scope of work, we do not have the funds to produce a plan for, or ensure the institutionalization of, an HIV/AIDS satellite NHA account. Institutionalization can only be considered within the context of other existing NHA activities. For example, in Rwanda, an interministerial group already exists which is working jointly on the NHA exercise.

- *Budgetary limitations:* The small budget for this project places limitations on our scope of work. In Rwanda, we will be able to work under the umbrella of the larger PHR NHA activity as well as the PHR prepayment project. That activity will be able to offset *some* of the costs of the primary data collection, the most expensive of which is collection of household data through a survey.

7. List of Deliverables

The following deliverables will be produced under this contract:

- *Adapted NHA tools* (methodology and spreadsheet matrices) for estimating HIV/AIDS expenditures;
- *Trained individuals* in Rwanda capable of collecting and analyzing HIV/AIDS funding sources and expenditures using the NHA methodology; and
- *Country report* on funding for and expenditures on HIV/AIDS in Rwanda, including an inventory of HIV/AIDS related programs and data sources, and recommendations for future use of the National Health Accounts methodology to estimate HIV/AIDS expenditures. We will integrate results from similar NHA research in the Dominican Republic and Honduras, provided they are available.

8. Methodology

Drawing both on the SIDALAC methodology paper and the traditional NHA methodology, we propose a four-phase process involving: 1) the identification of information sources; 2) preparation of instruments for data collection; 3) data collection; and 4) analysis and dissemination of results.

8.1 Phase One: Identification and Inventory of Information Sources

Before data collection is begun, an exhaustive inventory of public and private sector organizations and agencies involved in HIV/AIDS-related activities will be made. First, however, a definition of what constitutes "HIV/AIDS-related activities" must be established in order to consistently disaggregate HIV/AIDS expenditures from other expenditures. Both the definition and inventory processes will involve consultations and brainstorming with the National AIDS Program and other local expert groups.

8.2 Definition of HIV/AIDS Expenditures

For this project, we define HIV/AIDS expenditures as those that have *direct impact on the prevention, management, and treatment of HIV/AIDS.* A preliminary list of the types of activities that might fall under "HIV/AIDS-related activities" is included in the table below. However, the final list of appropriately included activities will need to be discussed with on-site staff in Rwanda when the project is initiated; only they will be able to accurately determine what definitions makes sense in the local context. In addition, interviews with local experts and government officials will be necessary to determine the appropriate desegregation of funds applied to multiple end uses.

Table A1. Preliminary Definition of HIV/AIDS-Related Activities[12]

1) Prevention and Promotion Activities
Awareness raising and behavior change communications • Mass media (radio, TV, newspapers, magazines, videos, posters, comics, public announcements) • Peer education • Primary school, secondary school, university, and technical school educational campaigns • One-on-one communication • Small group communication • Educating target groups (prostitutes, teens, homosexual males)
Safe sex campaigns • Free condom distribution • Condom social marketing • Safe sex workshops
Preventing perinatal transmission • HIV testing and counseling for pregnant women • Provision of anti-retroviral drugs to infected women, during pregnancy and at the time of delivery • Breast feeding interventions
HIV testing and counseling • Anonymous/confidential testing • Referrals for care • Trained counseling
STD management • Testing • Prophylactic or syndromic management • Counseling • Referral • Treatment

[12]This draws upon an informal list prepared by staff at USAID; the methodology paper produced by SIDALAC, "National Spending on HIV/AIDS," presented at the Mexican Foundation for Health Conference, Mexico City, April 1999, and conversations with on-site experts.

• Drugs
Blood screening programs • Screening donated blood • Notification/counseling to infected donors • Test kits
Universal precautions for infection control • Ensuring safe injections • Protecting health workers (including traditional birth attendants) from accidental infection
2) Management
Palliative care • Home-based care • Psychosocial support programs
Surveillance • Epidemiological data collection and analysis • Training data collectors
Blood Screening • Referrals to care • Counseling to infected donors
Family supports • Programs to care for children orphaned by AIDS • Programs to support families with infected members
3) Treatment
Hospital and clinic expenditures • Inpatient stays, • Outpatient consultations, • Psychiatric services, • Nutrition services, • Laboratory and radiology diagnostic services, and • Anti-retroviral and other pharmaceutical treatments
Counseling
Alternative/traditional therapies

Given the complexity of the data collection in this study and the availability of data, we propose to focus exclusively on expenditures that are *directly* HIV/AIDS-related. Expenditures that have only an *indirect* relationship to HIV/AIDS work, such as school fees, will not be considered in this activity. However, we are also considering using proxy conditions (such as tuberculosis or pneumonia) as indicators of HIV/AIDS. Where the treatment or prevention of these diseases has related expenditure information, it may be possible to take a proportion of these costs into account in the NHA. However, researchers working on a similar problem in Botswana determined that the level of "noise" was so great as to cause the analysis to be statistically invalid. Therefore, in the initial phases of the project we will have to assess

the feasibility of using proxies in Rwanda via discussions with on-site experts. We have also requested advice on the issue of proxies from other researchers who have implemented household surveys on HIV/AIDS.

8.3 Inventory of Entities Involved in HIV/AIDS-Related Activities

Next, an exhaustive inventory of public and private sector organizations and agencies involved in HIV/AIDS-related activities will be made. These organizations will be categorized as *sources* of financing, *intermediaries***,** and service *providers* based on the NHA classification of flows of funds, as outlined below. Note that we have organized these sources, intermediaries, and end uses by whether they are in the public sector or private sector; however, funds may of course flow *between* the public and the private sectors.

Table A2. Categorization of Public Sector Entities Involved in HIV/AIDS-Related Activities

Sources of Financing • Ministry of Finance • International donors
Financing Intermediaries • Ministry of Health • Program National de Lutte Contre le SIDA (PNLS) • Other government ministries and institutions, including the Department of Education, Department of Social Welfare, Department of Agriculture, and others (appropriate ministries and institutions will be determined through on-site discussions) • Provincial departments of health
Providers • Public health facilities (primary, secondary, and tertiary) • Public blood banks

Table A3. Categorization of Private Sector Entities Involved in HIV/AIDS-Related Activities

Sources of Financing • Household out-of-pocket spending • Private firms • NGOs
Financing Intermediaries • Households • Insurance Schemes • NGOs
Providers • NGOs • Pharmacies • Private health facilities (primary, secondary and tertiary)

- Private blood banks
- Other private providers, including private firms and companies

In particular, generating the list of local NGOs and firms involved in HIV/AIDS activities will be challenging. Some organizations may have an explicit HIV/AIDS focus and others may have a broader focus. Government and hospital officials may be able to provide some contacts, and international charitable organizations may have local branches. Other organizations may be found through word of mouth. Below is a list of the types of organizations that are likely to be involved in HIV/AIDS work:

Table A4: NGOs and Private Sector Organizations Potentially Providing HIV/AIDS-Related Services

- Support groups and counseling centers
- Clubs/Associations
- Churches
- Family planning clinics
- Retailers/Wholesalers
- Schools
- Microfinance institutions
- Funeral societies

8.4 Inventory of Data Sources

After creating an inventory of the organizations involved in HIV/AIDS-related activities, an inventory of information sources will be made. Possible information sources are listed in Table 5.

Table A5. Potential Information Sources

Information on sources of financing

- Published financial reports from bilateral donor organizations
- published financial reports from the UN and other multilateral agencies
- surveys sent to donor organizations
- interviews with donor organizations
- national and local government budgets
- interviews with staff at relevant government ministries
- interviews with staff at large NGOs

Information on financing intermediaries • national and local government budgets • interviews with staff at relevant government ministries • surveys sent to NGOs • surveys sent to insurance companies • household surveys
Information on providers • survey of large hospitals and sample of primary health care clinics • interviews with hospital and clinic personnel • discussions with experts in the field • surveys sent to NGOs and large employers • pharmaceutical company records • household surveys • interviews with advocacy groups

8.5 Phase 2. Preparation of Data Collection Instruments

In Rwanda, as part of the broader NHA and prepayment work, surveys are already being developed for NGOs, insurance companies, hospitals, large employers, government ministries, and pharmaceutical companies. Our staff will work in collaboration with on-site experts to review existing questionnaires on HIV/AIDS and health expenditures, from sources such as WHO, UNDP, and Macro International. We will then incorporate HIV/AIDS-specific questions into our surveys.

A household survey instrument has already been developed and tested for collecting data on health and development in Tanzania.[13] Several questions on demographics, socio-economics, health status, health care utilization, and spending will be culled for use in surveying HIV-positive individuals. An HIV/AIDS module from the most recent DHS survey may also prove useful. Additionally, an AIDS patient association in Butare, Rwanda has offered to assist us in survey pilot testing.

In general, questions will likely address the number of times family members visited a health provider to get treatment for certain symptoms; the number and cost of medications purchased, including traditional medications; the number of days spent in the hospital; the number of days of work missed; and methods the family used to replace lost income, including taking on more debt and selling possessions. We are committed to sensitive, non-intrusive interviewing, and plan to test the questionnaire on a small sample of patients before implementing the survey on a larger scale to ensure that questions are phrased in the most sensitive manner possible.

[13]Kagera Health and Development Survey, Household Questionnaire, Wave 2.

8.6 Phase 3: Data Collection Activities

This section outlines the steps that will be followed to obtain expenditure data in Rwanda.

- **Obtain data on expenditures for HIV/AIDS-related programs from bilateral and multilateral aid organizations, and compare with country-reported receipt of bilateral funding.**

Under the NHA activity, reports on donor expenditures are being requested both from the donor agencies and from the Rwandan government. We will add a section on HIV/AIDS-specific assistance. Significant double-checking may be necessary to account for differences between their reported amounts. As much detail as possible about the end uses of the funding shall be requested, and interviews with representatives of donor agencies and government officials will be held to ensure a thorough analysis.

- **Obtain reports of government expenditures on HIV/AIDS-related activities. Review these reports, and interview national and local officials.**

The research team will contact appropriate Ministries in Rwanda to request information on national expenditures on HIV/AIDS-related programs. Determining government spending in the National AIDS Program will be relatively straightforward. Government spending related to HIV/AIDS work in other sectors (for instance, under education budgets, women's programs, or social welfare programs to mitigate the impact of HIV/AIDS), as well as spending at the municipal or district level, will require more in-depth analysis. It is likely that officially reported expenditures will underestimate the total resources devoted to HIV/AIDS-related work in the nation; the UNAIDS/Harvard study referred to above estimated that their report captured about two-thirds of all expenditures. Interviews with national and local officials may be necessary to capture under-reported activities. In many cases, national and local officials will have to estimate the proportion of integrated programs that should be considered HIV/AIDS-related.

Budgets will be reviewed both to determine the amounts of HIV/AIDS funding and to determine the particular agencies and organizations that are the recipients of such funding. These agencies will then be contacted, to determine how the funding is actually spent in the field.

- **Estimate insurance company expenditures on testing and treating HIV/AIDS.**

There is only one health insurance company in Rwanda with a very small clientele. We will send a questionnaire to this company regarding funding and outlays relating to HIV/AIDS, and interview company representatives if necessary. A household questionnaire, described below, will also address insurance expenditures by asking individuals whether they pay for health insurance.

- **Estimate primary, secondary, and tertiary health facility expenditures on the prevention, management, and treatment of HIV/AIDS.**

Rwanda's Health Information System collects monthly statistical reports on utilization, expenditures, and revenues from all district clinics and hospitals, which we will analyze. In addition, we intend to collect data on-site from major hospital and clinic records in a sample of approximately 1/3 of facilities. This will help us determine how many individuals were admitted with HIV/AIDS, how many out-patient consultations were provided, how many patients were diagnosed with HIV/AIDS during their stay, how many died of AIDS (or a specified set of AIDS-related infections), the frequency of their hospital visits,

the length of their stay(s) in the hospital, and the cost of their treatment. Where possible, we will obtain facility-level information on prevention and STD management through interviews and reviews of facility records. The results of this on-site review will then be compared with data from the Health Information System and government ministry budgets, and any level of discrepancy there will help us adjust figures on the other non-sampled facilities appropriately.

The central (CHK, Roi Faical, HUB) and key district hospitals (Byumba, Kabgayi, Birehe, Kabutare), as well as antenatal care clinics in Kigali will be sent questionnaires on expenditures and funding sources, to provide an additional comparable source of data.

This project will also draw on a methodology, described in the Shepard et al. study,[14] for estimating the costs of HIV/AIDS treatment. Based on experiences in five developing countries, researchers recommend consulting with groups of informed experts from various sectors in the health care field, including physicians and providers from different parts of the country, health economists, epidemiologists, leaders of NGOs involved in AIDS care, and traditional healers. Experts will be given a survey and asked to estimate the cost of visits to outpatient clinics, inpatient hospital stays, medications prescribed, etc. A matrix will then be constructed to compare each participant's estimates of the cost of each component of treatment by region.[15] Cost data obtained from other sources (i.e., hospital records and household surveys) will be compared with the experts' cost estimates to ensure greater accuracy. If data are only available from some regions of the country, a method will be determined to extrapolate costs in other regions from available data.

Once the hospital-level or regional-level expenditures on HIV/AIDS-related activities are known, these figures can be broken down by the hospitals' funding sources—the percent of hospital funds provided by Ministry of Health financing, patient fees, private sources, international charities, etc.

- **Estimate pharmaceutical expenditures.**

This information will primarily be obtained via questions on the household and provider surveys. We will also review provider reports on drug expenditures while on-site in the facilities mentioned above. In addition, drug-importing agencies will be contacted.

- **Estimate NGOs' and private sector organizations' expenditures on HIV/AIDS-related activities.**

NGOs are often able to provide highly differentiated, cost-effective services to small and distinctive groups of clients, especially marginalized groups, and are relied upon by national governments to provide services the governments cannot provide. Increasingly, large employers may also be contributing to HIV/AIDS work in Rwanda. Unfortunately, reporting on private sector expenditures is not nearly as standardized or consistent as reporting on government expenditures.

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[14]Donald Shepard. 1998. "Levels and determinants of expenditures on HIV/AIDS in five developing countries," in *Confronting AIDS: Evidence from the developing world: Selected background papers.* New York: Oxford University Press for the World Bank.

[15]It is important; however, to acknowledge that physicians may overstate the quantity of care *actually* being delivered to AIDS patients.

A survey questionnaire will be sent to NGOs involved in HIV/AIDS work and to large employers, asking about funding and expenditures relating to HIV/AIDS. The data obtained in this manner will be validated with data obtained from donors, discussions, and interviews with prominent NGOs and employers. In order to account for NGOs that cannot be reached or which lack reliable expenditure data, the total expenditures for the known NGOs will be extrapolated to other active NGOs in the area.

- **Estimate household expenditures on HIV/AIDS.**

The following steps will be implemented to estimate household expenditures on HIV/AIDS:

- Questions related to HIV/AIDS expenditures will be included in the household survey that will be conducted in five districts where PHR is implementing a project to develop pre-payment schemes.
- A sample of patients testing positive at hospitals will be interviewed.
- Attempts will be made to collect information from the 10 antenatal clinics where pregnant women are currently already being screened for HIV.
- We have made contact with an AIDS association located in and around Butare, where we should be able to implement a survey with up to 200 respondents. The social worker who organized the association is willing to fill in the questionnaire with the AIDS patients. Butare is a rural locale, and interviewing patients there should give us a sense of rural household expenditures.

8.7 Ensuring the Validity and Consistency of the Data

When at all possible, we will triangulate our data sources by obtaining and comparing information from more than one source. We will work to account for discrepancies between sources via follow-up interviews with the information sources. Since we will be requesting information on both funding and expenditures from each of these organizations and institutions, we should be able to estimate the extent of double counting and adjust for this. The organization of data into matrices (see below) should also help to ensure accurate and consistent accounting.

8.8 Organization and Presentation of Data

Modifying the SIDALAC methodology slightly, we propose to construct three matrices for the organization and presentation of data. Each chart will be divided between public and private expenditures. The total cost should be consistent across all of the matrices.

- Matrix 1 will show the flow of resources from funding sources to intermediaries.
- Matrix 2 will show the flow of resources from intermediaries to providers.
- Matrix 3 will show the flow of resources from intermediaries to *functions*, (i.e., prevention, management, and treatment activities).

8.9 Phase 4: Analysis and Dissemination of Results

In the final phase of the project, results of the data collection will be analyzed and a report on findings will be drafted. Preliminary findings and tables will be presented to and discussed with our research team as well as local experts. The final paper will provide recommendations for future use of the National Health Accounts methodology to estimate HIV/AIDS expenditures.

Researchers in Honduras and the Dominican Republic are currently utilizing the SIDALAC methodology to estimate HIV/AIDS expenditures. We intend to share our methodology and results with them as we go along. If their results are available in time, we hope to include their findings in our final paper as well. Their experience in the field will add greatly to the strength of the paper and to our understanding of the applicability of the NHA framework to analyzing expenditures by disease category.

9. Scope of Work and Timeline

Start-up and research design (May-September 1999)

- Background research and initial communications with Rwandan contacts
- Initial conference call between Abt Associates and Rwandan research teams
- Draft methodology paper and distribute to experts in the field
- Finalize the methodology, data collection activities, and analysis process

Phase 1: Identification and Inventory of Data Sources (September-October 1999)

- Consultation and brainstorming with local experts
- Determination of operational definitions relating to HIV/AIDS expenditure
- Determination of appropriate proxy conditions for AIDS
- Inventory of organizations and agencies involved in HIV/AIDS activities
- Inventory of potential sources for HIV/AIDS expenditure data

Phase 2: Preparation of Data Collection Instruments (September-October 1999)

- Designing the NHA-HIV/AIDS data collection tools
- Training local staff to implement the data collection and analysis

Phase 3: Data Collection (October 1999 - March 2000)

- Collection of data on large funding flows via reports from international donors and the Rwandan government
- Analysis of government budgets, interviews with government officials
- Questionnaire to hospitals and clinics, analyses of hospital records and workshops with medical experts
- Questionnaire to insurance companies, analysis of insurance company records and interviews
- Questionnaire to pharmaceutical providers
- Interviews and workshops with local NGOs and private sector representatives

- Survey of HIV-positive individuals
- Construction of matrices

Phase 4: Analysis (April 2000-August 2000)

- Analysis of data
- Preliminary findings and tables presented to and discussed with research team and local experts
- Write-up of findings and recommendations

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