



# SUSTAINABILITY ANALYSIS OF HIV/AIDS SERVICES: HAPSAT GUYANA



July 2011

This publication was produced for review by the United States Agency for International Development. It was prepared by Itamar Katz, Danielle Altman, John Osika (Abt Associates), Bendita LatchmanSingh, Nicholas Persaud, and Shanti Singh (National AIDS Program Secretariat/Ministry of Health) for Health Systems 20/20 Project..



## Mission

The Health Systems 20/20 **cooperative agreement**, funded by the U.S. Agency for International Development (USAID) for the period 2006-2011, helps USAID-supported countries address health system barriers to the use of life-saving priority health services. Health Systems 20/20 works to strengthen health systems through integrated approaches to improving financing, governance, and operations, and building sustainable capacity of local institutions.

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# **SUSTAINABILITY ANALYSIS OF HIV/AIDS SERVICES: HAPSAT GUYANALE**

## **DISCLAIMER**

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# ACRONYMS

|         |   |
|---------|---|
| AIDS    | Acquired Immunodeficiency Syndrome                        |
| ADT     | Antiretroviral Dispensing Tool                            |
| ART     | Antiretroviral Therapy                                    |
| BCC     | Behavioral Change Communication                           |
| BBSS    | Biological and Behavioral Surveillance Survey             |
| CARICOM | Caribbean Community                                       |
| CD4     | Cluster of Differentiation 4                              |
| CDC     | Centers for Disease Control                               |
| CI      | Confidence Interval                                       |
| CSHQ    | Central Support and Headquarter Expenses                  |
| CSW     | Commercial Sex Worker                                     |
| DOTS    | Directly Observed Treatment Short-course                  |
| DRV     | darunavir   |
| DRV/r   | darunavir combined with ritonavir                         |
| EFR     | Enhanced Financial Reporting                              |
| ETV     | etravirine  |
| FTE     | Full-time Equivalent                                      |
| FY      | Fiscal Year   |
| GHARPII | Guyana HIV/AIDS Reduction and Prevention Project, Phase 2 |
| HAPSAT  | HIV/AIDS Program Sustainability Analysis Tool             |
| HBC     | Home-based Care   |
| HFLE    | Health and Family Life Education                          |
| HIV     | Human Immunodeficiency Virus                              |
| HSDU    | Health Sector Development Unit                            |
| HSU     | Health Statistics Unit                                    |
| IMAI    | Integrated Management of Adolescent/Adult Illness         |
| IP      | Implementing Partner                                      |
| M&E     | Monitoring and Evaluation                                 |
| MCH     | Maternal and Child Health                                 |
| MoH     | Ministry of Health  |
| MSM     | Men Having Sex with Men                                   |

|        |  |
|--------|--|
| NAP    | National AIDS Program                                  |
| NAPS   | National AIDS Program Secretariat                      |
| NGO    | Nongovernmental Organization                           |
| OBR    | Optimized Background Regimen                           |
| OVC    | Orphans and Vulnerable Children                        |
| PAHO   | Pan American Health Organization                       |
| PEPFAR | President's Emergency Plan for AIDS Relief             |
| PLWH   | People Living with HIV                                 |
| PMTCT  | Prevention of Mother-to-Child Transmission of HIV      |
| RAL    | raltegravir  |
| RCC    | Rolling Continuation Channel                           |
| RTV    | ritonavir  |
| SCMS   | Supply Chain Management System                         |
| STI    | Sexually Transmitted Infections                        |
| TB     | Tuberculosis   |
| ToT    | Training of Trainers                                   |
| UNAIDS | United Nations AIDS Program                            |
| UNDP   | United Nations Development Program                     |
| UNGASS | United Nations General Assembly Special Session        |
| UNICEF | United Nations International Children's Emergency Fund |
| USAID  | United States Agency for International Development     |
| VCT    | Voluntary Counseling and Testing                       |
| WHO    | World Health Organization                              |

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# EXECUTIVE SUMMARY

## BACKGROUND

Guyana's success in reducing HIV prevalence, coupled with the global decline in HIV/AIDS funding, necessitates an examination of the financial sustainability of Guyana's AIDS program. The aim of this document is to provide Guyana's National AIDS Program Secretariat (NAPS) with an analysis of the unit costs and financial and human resources available and needed to sustain Guyana's HIV/AIDS program through 2015. The report focuses on activities that a broad group of stakeholders involved in Guyana's HIV/AIDS program identified as being critical to the sustainability of the program.

## METHODOLOGY

This summary presents cost estimates and then prioritizes a wide range of HIV response activities. The analysis and recommendations presented in this document are a result of epidemiological, contextual, and financial findings regarding the HIV response in Guyana. The methodology for this assessment is similar to that applied in other sustainability analyses that have been carried out by the United States Agency for International Development (USAID)-supported Health Systems 20/20 project, using the HIV/AIDS Program Sustainability Analysis Tool (HAPSAT). The methodology was adapted to the Guyana context and implemented as a five-step process. The first step included the review of the reports produced to date on the HIV epidemic of Guyana and its response. The HAPSAT team then conducted an intensive stakeholder workshop to determine the key sustainability issues facing Guyana's HIV/AIDS program. Workshop attendees were asked to identify specific issues present in the current program that reduced the program's capacity for sustainability. The stakeholders in topic-specific groups (e.g., prevention, treatment) then determined what activities could feasibly address these sustainability issues, and they were guided by the facilitators of NAPS and the HAPSAT team to ensure that the costing methodology could appropriately assess the feasibility of these activities. To conclude the workshop, the stakeholders were asked to prioritize these activities. In the third step of the process, the team conducted interviews, financial document review, and primary data collection in order to assess funding availability and determine unit costs and human resource needs. In the fourth step, these data were analyzed to determine national resource requirements and targets for the HIV/AIDS program between 2011 and 2015, using national HIV/AIDS targets as a basis, and, where absent, suggested targets were set based on need and past performance of the examined HIV interventions. The HAPSAT team further developed recommendations, taking into consideration unit cost findings, stakeholder priorities, the review of the literature of the HIV epidemic in Guyana, and other relevant contextual issues. In the fifth and final step, the findings and recommendations were presented in a stakeholder workshop, and workplans were generated by the stakeholders for follow-up actions.

## FINDINGS AND RECOMMENDATIONS

### **Maintain high-level coverage of services**

Guyana has achieved universal access in many of the key HIV services, including antiretroviral therapy (ART), prevention of mother-to-child transmission of HIV (PMTCT) treatment, blood screening, HIV/Tuberculosis (TB) treatment, as well as comprehensive care and support for people living with HIV (PLWH) and orphans and vulnerable children (OVC). There is a need to ensure that the high levels of coverage are maintained.

ART is estimated to cost US\$9.3 million in 2011, decreasing to US\$6.8 million in 2012 followed by an increase through 2014, and then decreasing again to US\$6.5 million in 2015. The annual cost for maintaining universal access to PMTCT treatment will range from US\$53,500 to US\$55,800 between 2011 and 2015. To provide HIV testing and counseling, the annual cost will range between US\$550,000 and US\$950,000 from 2011 to 2015.

A wide range of outreach and care and support services were costed. If all of these activities were to be implemented with the targets outlined in sections 3.4 and 3.5, in 2015 the annual cost would reach US\$1.1 million for youth, US\$725,000 for vulnerable groups, US\$975,000 for care and support for PLWH, US\$809,000 for OVC support, and US\$64,500 for stigma reduction among health workers. The cost of the examined services is expected to be US\$13.5 million in 2011, eventually decreasing to US\$11.2 million in 2015. The costing captures the bulk of the HIV services, yet excluded in the above estimates are HIV services such as sexually transmitted infections (STI) diagnosis and treatment, blood safety, as well as non-routine surveillance, and capital costs for supporting services.

Establishing entry/exit criteria for social services, such as nutritional support, will be beneficial to ensure the HIV program supports only those in real need of such services, while providing PLWH with the capacity to sustain themselves through income-generating activities.

### **Scale up outreach to vulnerable groups**

Men who have sex with men (MSM) and commercial sex workers (CSWs) are the populations with the highest HIV prevalence in Guyana. These two populations are likely a major source of infection. There is a need to continue to reach MSM and CSWs with HIV prevention to reduce HIV incidence among these populations and beyond.

In the interior regions there is a need to scale up HIV prevention among vulnerable groups, in particular CSWs, as well as miners and loggers, through the National Malaria Control Program, nongovernmental organizations (NGOs), and mining operators.

Deploy a more targeted mass media prevention strategy

An assessment of the number of television and radio spots required for adequate, but not excessive, exposure to Guyana's 2010 behavioral change communication (BCC) campaign suggests that one-fifth of the exposure generated in 2009 would have been sufficient for reaching targeted populations in 2010. The adult population already possesses a high level of accurate knowledge about HIV/AIDS. A large proportion of the adult population reported practicing safe sex as far back as 2005, and has continued to report practicing safe sex into 2009.

### **Increase the use of effective stigma reduction interventions**

A major concern stakeholders raised is the stigma and discrimination associated with HIV despite the high knowledge levels of the disease. Based on the recommendations of a recent report on stigma and discrimination in Guyana, stigma reduction training is needed for all health professionals across Guyana's health facilities. In addition, community leaders should be trained on this topic. Stigma reduction should be integrated into prevention and care and support through the following mechanisms:

- Support groups for vulnerable populations.
- Sex education sessions for youth.
- Support groups and entrepreneurial and vocational training for PLWH.

Stigma reduction is likely to increase adherence to ART, as adherence is linked to self-HIV stigma. This will assist in maintaining ART patients on first line treatment, which is 58 percent and 79 percent cheaper in Guyana than second line and third line treatments, respectively.

## **Construct a strategic information database**

Many stakeholders are involved in the HIV response, yet no comprehensive database exists on the activities of each donor and implementer. A national HIV/AIDS monitoring and evaluation (M&E) Operational Plan for 2008–2011 is underway. The following recommendations, devised with stakeholders in Guyana's HIV response, will facilitate the construction of a strategic information database and the more effective use of data for improving coordination between different implementers:

1. Consolidate a list of all indicators of HIV services, to enable consistent reporting by all implementers. NAPS and the United Nations AIDS Program (UNAIDS) have already identified a consultant to carry out this task.
2. Computerize data collection from various services: Reach data of ART, PMTCT, HIV counseling and testing (HCT), condom distribution, and nutritional support are already captured electronically; as detailed in Chapter 5, reach data of home-based care (HBC), STI diagnosis and treatment, and the voucher program can be easily computerized.
3. Centralize the computerized data in one domain: UNAIDS' CRIS software can be used for capturing reach data at the indicator level. For linkages between different datasets, an off-the-shelf software package, such as MS Access, could be an interim solution.
4. Disseminate the M&E data: Ensure data dissemination activities and the use of the M&E Operational Plan are fully implemented.

## **Utilize AIDS funding for nonrelated HIV services**

Guyana has managed to provide universal access to many of its HIV/AIDS services, including ART and PMTCT treatment. In this context, resources are needed to maintain these services. The need for capital investments is diminishing, and donors are transitioning their activities to the Ministry of Health, which has low-cost overheads and is best positioned to identify and address opportunities for health systems strengthening. High levels of correct HIV knowledge and safe sex practices, as well as the substantial decline in HIV prevalence, imply that Guyana's AIDS program can now focus its resources on the remaining program gaps, such as services for vulnerable groups and youth. To sustain the HIV program, there is a need to channel more HIV funding to cross-cutting themes. This will yield the following benefits:

1. A strengthened health system: HIV funding has already been utilized for the construction of a modern warehouse to store and manage both HIV and non-HIV drugs and commodities. Such capital investments will provide Guyana's health system with long-term benefits that the government can maintain even before donors pull out.
2. Efficiency gains: The marginal cost of expansion of existing activities frequently decreases, and, as such, it may be more efficient to extend relevant services beyond those people infected and affected by HIV rather than to establish parallel services for those not infected or affected by HIV.
3. Improved budget allocation: HIV funding for 2010 is estimated at US\$29 million. In comparison, the total health budget of Guyana in the same year is US\$66.5 million. Although HIV funding is also allocated to non-health services, it is necessary to increase the investment of the HIV funding in cross-cutting themes to ensure more balanced allocation of resources.
4. Integration of HIV services into general health care and social services: Funding cross-cutting issues will facilitate integration of HIV services into general health care and social services, which will result in cost savings.

Integration is of particular importance for maximizing the limited human resources for health in Guyana. HAPSAT estimations of human resources required for HIV counseling and testing indicate that a full-

time equivalent (FTE) counselor should be stationed only in facilities that have an average of 15 tests per day, or 3,300 per year. Where fewer than 3,300 tests exist, the counselor should be provided with other tasks, or the testing should be done by other trained staff. Guyana's HIV response will benefit from mapping all the outreach workers that provide care and support to ART patients and ensure no duplications exist. Finally, the shortages in health workers can be further tackled by ensuring health workers receive patients throughout the opening hours of clinics by setting up an appointment system.

The recommendation for integration of services will require all health staff to receive stigma reduction training, as previously detailed. In addition, clinics will need to be open to patients at least six hours a day. Clinics will need to notify patients of the benefits of receiving services in the afternoon, such as shorter waiting times.

Integration of HIV services into general health care is essential for sustaining the HIV services in the long term. The HIV response has seen a decline in the funding they receive from their largest donor, the President's Emergency Plan for AIDS Relief (PEPFAR), and competition for increasingly limited donors' AIDS funding is becoming fiercer due to improved absorptive capacity of many AIDS programs.

### **Conclusions**

Guyana's HIV program provides high coverage, quality HIV services. To continue to provide this level of HIV services there is a need to secure resources to continue high quality universal access. Decreases in HIV funding require the continual implementation of sustainable solutions, mainly through integrating health and social services.

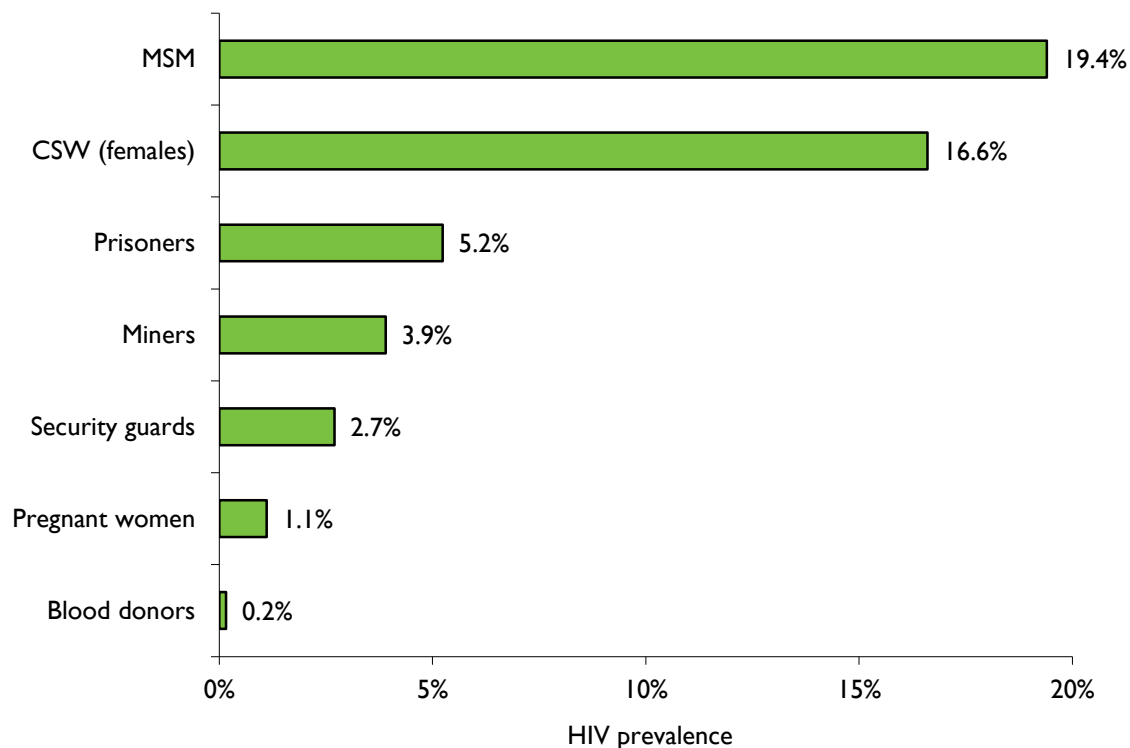


# I. INTRODUCTION

## I.1 HIV IN GUYANA

Guyana had an HIV/AIDS prevalence of 1.1 percent among pregnant women in 2009 (Figure 1). As shown in Figure 1, this low-level epidemic has two smaller concentrated epidemics, among commercial sex workers (CSWs) and among men having sex with men (MSM), each exceeding the 15 percent HIV prevalence. Both the CSW and MSM populations are probably a significant source of HIV infections to the general population (Camara Email correspondence, 10 August 2010).

**FIGURE 1: HIV PREVALENCE, BY SUBGROUP**

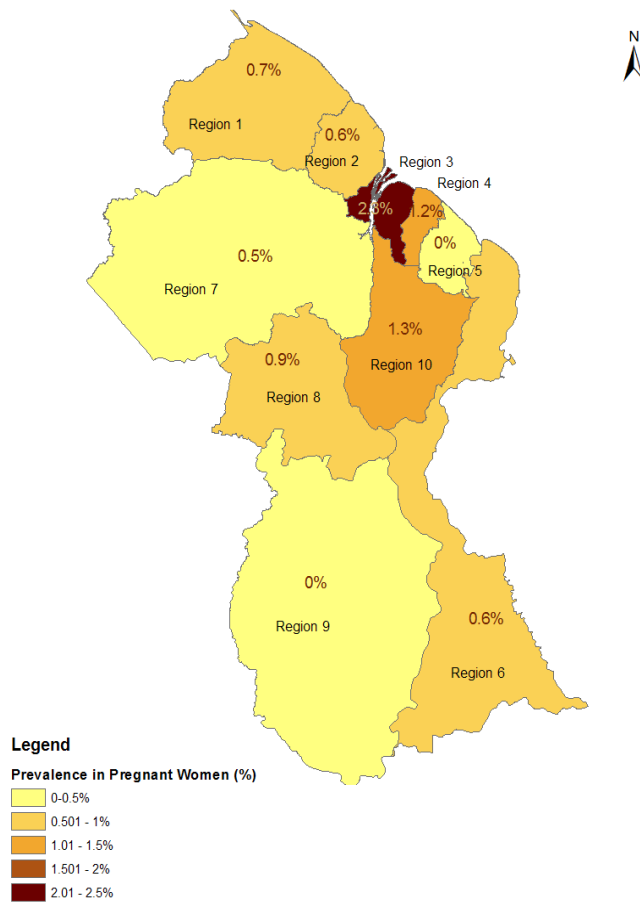


Source: (Presidential Commission on HIV and AIDS 2010b)

Year of HIV prevalence: Blood donors, Pregnant women, CSW, and MSM – 2009; Security guards and prisoners – 2008; Miners – 2003

The HIV prevalence varies across the regions, as shown in (Figure 2). As of 2009, HIV prevalence of pregnant women by region shows HIV prevalence to be highest in regions 3, 4, and 10, and lowest in regions 5 and 9, where no pregnant woman tested HIV positive in 2009.

**FIGURE 2: 2009 HIV PREVALENCE OF PREGNANT WOMEN, BY REGION**



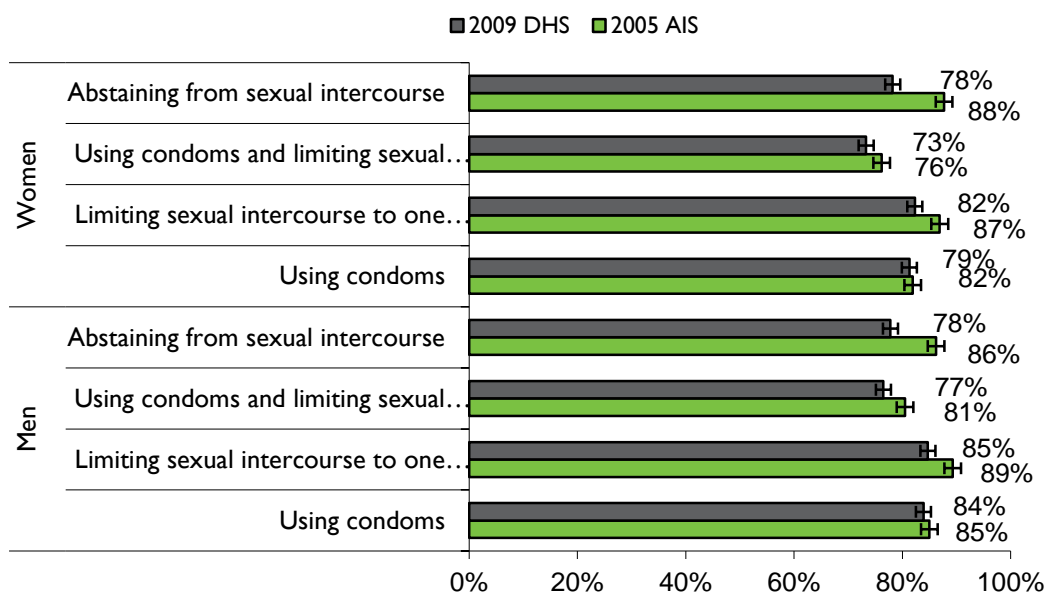
Based on data from (Singh 2010)

There are high levels of correct knowledge on HIV and safe HIV-related sexual behavior. Data from two different surveys, one conducted in 2005, another with a larger sample in 2009, are presented in

Figure 3. In 2005, high levels of correct knowledge of these four safe sexual behaviors already existed. Since then, the levels of correct knowledge have either remained unchanged or slightly decreased. Notably, in 2009, fewer men and women perceived abstinence as a means to reduce the risk of being infected by HIV than they had in 2005.

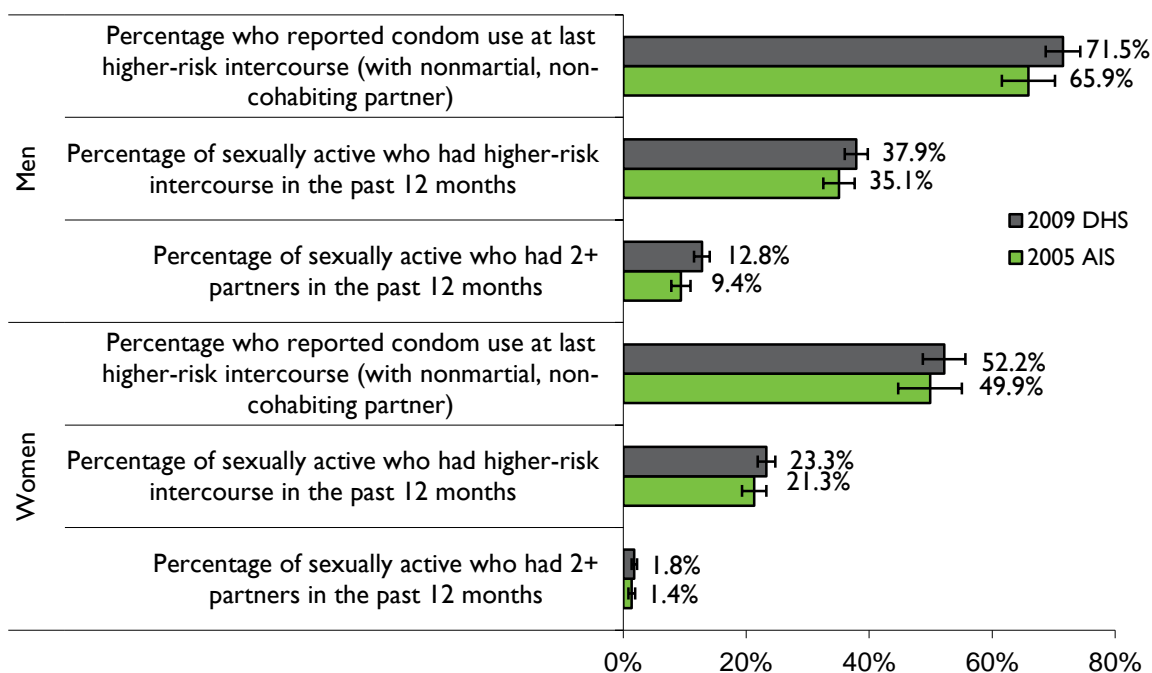
Examination of the trend of three sexual behaviors further reveals no significant changes. One exception is the percentage of sexually active males who had 2+ partners in the past 12 months, which increased from 9.4 percent (95 percent confidence interval [CI] 8.1 to 11 percent) to 12.8 percent (95 percent CI 11.5 to 14.1 percent) (Figure 3). (Bureau of Statistics, Ministry of Health of Guyana et al. 2009). Overall, the levels of reported safe sex are high. Among sexually active females, as few as 1.8 percent (95 percent CI 1.4 to 2.2 percent) had two or more partners in the past 12 months. Among males this proportion was much higher, yet 71.5 percent (95 percent CI 68.7 to 74.3 percent) used condoms when they last engaged in higher-risk intercourse (with nonmarital, non-cohabiting partner).

**FIGURE 3: PROPORTION OF THE ADULT POPULATION WITH CORRECT KNOWLEDGE OF FOUR SAFE SEXUAL BEHAVIORS, BY GENDER, 2005 AND 2009, WITH 95% CONFIDENCE INTERVAL BARS**



Source: (Bureau of Statistics, Ministry of Health of Guyana et al. 2009)

**FIGURE 4: REPORTED SEXUAL BEHAVIORS BY GENDER, 2005 AND 2009, WITH 95% CONFIDENCE INTERVAL BARS**



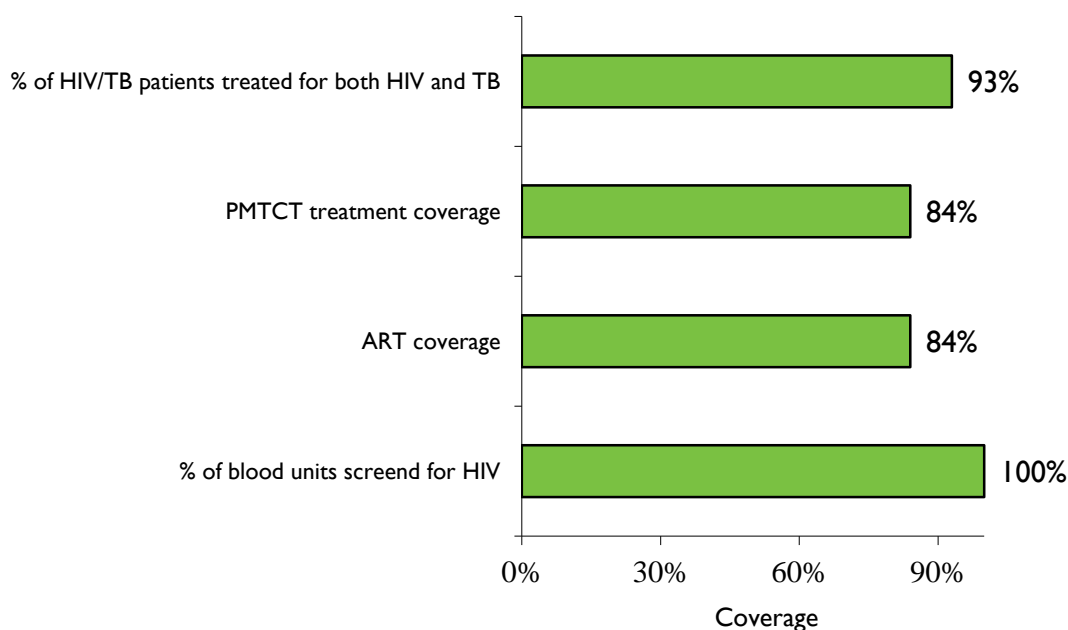
Source: (Bureau of Statistics, Ministry of Health of Guyana et al. 2009)

In summary, HIV prevalence is low among most groups in Guyana, and high among MSM and CSWs. A large proportion of the population has correct knowledge of HIV and many are practicing safe sex, at least since 2005.

## I.2 NATIONAL RESPONSE TO HIV

The first case of AIDS was reported in 1987. By 1989 the Government of Guyana established the National AIDS Program (NAP) under the MoH. In 1992 the National AIDS Program Secretariat (NAPS) was established and charged with the role of coordinating the national response to the AIDS epidemic. In the same year the National AIDS Committee was established with responsibility for developing and promoting HIV and AIDS policy and advocacy issues, advising the MoH, and assessing the work of NAPS. The government’s response has been complemented by the activities of various civil society organizations, whose approach focused primarily on prevention and care and support. The management and coordination of the national AIDS response were strengthened over the last six years with substantial support from development partners, which enabled the scale-up of key prevention and care and support services (Presidential Commission on HIV and AIDS 2010b). According to the 2008–2009 Guyana United Nations General Assembly Special Session (UNGASS) report, the coverage levels of major services such as antiretroviral therapy (ART) and prevention of mother-to-child transmission of HIV (PMTCT) treatment exceeded 80 percent in 2009 (Figure 5), and as such can be considered universal access according to the United Nations AIDS Program (UNAIDS) (UNAIDS 2007). ART’s universal coverage might have been a factor in the decrease of AIDS-related deaths, from 475 in 2002 to 237 in 2008 (Singh 2010).

**FIGURE 5: COVERAGE LEVEL OF KEY HIV SERVICES, 2009**



Source: (Presidential Commission on HIV and AIDS 2010b)

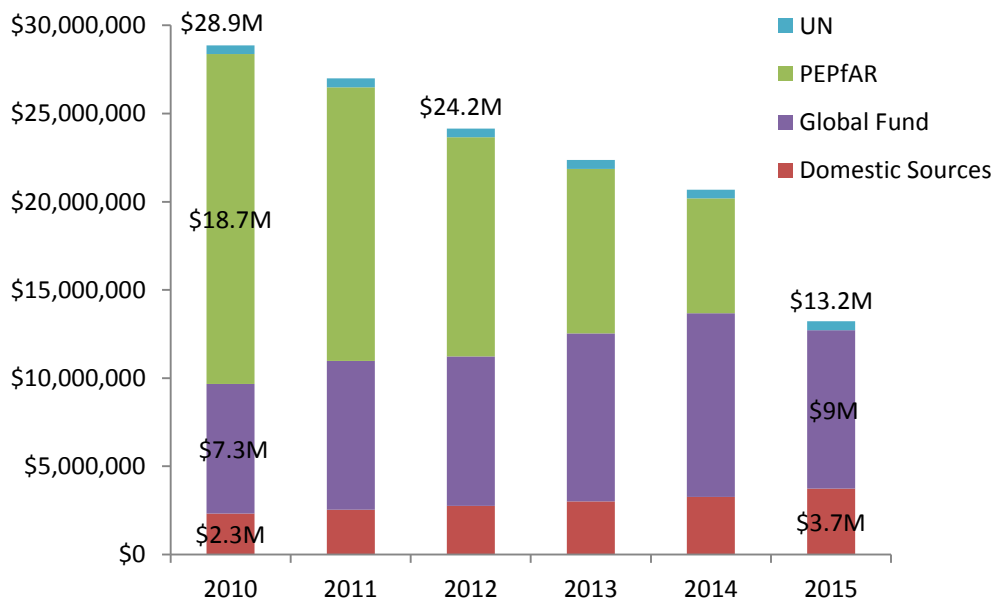
Guyana’s very high coverage level of HIV services is a result of the country’s early and comprehensive incorporation of best practices. In 2007, Guyana started to initiate ART treatment for patients with a CD4 count below 350 (Ministry of Health (MOH) [Guyana] 2006), as recommended in the World Health Organization’s (WHO) recent 2009 ART guidelines, rather than starting treatment below CD4

of 200, as in the previous WHO ART guidelines. As of mid-2010, only five patients were receiving D4T, an antiretroviral that WHO recommended phasing out in 2009. Guyana’s AIDS program has also integrated its PMTCT services into maternal and child health (MCH) facilities, in order to ease access to such services. Guyana’s HIV/AIDS and Tuberculosis (TB) programs are working jointly to treat HIV/TB patients.

### 1.3 FUNDING THE HIV EPIDEMIC RESPONSE

Guyana’s HIV budget in 2010 was almost US\$29 million (Figure 6). The U.S. President’s Emergency Plan for AIDS Relief (PEPFAR) provided 65 percent of these funds, while 25 percent was provided by the Global Fund to Fight AIDS, Tuberculosis and Malaria (the Global Fund). PEPFAR’s contribution to Guyana’s HIV/AIDS budget is expected to end by 2015, by which time the Global Fund will be the largest funder. Between 2010 and 2015, the annual budget of Guyana’s HIV response is projected to decline by as much as 54 percent, to US\$13.2 million. In early 2016, the currently last Global Fund grant Guyana received will end. Given the income level of Guyana (low-middle) and its low HIV prevalence, Guyana might not be eligible for further funding from the Global Fund. The Government of Guyana is gradually increasing its contribution by at least 61 percent, from US\$2.3 million in 2010 to US\$3.7 million in 2015.

**FIGURE 6: GUYANA HIV FUNDING, BY SOURCE OF FUNDING AND YEAR**

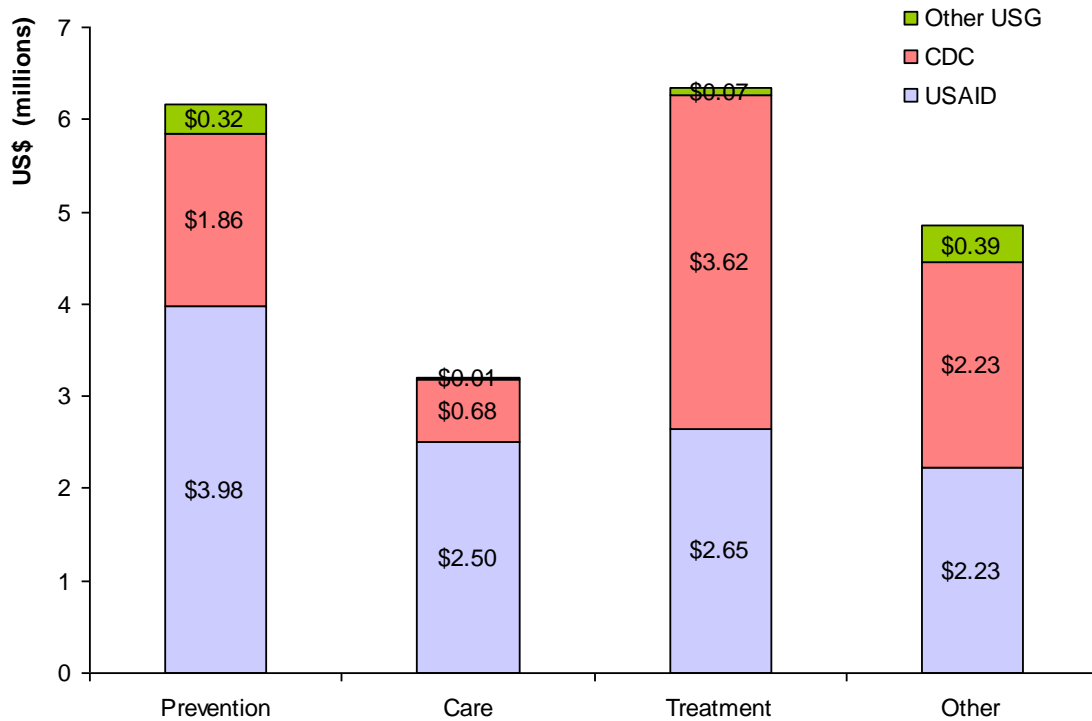


Sources: (PEPFAR ; Country Coordinating Mechanism Guyana 2008a; Country Coordinating Mechanism Guyana 2009; The Global Fund to Fight AIDS Tuberculosis and Malaria 2011a; The Global Fund to Fight AIDS Tuberculosis and Malaria 2011b; The Global Fund to Fight AIDS Tuberculosis and Malaria 2011c)

Note: Domestic resources include the cost of health workers, cost of lab tests other than CD4 count and viral load, and cost of MoH's overheads for ART services.

In fiscal year (FY) 2009 (October 2008 to September 2009), PEPFAR allocated 31 percent of its funding to treatment, 30 percent of its funding to prevention, and 16 percent to care (Figure 7). The amount of U.S. government funding allocated through the United States Agency for International Development (USAID) was 55 percent, while 41 percent was distributed through the Centers for Disease Control (CDC). In FY 2009, CDC invested US\$3.6 million on HIV/AIDS treatment in Guyana, whereas USAID allocated \$2.6 million; however, USAID was the main financial agent for prevention and care in 2009.

**FIGURE 7: U.S. GOVERNMENT'S HIV BUDGET FOR FISCAL YEAR 2009, BY AGENCY AND SERVICE CATEGORY**

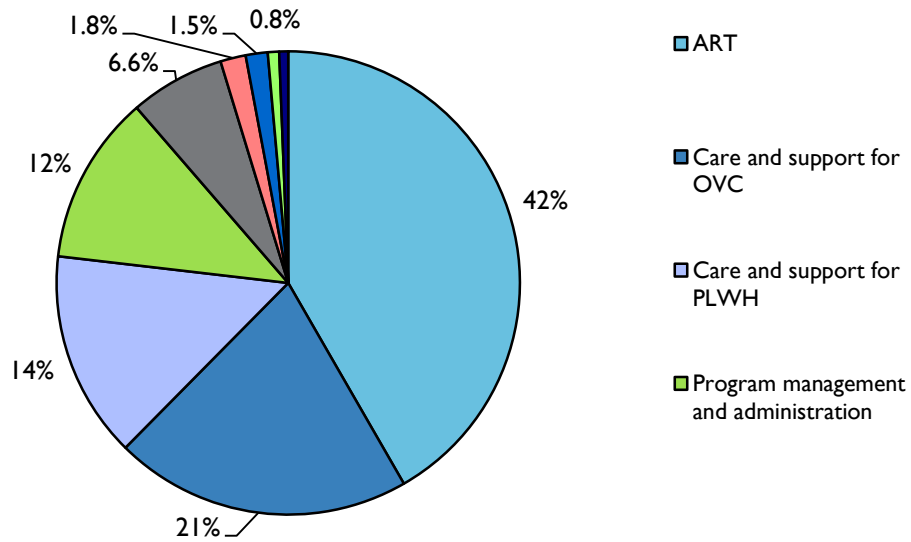


Source: (PEPFAR)

Guyana's AIDS program, with the MoH as principal recipient, received US\$24.5 million from the Global Fund from the first disbursement in 2005 through March 2011. Approximately US\$7.3 million was budgeted for 2010, increasing to US\$8.4 million in 2011, and peaking at US\$10.4 million in 2014. This funding derives from four different grants with the main one being the Round 3 HIV grant, while the other three grants include a health system strengthening Round 8 grant and funding for HIV/TB services from two TB grants. Its Rolling Continuation Channel (RCC) proposal for March 2010 to March 2016 includes US\$14 million through March 2013. Depending on grant performance and funding availability, the country should receive the remaining US\$27 million through March 2016 (Country Coordinating Mechanism Guyana 2009).

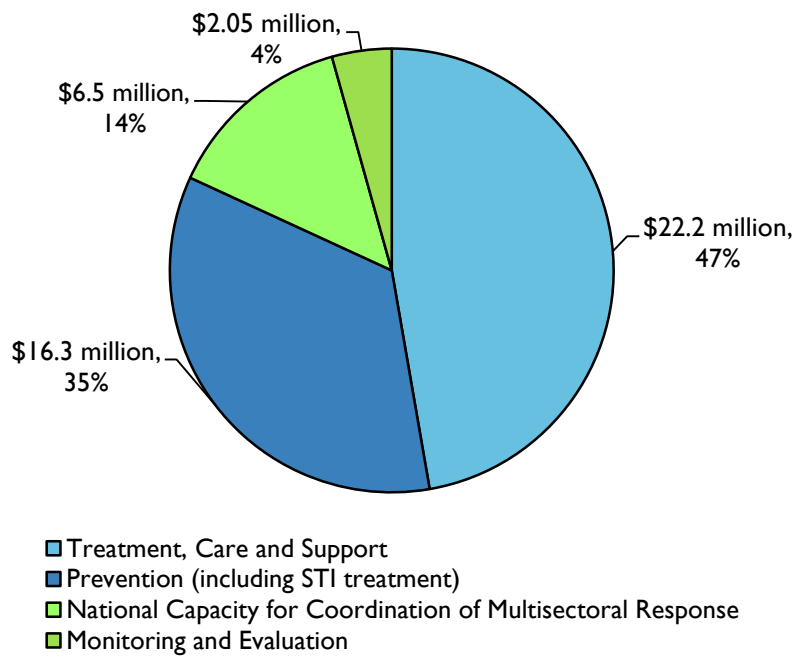
Global Fund expenditure data from March 2008 to April 2009 revealed that 42 percent of the funding of the Round 3 HIV grant was invested in ART, 21 percent was allocated for care and support of orphans and vulnerable children (OVC), 14 percent was provided for care and support of people living with HIV (PLWH), and 8.1 percent was spent on behavioral change communications (BCC), mainly on mass media (Figure 8). The Round 3 HIV grant's budget for 2010–2016 reduces the treatment and care and support allocation from 75 percent of the total funds in 2008 to 47 percent of the total funds. It increases the prevention share from 9 percent of the funds to 35 percent of the funds in the same period (Figure 9). The second largest Global Fund investment in Guyana's HIV response is the health system strengthening Round 8 grant of US\$10 million for 2010–2014. Two TB grants (Rounds 3 and 8) allocated US\$610,000 for HIV/TB activities between 2009 and 2015 (Country Coordinating Mechanism Guyana 2008b); 2009 Enhanced Financial Reporting [EFR] of Global Fund grant GYA-405-G03-T).

**FIGURE 8: EXPENDITURE OF GLOBAL FUND'S FINANCING BY SERVICE DELIVERY AREA, APRIL 2008 TO MARCH 2009**



Source: 2009 EFR of Global Fund grant GYA-304-G01-H

**FIGURE 9: BUDGET ALLOCATION OF GLOBAL FUND'S HIV ROUND 3 PROPOSAL, MARCH 2010 THROUGH MARCH 2016**



Source: (Country Coordinating Mechanism Guyana 2009)

## I.4 EMERGING CHALLENGES

Six major challenges for achieving the UNGASS goals/targets are summarized by Guyana's 2008–2009 UNGASS report (Presidential Commission on HIV and AIDS 2010b) and include the following:

- High attrition rate of health workers, largely due to migration. Being aware of this issue, the Ministry has developed a human resources strategy and strides were made in increasing the number of health care workers. More nurses are being trained than in previous years. The scholarship program with the Cuban Government has resulted during the period of 2008-2011 in more than 100 trained medical doctors serving the Government of Guyana for a five year contractual period. Medexes (physician assistants) were also trained, and are on a five years contractual service period. Additionally post graduate and specialty programs developed by Guyana's tertiary institution, the Georgetown Public Hospital Corporation in the areas of surgery, emergency medicine among others.
- Inadequate external quality control for private sector laboratories. However the public sector laboratory network is quality controlled by the National Public Health Reference Laboratory, established under the auspices of the HIV program. Quality assurance program was established in 2007 with external proficiency testing for private and public laboratories in Guyana.
- High levels of HIV stigma and discrimination. There are signs this situation has changed over the years. Key areas such as counseling and testing have become less stigmatized with large increases in the number of persons testing on an annual basis.
- Donor coordination needs to be improved to streamline the allocation of resources. However, the existing coordination mechanisms are functional, including the Country Coordination Mechanism for Guyana's Global Fund grants as well as bilateral arrangements.

Need for implementing standard operational procedures for TB health care workers to protect themselves and clients. To address this, the National Tuberculosis Control Program in collaboration with the Department of Standards and Technical Services have developed an Infection Control Plan. Elements of the plan have already been implemented including aspects of infection control for health care workers and for clients.

- Need for increasing access to services in remote areas, mainly the interior, to meet the demand generated by the BCC program (Presidential Commission on HIV and AIDS 2010b). HIV prevalence in the interior is low (Figure 2), yet there are significant numbers of vulnerable groups in these areas: miners, loggers, and the populations that live adjacent to these mines and forests. This issue is also being addressed by the HIV response: more NGOs are supported in a targeted manner. A National coordinating mechanism was established by the Ministry of Health and includes key Governmental, NGO and partner agencies to coordinate and monitor the services to these communities.

Guyana has seen a decline in PEPFAR funding – its major funder for the HIV program – and a complete phase-out of World Bank funding, with very limited national resources to replace this funding. Consequently, Guyana must assess the current portfolio of HIV/AIDS activities and estimate funding gaps. It is also necessary to assess human resource constraints to maintain high coverage level of HIV services and ensure that the targets outlined in the Guyana national HIV/AIDS strategy 2007–2011 are feasible given the expected availability of resources.

An extensive list of barriers for achieving the UNGASS goals/targets is provided in Guyana's Universal Access report, launched on July 2010 (Presidential Commission on HIV and AIDS 2010a).



## 1.5 HIV/AIDS PROGRAM SUSTAINABILITY ANALYSIS FOR GUYANA

Health Systems 20/20 is a five-year (2006–2011) cooperative agreement (no. GHS-A00-06-000-00) led by Abt Associates Inc. and funded by USAID. The project addresses the financing, governance, operational, and capacity-building constraints that block access to and the use of priority population, health, and nutrition services by people in developing countries. Health Systems 20/20 offers global leadership, technical assistance, training, grants, research, and information dissemination.

The HIV/AIDS Program Sustainability Analysis Tool (HAPSAT) is composed of a core analysis, which is conducted in all HAPSATs, and a country-specific analysis, which is defined through a stakeholder process. The core analysis estimates the financial and human resources required to sustain and/or scale up a comprehensive portfolio of HIV/AIDS services, using a computer-based tool. The tool was developed by Health Systems 20/20 for forecasting and analyzing the sustainability of HIV/AIDS programs. HAPSAT synthesizes detailed epidemiological, demographic, and economic data to generate a country-specific HIV policy model that can be used to simulate alternative policy scenarios. The analysis estimates resource requirements for a core set of HIV/AIDS services, including ART, HIV testing and counseling, PMTCT treatment, care and support services for PLWH (e.g., home-based care [HBC], palliative care, psychosocial support) and OVC, and prevention. The country-specific analysis examines topics of particular interest to the stakeholders of the HIV program, such as the costs and benefits of decentralization.

The HAPSAT model was specifically designed to be flexible so that it can be used in any country setting. The HAPSAT model has been applied in 11 countries to date and put to a range of uses. In Zambia the model was used to inform a successful Global Fund application. In Nigeria it supported a World Bank's Multi-Country HIV/AIDS Program application. Kenya is using its HAPSAT analysis to help define the PEPFAR partnership framework between the U.S. government and the Kenyan government. In Cote d'Ivoire it informed USAID's Country Operational Plan and the development of a PEPFAR partnership framework. HAPSATs were recently completed in Haiti and Sierra Leone, and several others are being finalized, including in Ethiopia, Southern Sudan, the Democratic Republic of Congo, and Viet Nam.

## 1.6 HAPSAT IN GUYANA

Guyana's HAPSAT aims to estimate the financial and human resources required to sustain the national HIV/AIDS program in Guyana, between 2011 and 2015, according to a set of policy scenarios, and to explore the financial implications of activities that can mitigate the impact of gaps in funding and human resources over this period. As previously described, the core HIV/AIDS services to be included in the sustainability analysis are HIV testing and counseling, PMTCT treatment, care and support services for PLWH and OVC, and prevention. Data on the financial resources available to the national HIV/AIDS program were also collected for the HAPSAT. The unit cost of ART was obtained from CDC recent Rapid Cost Assessment (see Annex B). Health Systems 20/20 and CDC coordinated their efforts to reduce duplication in data collection processes.

The HAPSAT further examines the four topics that have been identified and prioritized through a stakeholder engagement process:

1. The implementation of an integrated database to improve coordination between partners.
2. The integration of stigma reduction into prevention activities.
3. The shortage in human resources.
4. The cost of transitioning from first-line regimens to second- and third-line regimens.

HAPSAT Guyana is designed to be an input for Guyana's AIDS strategies and funding proposals. It is planned to be used for PEPFAR's Country Operational Plan as well as for the implementation of PEPFAR's partnership framework.

## 2. METHODOLOGY

### 2.1 HAPSAT METHODOLOGY

Resources required to deliver HIV/AIDS services in Guyana in 2011 through 2015 are broken down into two categories: financial resources (donor and government funding) and human resources for service delivery (e.g., medical doctors, nurses, pharmacists, medical technologists, counselors and social workers, and home-based care workers and sexually transmitted infection [STI] outreach workers). Sustainability analysis is the measurement of the gap between the resources available and the resources needed to implement an HIV/AIDS program. Table I details the elements of service delivery that were costed in Guyana’s HAPSAT and those that were not.

**TABLE I: ELEMENTS OF SERVICE DELIVERY COSTED VS. NOT COSTED IN HAPSAT FOR GUYANA**

| Elements costed directly with data from Guyana   | Elements not costed (outside HAPSAT scope)  |
|--|---|
| <ul style="list-style-type: none"> <li>• Drugs and commodities for ART and PMTCT treatment</li> <li>• HIV-related laboratory reagents and consumables for testing and monitoring</li> <li>• Professional health worker labor for HIV/AIDS clinical services</li> <li>• Costs for prevention and care and support services</li> </ul> | <ul style="list-style-type: none"> <li>• New facility infrastructure or renovation</li> <li>• Laboratory equipment</li> <li>• Studies, research</li> <li>• Donor overheads (with the exception of ART unit cost)</li> <li>• Administration and support staff in regions and lower tiers of the health system</li> <li>• Non health staff salaries</li> <li>• Health system strengthening</li> </ul> |

Each service in Guyana’s HIV/AIDS program has a defined unit of service by which the program’s direct output (service volume) can be measured and reported. For example, a unit of ART service is one patient-year of ART. Using country-specific data, unit costs were estimated for each service, through one of the following costing methods:

1. Bottom-up costing: an ingredients approach that quantifies the level of inputs required to produce a service, and the cost of each of these inputs.
2. Top-down costing: a division of the budget of a given service by the number of people reached by the service.

The bottom-up costing could be considered to be more suitable for projections as it excludes capital costs and can be controlled for fixed versus variable costs. However, top-down costing incorporates indirect costs, which may account for a significant proportion of costs and are hard to quantify in a bottom-up costing. Bottom-up costing was the preferred method when possible.

The HAPSAT model was used for applying bottom-up costing of HIV testing and counseling and PMTCT treatment. Both costing methods were utilized for the costing of prevention and care and support, depending on the data that partners made available to the costing team. When detailed data were provided, a bottom-up approach was used to cost an intervention. However, when only “high-level”

data were made available, a top-down approach was used. Neither of the methods took donors' overhead into account.

## 2.2 DATA COLLECTION

### 2.2.1 KEY INFORMANT INTERVIEW

Country-specific data were collected from the MoH (including NAPS and Health Sector Development Unit [HSDU]), U.S. government agencies and their implementers, UNAIDS, the Global Fund, nongovernmental organizations (NGOs), health facilities, and independent experts involved in Guyana's HIV response. Annex A provides a list of all those interviewed. Secondary data sources providing relevant input for the HAPSAT were provided by the sources visited.

### 2.2.2 SETTING TARGETS

All examined activities, with the exception of mass media, were assigned targets for 2011 to 2015. The methodology used for setting targets varied from one service to another. For ART targets, the annual increase was assumed to be the average of new patients between 2007 and 2010, after subtracting 10 percent from the number of people on ART in the previous year, to account for attrition. It was further assumed that 10 percent of patients are on second-line regimens. As with ART, HCT targets were also increased based on scale-up between 2007 and 2010. Lacking comparable historical data, pre-ART targets assumed to increase by 8 percent annually, based on the increase in people on ART between 2009 and 2010. The 2011–15 targets of PMTCT treatment were provided by NAPS.

In other HIV services where targets existed only up to 2011, the analysis assumed that no increase would occur in targets between 2012 and 2015, as they were already aimed at providing universal coverage. Where targets did not exist, a target based on the estimated need was formulated. The rationale for the target setting of each activity is detailed within the tables of the five-year targets.

Costs are required for both consumables and labor that the program uses. The main consumables in this analysis are drugs, nutritional supplies, and laboratory consumables. Drug costs of PMTCT treatment were taken directly from the Supply Chain Management System (SCMS) 2009–2014 quantification exercise document. Drug costs of first- and second-line ART were obtained from CDC's Rapid Cost Assessment (Annex B). The cost of third-line regimens, which are not yet provided in Guyana, was taken from the Médecins Sans Frontières (<http://utw.msfacecess.org/drugs>) website. Nutritional commodity requirements and prices were obtained from the NAPS Food Bank.

Determining the cost of labor requires data on how much labor by skill type is currently being used to provide each unit of service being delivered. First, it is necessary to determine how much of the health worker's time, broken down by cadre, is required to produce a unit of service. Second, the cost of health workers must be calculated by examining their annual salary. Health worker salaries were determined by using the 2009 government salary wage chart. Salaries included allowances (i.e. for uniforms and transportation), the extra month of wages that is paid out to health workers, and the 7 percent government contribution to benefits. Hardship pay to workers in remote areas and housing provided to doctors was not included. For PMTCT treatment and HIV testing and counseling, the unit of cost determined is the cost per pregnancy treatment and cost per counseling session, respectively.

To reduce duplication of efforts, the projected unit cost of ART in 2011 through 2015 was taken from CDC's Rapid Cost Assessment (Annex B). These projections were modified by CDC upon the request of Health Systems 20/20 to take into account lower capital costs and reduced budgeting for human resources and overheads following the transition of key elements of ART services from international organizations to MoH, as detailed in Annex B. However, the labor required for ART per person per year was needed to assess the human resource gap. The annual number of clinic visits an ART patient

made was determined by analyzing ART guidelines. The labor required for the provision of treatment to one ART patient was calculated using data collected at sites by the HAPSAT team (see section 2.2.3).

Cost of mass media was obtained from NAPS (Singh 2010; Ganesh interview, August 2010) and from leading TV and radio stations, namely, TV channels 11 and TVG 28, and radio stations Voice of Guyana and 98.1 FM. Cost of non-facility-based activities, such as prevention outreach and care and support activities, were obtained from NAPS (Singh 2010) and NGOs.

There is significant variation in the “bundle” of outreach prevention and care and support services offered by the large number of providers in Guyana. Furthermore, donors and implementers gave the research team their budgets and expenditures in different forms: some provided costs at the activity level, and others provided more detailed costs at the input level. As such, all the relevant activities for which unit costs were collected are presented in the analysis. For prevention and care and support services, no estimates were calculated for human resource needs because of the wide variation in the types of care and cadres required for nonclinical services compared to clinical care, which is delivered according to protocol and by a relatively limited set of cadres.

### 2.2.3 FACILITY-LEVEL PARAMETERS

Six hospitals, one health center, and five NGOs (Table 2) were surveyed to determine the key human resources parameters for clinical HIV/service delivery (i.e., the set of cadres that currently deliver ART, PMTCT, and HIV testing and counseling services). Researchers administered surveys to the clinical directors for HIV services in these facilities and obtained supplementary information from staffing schedules, service delivery reports, and interviews with clinical service staff. The different types of health facilities combined provide 70 percent of ART nationally.

### 2.2.4 SERVICE UTILIZATION

Current service utilization was obtained mainly from NAPS reports (Country Coordinating Mechanism Guyana 2009; Presidential Commission on HIV and AIDS 2010b; Singh 2010) as well as from interviews with stakeholders (Annex A). National coverage levels of facility-based services such as ART and PMTCT were easily available from these reports; however, the reach of prevention outreach, as well as care and support services, was harder to assemble due to the lack of a central strategic information system. Nevertheless, it was possible to map the reach of the major prevention outreach and care and support services activities.

**TABLE 2: SITES FROM WHICH FACILITY-BASED DATA WERE COLLECTED**

| Facility   | Type of facility            | Region |
|--|-----------------------------|--------|
| St. Joseph Mercy Hospital                                | Private hospital            | 4      |
| National Care & Treatment Center                         | National hospital (Level 5) | 4      |
| Dorothy Bailey Health Center                             | Health center (Level 2)     | 4      |
| Guyana Responsible Parent Association                    | NGO                         | 4      |
| Georgetown Chest Clinic                                  | National hospital (Level 5) | 4      |
| New Amsterdam Hospital                                   | Regional hospital (Level 4) | 6      |
| Skeldon  | District hospital (Level 3) | 6      |
| Fighting, Abstinence, Consciousness, Togetherness (FACT) | NGO                         | 6      |
| St. Francis Community Developers                         | NGO                         | 6      |
| Comforting Hearts  | NGO                         | 6      |
| Suddie Family Health Clinic                              | Regional hospital (Level 4) | 2      |
| Hope for All   | NGO                         | 2      |

### 2.2.5 RESOURCE EXPENDITURE

Data on Global Fund expenditures for HIV/AIDS services from April 2008 to March 2009 were obtained from the EFR of the HIV and TB Round 3 grants. For 2010–2015, data were obtained from the Global Fund's Round 8 TB and health system strengthening proposals, and from its Round 3 RCC HIV proposal for 2010–2016. These data were supplemented with the Global Fund's financial reports (The Global Fund to Fight AIDS Tuberculosis and Malaria 2011a). Regarding the TB grants, only the budgets allocated to HIV/TB service delivery areas were used in the HAPSAT analysis.

Data on PEPFAR expenditures for HIV/AIDS services were collected from PEPFAR's FY budgets for 2009 and 2010 and from discussion with the PEPFAR/Guyana. Both PEPFAR and Global Fund figures were adjusted to a calendar year of January to December. Figures on domestic resources and United Nations funding were obtained from a Global Fund Round 3 HIV RCC proposal for 2010–2016 as well as from interviews.

### 3. CURRENT AND TARGET SERVICE DELIVERY LEVELS AND THEIR PROJECTED COSTS

#### 3.1 ART SERVICE DELIVERY AND PROJECTIONS

In 2009, 2,832 people were on ART, further increasing to 3,059 in 2010. Based on CDC’s Rapid Cost Assessment (see Annex B), in 2011 the unit cost per patient per year on pre-ART is US\$1,068, for first-line ART it is US\$2,249, and for second-line ART the cost is US\$3,093. In 2012 the cost will decrease to US\$554, US\$1,552 and US\$2,365 for pre-ART, first- and second-line treatments, respectively. The decrease is due to an expected reduction in overhead with the transition of the management of ART services from international implementing agencies to the MoH. The 2015 unit cost was reduced further, as PEPFAR’s support is expected to end, and with it the technical assistance it provides to ART services. The annual cost will decrease from US\$9.3 million in 2011 to US\$6.8 million in 2012, gradually increasing in 2013 and 2014 to US\$7.5 million due to the increase in targets, and then again decreasing in 2015 to US\$6.5 million, due to the further decrease in the overheads mentioned above.

**TABLE 3: 2011–2015 TARGETS OF ART**

|   | 2011        | 2012        | 2013        | 2014        | 2015        |
|---|-------------|-------------|-------------|-------------|-------------|
| Pre-ART patients                            | 1,246       | 1,346       | 1,454       | 1,571       | 1,697       |
| Pre-ART cost per person per year (US\$)     | 1,068       | 554         | 563         | 573         | 493         |
| First-line ART targets                      | 3,056       | 3,329       | 3,575       | 3,796       | 3,995       |
| First-line cost per person per year (US\$)  | 2,249       | 1,552       | 1,512       | 1,478       | 1,223       |
| Second-line ART targets                     | 340         | 370         | 397         | 422         | 444         |
| Second-line cost per person per year (US\$) | 3,093       | 2,365       | 2,302       | 2,248       | 1,865       |
| Annual cost (US\$)                          | 9.3 million | 6.8 million | 7.1 million | 7.5 million | 6.5 million |

The above unit costs are lower than previous CDC unit costs of ART in Guyana for three major reasons. First, the unit cost of ART used in this report excludes capital costs other than training. Given Guyana’s high level of coverage, implementers anticipate much lower levels of capital investment will be required to support ART delivery in the future. A caveat to this assumption is that the marginal cost of providing ART to the few additional individuals that could be considered hard to reach (due to geographical location, resistance to testing/treatment, or fear of stigma) will be more expensive compared to the average cost of providing ART to those currently on treatment. For example, reaching those patients located in areas geographically difficult to reach may require some investment in mobile testing/treatment units. Second, the overhead from 2012 through 2015 was reduced. By 2012, international organizations currently supporting the implementation of ART services will limit their support of technical assistance and will hand over the implementation to the MoH, which has lower overheads. Third, the above unit costs are based on MoH salaries, which are usually lower than donors’ salaries, and by 2011, most of the health providers of ART will be paid by the MoH.

A question stakeholders raised is the cost of transitioning from first-line to second- and third-line regimens. The overall adherence rate in 2009 was 72.2 percent, which is in line with the adherence rate

found in a study reviewing 33 patient cohorts with 74,192 patients in 13 countries (Rosen, Fox et al. 2007). In the study, 56 percent of the attritions were due to death, while in Guyana, deaths represented only 41 percent of the attritions in 2009 (Singh 2010). A possible reason for this difference is that ART in Guyana is initiated when CD4 count is below 350, while the average CD4 count in the 33 cohorts examined was much lower at 132.

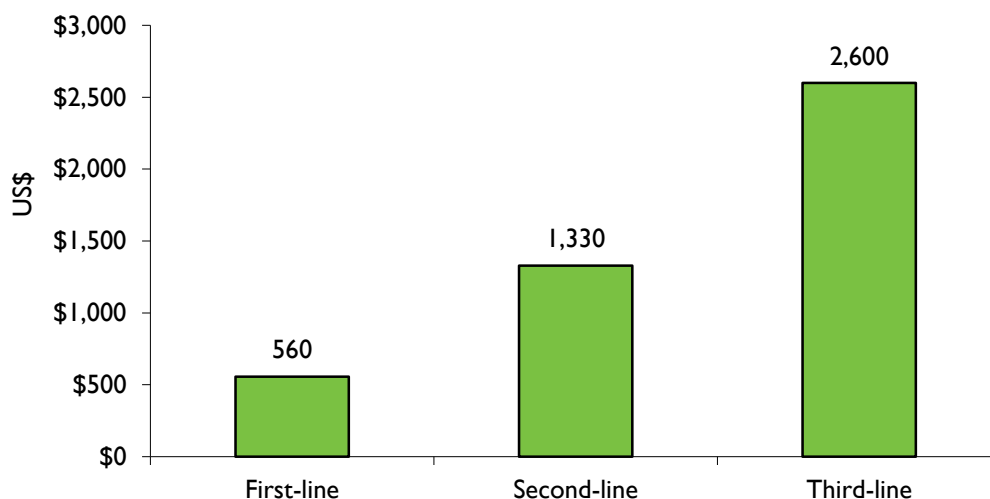
Treatment interruption often leads to resistance to ARV, at both the first- and second-line regimens (Oyugi, Byakika-Tusiime et al. 2007). In addition to complicating the treatment, interruption raises the cost. The cost of drugs per patient in the second-line regimen is more than twice the amount of first-line regimen (US\$1,330 versus US\$560) (Figure 10). Between 2007 and 2009, the proportion of patients treated with second-line regimens increased 3 percent annually, and if this trend is to continue, the overall cost of ART will rise. Third-line regimens are not yet provided in Guyana. Table 4 lists the third-line regimens mentioned in WHO 2010 ART guidelines (World Health Organisation (WHO) 2010), and these include raltegravir (RAL), etravirine (ETV), or darunavir (DRV) combined with ritonavir (RTV or r). Each one of these antiretroviral is provided with the optimized background regimen (OBR) chosen by genotyping and phenotyping. The most expensive regimen is the combination of all three options, costing US\$3,204 per patient per year, but it is given only to those with few remaining treatment options (World Health Organisation (WHO) 2010). Based on these data, the average cost of third-line regimen is US\$2,600, twice the cost of second-line ART drugs, and 4.7 times the cost of first-line ART drugs (Figure 10).

**TABLE 4: COST OF THIRD-LINE REGIMEN**

| Regimen   | Daily dose       | Drug cost per patient per year | Regimens cost per patient per year (third line + OBR) |
|---|------------------|--------------------------------|---|
| DRV 300mg tablet and RTV 100mg soft-gel capsule | DRV – 4; RTV – 2 | 1,178                          | 2,469   |
| RAL 400mg tablet                                | 2                | 1,113                          | 2,404   |
| ETV 100mg tablet                                | 4                | 913                            | 2,204   |
| RAL, ETV, and DRV/r                             |                  | 3,204                          |   |

Source: Regimens are from WHO 2010 ART guidelines (World Health Organisation (WHO) 2010) and prices are from Medecins Sans Frontieres (<http://utw.msfaaccess.org/drugs>); The cost of OBR was assumed to be the cost of second-line regimen.

**FIGURE 10: COST OF ART DRUGS, BY LINE REGIMENS**



Source: First- and second-line regimens are from CDC's Rapid Cost Assessment 2010 (Annex B)



Unstructured treatment interruptions can be reduced if treatment is easily accessible to the patient, in terms of availability and cost of drugs. In Guyana, ART is free and, in general, the supply of antiretroviral drugs is adequate. ART is provided through 18 ART centers and a mobile team servicing four remote hinterland regions. Through the current integration of ART services into general services, ART will be even more accessible.

Adherence is reported to be linked to the number of self-reported slimming symptoms and, as such, it is important to provide nutritional support to people on ART (Marcellin, Boyer et al. 2008). Since non-adherence to treatment is more acute within mobile populations, substance abusers, and individuals who are influenced by cultural factors (Presidential Commission on HIV and AIDS 2010a), scaling up this service to those populations should be a priority. Moreover, nutritional support per person per year costs US\$240, substantially lower than the marginal cost of putting a patient on second- or even third-line regimens. The implementation of prevention and care and support activities centered on stigma reduction, as outlined in this report, should also increase adherence to ART. Stigma reduction will lower self-HIV stigma. Self-HIV stigma has been found to be negatively correlated with adherence (Dlamini, Wantland et al. 2009).

### 3.2 HIV TESTING AND COUNSELING SERVICE DELIVERY AND PROJECTIONS

The number of people tested for HIV in 2009 was 105,030 (Singh 2010). This is equivalent to 27 percent of the 15–49 years old population, though anecdotal evidence indicates that many people test multiple times during the year.

HCT targets for 2011–2015 were formulated based on the past trends: it was assumed the reach will increase annually by 16,200. The 2011 target of almost 126,000 HIV tests in 2011, at a unit cost of US\$4.4, is estimated to cost US\$554,000. By 2015, the unit cost is expected to increase to US\$5 due to increase in labor costs. The target for the same year is almost 191,000, and the total cost is US\$953,000.

**TABLE 5: 2011–2015 TARGETS OF HIV TESTING AND COUNSELING TREATMENT**

|                                    | 2011    | 2012    | 2013    | 2014    | 2015    |
|------------------------------------|---------|---------|---------|---------|---------|
| HIV testing and counseling targets | 125,869 | 142,060 | 158,251 | 174,442 | 190,633 |
| Cost per person tested (US\$)      | 4.4     | 4.6     | 4.7     | 4.9     | 5       |
| Annual cost (US\$)                 | 553,824 | 653,476 | 743,780 | 854,766 | 953,165 |

### 3.3 PMTCT SERVICE DELIVERY AND PROJECTIONS

In 2009, the number of pregnant women tested for HIV was 11,776, or 86 percent of the 13,759 pregnancies for the year (Iyer 2010). The number of HIV-positive pregnant women treated in 2010 to prevent vertical transmission was 158, 87.3 percent of the 181 women found to be HIV-positive prior to or upon entry at the labor and delivery ward (Iyer 2011).

The unit cost ranges from US\$341 to US\$357 between 2011 and 2015 (Table 6). The annual cost will range from US\$53,500 to US\$55,800 between 2011 and 2015.

**TABLE 6: 2011–2015 TARGETS OF PMTCT TREATMENT**

|                                   | 2011   | 2012   | 2013   | 2014   | 2015   |
|-----------------------------------|--------|--------|--------|--------|--------|
| PMTCT treatment targets           | 160    | 155    | 160    | 155    | 155    |
| Cost per pregnancy treated (US\$) | 341    | 345    | 349    | 353    | 357    |
| Annual cost (US\$)                | 54,560 | 53,475 | 55,840 | 54,715 | 55,335 |

## 3.4 PREVENTION ACTIVITIES AND STIGMA REDUCTION

Outreach prevention is carried out mainly by NAPS and NGOs supported by phase two of the Guyana HIV/AIDS Reduction and Prevention Project (GHARPII), a USAID-funded project. The Red Cross/Red Crescent, United Nations Development Program (UNDP), United Nations International Children's Emergency Fund (UNICEF), and the Peace Corps are among those organizations that implement smaller-scale prevention activities. Although the reach of major implementers is reported in the HAPSAT analysis, the extent to which programs overlap is unclear, inhibiting an assessment of the coverage of HIV prevention efforts.

According to the latest figures for PEPFAR-supported programs reporting on the period of October 2008 to September 2009, 30,100 individuals were reached through community outreach HIV/AIDS prevention activities that promoted abstinence and/or being sexually faithful. During the same period, 40,200 individuals were reached through community outreach HIV/AIDS prevention activities that promoted correct and consistent use of condoms and through related interventions.

In 2009, NAPS, with Global Fund financing, achieved the following: 125 community leaders and 145 peer educators were trained to reduce stigma and discrimination related to HIV/AIDS; 7,900 Me-to-You pledges were signed ensuring ongoing interpersonal communications on HIV prevention; and youth were reached through several competitions and sport events, as well as through activities surrounding World AIDS Day. Other prevention activities supported by the Global Fund during 2009 included the distribution of 2.57 million condoms and the diagnosis and treatment of 1,585 STI episodes (Singh 2010; The Global Fund to Fight AIDS Tuberculosis and Malaria 2011b).

### 3.4.1 STIGMA REDUCTION

HIV stigma and discrimination are major concerns stakeholders have raised. No publicly available data exist on the extent and/or trends of this barrier in Guyana; however, a recent report on stigma and discrimination in Guyana (Choy, Thomas et al. 2009) explored the issue qualitatively and provided a range of recommendations, including the following:

1. Implement institutional and legislative anti-stigma interventions, such as training nurses to improve their attitude toward HIV-infected patients, which is essential for effective interaction and treatment. The recommendation to train health professionals on stigma reduction was also featured in a report on Sexual and Gender Minorities in Guyana (Wills 2010).
2. Empower and educate PLWH and their families through education on HIV and training families in primary care and treatment.
3. Develop and apply additional group-based counseling approaches to deal with self-stigma.
4. Encourage PLWH to openly speak about their experience with the public.
5. Promote HIV as a topic for discussion in homes by going beyond youth and vulnerable groups and reaching heads of households and the aged population. These groups have significant influence on the attitudes and behaviors of the younger population. Open discussion on HIV/AIDS among friends and family was shown to be a key factor in Uganda's success in the 1990s (Low-Beer and Stoneburner 2004; Stoneburner and Low-Beer 2004).
6. Promote sex education in schools to address the sex taboo issue, including through the use of peer educators. In rural communities, peer education networks should be established. These networks would benefit from working with schools and faith-based leaders on tackling the taboo challenge.
7. Involve more faith-based and cultural organizations in the conceptualization and delivery of HIV-related programs. Encourage faith-based leaders to advocate for building pro-social behaviors

(such as compassion, support, and care) among congregational members. This recommendation led to the establishment of a National Faith Coalition on HIV and AIDS to reach their constituents

Recommendations 2, 3, and 6 could be addressed through prevention outreach and care and support services (see the following sections). Stigma reduction among community and religious leaders, as well as among health and uniformed staff, is a priority. Costing data on two stigma-reduction activities were collected.

One stigma-reduction activity is training of trainers (ToT), a three-day training for health workers who will then be expected to train their colleagues on the subject. The unit cost for this activity is US\$209. The ToT for health workers can be shortened to two days, which will lower the cost to US\$158 per person trained. These two days can be split into two sessions, each one-day long, with an interval of one month, to enable the trainees to reflect on the course material. The first session can include an overview of the subject and its importance as well as role plays, while the second session can be used for participants' discussion of their thoughts and experiences since the first session, as well as for an assessment of the extent trainers trained their colleagues. A total of 444 health professionals will need to be trained: one person from each of the 135 health centers, and 10 persons from each of the 31 hospitals (Ministry of Health (MOH) [Guyana] and WHO/Pan American Health Organization (PAHO) 2009). Assuming a two-day ToT is applied, the cost would be roughly US\$70,000 for the first year. Such training will need to be conducted annually. After the first year, the majority of trainings in a given year would be a one-day refresher course. The minority of trainings would be for new trainees, which would involve a two-day training. Assuming 18.5 percent attrition rate (UNAIDS 2009), new recruits filling the vacant positions will need to be fully trained and the remaining will require a one-day refresher course (US\$106 per person), the annual cost of stigma reduction will be US\$51,000 after the first year. The trained trainers will be required to provide workshops on stigma and discrimination to their colleagues. This is estimated to cost US\$20, which includes snacks, materials, and transportation for those arriving from the 241 health posts. The number of health professionals who are likely to deal with AIDS patients is 3,525 in 2011, with an annual increase of 673 thereafter (Ministry of Health (MOH) [Guyana] and WHO/Pan American Health Organization (PAHO) 2009). This will require US\$70,000 in 2011 and an additional US\$13,500 annually thereafter.

The other activity is a two-day workshop for community leaders with a unit cost of US\$93 (Table 7). Targets for training community leaders can be obtained from the HIV Round 3 RCC proposal. Based on the unit cost, the estimated annual cost will increase from US\$6,900 in 2011 to US\$40,000 in 2014 (Table 8).

**TABLE 7: UNIT COST OF STIGMA-REDUCTION ACTIVITIES**

| <b>Services</b>                               | <b>Annual unit cost (US\$)</b>                    | <b>Method</b>                 |
|---|---|-------------------------------|
| Training of trainers for health professionals | 209 (3 days); 158 (2 days); 106 (1 day refresher) | Bottom-up costing of NGO data |
| 1-day training for health professionals       | 20  | Bottom-up costing of NGO data |
| Community leaders trained                     | 93 (2 days)                                       | Top-down costing of NAPS data |

**TABLE 8: TARGET FOR STIGMA-REDUCTION SERVICES**

| Service                                       | Rationale for targets                  |                      | 2011             | 2012   | 2013   | 2014   | 2015 |
|---|--|----------------------|------------------|--|--------|--------|------|
| Training of trainers for health professionals | See text above                         | Annual target        | 444 new trainees | 81.5 percent (362) past trainees, 18.5 percent (82) new trainees |        |        |      |
|   |  | Annual budget (US\$) | 70,000           | 51,000   |        |        |      |
| Training health professionals                 | See text above                         | Annual target        | 3,525            | 673  |        |        |      |
|   |  | Annual budget (US\$) | 70,000           | 13,500   |        |        |      |
| Community leaders trained                     | Targets as in HIV Round 3 RCC proposal | Annual target        | 74               | 100  | 125    | 425    |      |
|   |  | Annual budget (US\$) | 6,882            | 9,300  | 11,625 | 39,525 |      |

Note: Attrition rate of 18.5 percent was based on a World Bank study among nurses in 2007 (UNAIDS 2009).

The ongoing integration of HIV clinical services into general health care is likely to help in stigma reduction by forming the perception that AIDS is simply another chronic disease, rather than a disease that requires its patients be separated from others.

It should be noted that reduction of stigma and discrimination is a cross-cutting theme among all BCC strategies employed by the prevention program. The perception among stakeholders, as reflected in the UNGASS report, is that programs are in place to reduce HIV-related stigma and discrimination through the media, school education, and use of celebrities; however, the stakeholders expressed some concern about whether appropriate messages are deployed to address this issue (Presidential Commission on HIV and AIDS 2010b). Guyana's HIV response will benefit from addressing these concerns to ensure these activities are good investments.

### 3.4.2 PREVENTION ACTIVITIES: HIV AWARENESS THROUGH MASS MEDIA

As part of Guyana's prevention activities, mass media is being used extensively for HIV/AIDS awareness. In 2009 alone, 15,337 spots were aired through 13 television channels and one radio station. In the same year, 241,981 posters, brochures, and other educational materials were distributed (Singh 2010). In addition, HIV/AIDS messages were posted on government property, as well as on two commercial billboards near Georgetown airport and Berbice Bridge. HIV awareness television advertisements are aired regularly while HIV awareness television programs are aired periodically. Most of these spots are shown during primetime. Each of NAPS' six HIV campaigns during 2010 is utilizing at least three mediums (Table 9). In all six campaigns, posters as well as television advertisements or documentaries are being used.

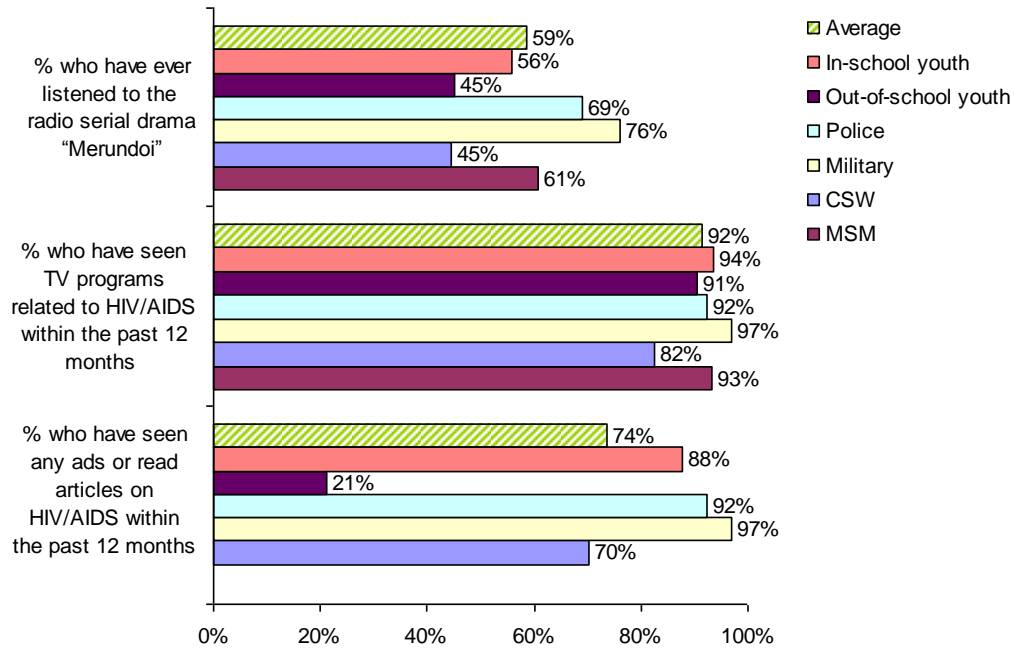
**TABLE 9: USE OF MASS MEDIA IN NAPS' SIX HIV CAMPAIGNS, 2010**

| <b>Campaign</b>  | <b>TV<br/>advertisements</b> | <b>Documentary</b> | <b>Radio<br/>advertisements</b> | <b>Brochures</b> | <b>Billboards</b> | <b>Posters</b> |
|--|------------------------------|--------------------|---------------------------------|------------------|-------------------|----------------|
| 1. Interventions among religious groups, children, and young adults      | Yes                          |                    | Yes                             |                  |                   | Yes            |
| 2. Introduction of preventative measures for people living with HIV/AIDS |                              | Yes                |                                 | Yes              |                   | Yes            |
| 3. Prevention of TB/HIV co-infection among persons living with HIV       | Yes                          |                    | Yes                             | Yes              | Yes               | Yes            |
| 4. Prevention of sexually transmitted infections                         | Yes                          | Yes                | Yes                             | Yes              |                   | Yes            |
| 5. Prevention of mother-to-child transmission of HIV                     | Yes                          | Yes                |                                 | Yes              | Yes               | Yes            |
| 6. Interventions for greater involvement of men in health services       | Yes                          |                    | Yes                             | Yes              |                   | Yes            |

Source: (Ganesh interview, August 2010)

Since NAPS uses different media, the effectiveness of the campaign is likely to increase (Kennedy, Mizuno et al. 2000; Agha 2003; Khan, Kabir et al. 2004; Katz 2006). The various forms of media also provide different benefits. Television has the highest exposure of all forms of media in Guyana. In the 2008 Biological and Behavioral Surveillance Survey (BBSS) among youth, uniformed populations, CSWs, and MSM, the average proportion of the surveyed populations that had seen a TV program related to HIV/AIDS in the past 12 months was 92 percent, compared to an average exposure of 74 percent of the surveyed populations to HIV-related printed material in the past 12 months. The proportion of those who had ever listened to the HIV awareness radio program Merundoi was lowest, at 59 percent (Figure 11)(Singh, Alleyne et al. 2010). However, television is more costly, both in production and in airing. Production for a 30-second television spot costs US\$1,194, compared to US\$75.40 for a 30-second radio spot. A 30-minute television documentary costs US\$5,370. The cost of airing a television advertisement was US\$20 dollars per 60 seconds in primetime, twice the cost of a 60-second advertisement during radio primetime. In addition to its low cost, radio is likely to reach populations that have no access to television. Unlike television and radio, printed material can be more customized to specific populations. The exposure of in-school youth and uniformed populations (military and police) to HIV-related printed material is as high as their exposure to television (Figure 11).

**FIGURE 11: EXPOSURE TO HIV INTERVENTIONS, BY SUBPOPULATION (SINGH, ALLEYNE ET AL. 2010)**



There are several reasons to consider reductions in the use of airtime. First, Guyana’s population has a high level of correct knowledge on AIDS (Figure 3). Second, in marketing, returns from advertising diminish quickly. A small frequency of one to three reminders per campaign is sufficient to sustain awareness of a particular message (Vakratsas and Ambler 1999). Table 10 shows the optimized exposure of the target population. The number of exposures for each campaign is much higher than the target population, yet to maximize the reach and the effect, the HAPSAT analysis assumed each person should be exposed three times through three different mediums (total of nine exposures). Based on this table, four of the campaigns will be relevant for a large segment of the population. Two campaigns are confined to target populations of PLWH and TB patients. These latter two populations can be reached effectively using targeted print material (brochures and posters on HIV/AIDS at TB clinics and in care and support centers) and outreach activities.

Mass media are required to reach the large segments of the remaining four campaigns. As shown in Table 10, the combined optimized exposure for these four campaigns is 20.4 million exposures. Although no comprehensive data exist on the number of exposures to HIV awareness in Guyana, the estimated exposure to the 15,337 spots in 2009 was most probably at least 100.4 million exposures.<sup>1</sup> To achieve 20.4 million exposures in 2010, approximately 3,100 spots would be needed to generate this level of exposure, assuming 24 percent of spots will be aired in major TV and radio stations, and of those, all programs and more than 50 percent of the ads will be in primetime.

<sup>1</sup> The number of exposures was estimated by the following method: based on interviews, it was assumed that 3,720 spots of the 15,337 spots aired in 2009 were aired in the major TV and radio channels (Channel 11, TVG 28, Voice of Guyana, and Radio 98.1 FM), with all programs and more than 50 percent of the ads aired in primetime. We assumed 3 percent (16,500 people) exposure of the adult population per spot, a total of 68.4 million exposures. In comparison, the average viewership in three different timeslots of a major TV channel in South Africa, SABC1, was 6.1 percent in early June 2010 (<http://41.215.233.179:8080/themedia/view/themedia/en/page260?oid=51841&sn=Detail&pid=1>). Another indication this is a conservative figure is that an average of 18 percent of CSW, MSM, in-school and out-of-school youth listened to the radio program Merundoi every day, according to the 2008 BBSS. For the remaining 11,199 spots, we assumed 0.5 percent (2,750 people) exposure of the adult population per spot, a total of 32 million exposures.

**TABLE 10: OPTIMIZED EXPOSURE PER CAMPAIGN**

| <b>Campaign</b>  | <b>Target population</b>           | <b>Optimized exposure (three exposures per person per medium [three mediums])</b> |
|--|------------------------------------|---|
| Interventions among religious groups, children, and young adults | 613,620 (age 10+)                  | 5,522,580   |
| Introduce preventative measures for people living with HIV       | 4,555 PLWH                         | 40,995  |
| Prevention of TB/HIV co-infection among persons living with HIV  | 5,184 PLWH and new TB cases (2009) | 46,656  |
| Prevention of sexually transmitted infections                    | 550,763 (age 15+)                  | 4,956,867   |
| Prevention of mother-to-child transmission of HIV                | 550,763 (age 15+)                  | 4,956,867   |
| Interventions for greater involvement of men in health services  | 550,763 (age 15+)                  | 4,956,867   |

### 3.4.3 OUTREACH INTERVENTIONS AMONG MSM AND CSWS

Two groups, MSM and CSWs, have high HIV prevalence. Among CSW, the HIV prevalence is 16.6 percent, though this is a decrease compared to the HIV prevalence of 26.6 percent in 2004. The decline among the MSM population was less apparent, from 21.3 percent to 19.4 percent in the same time period.

The number of CSWs reached in 2009 was 986, and of MSM it was 1,375. Most of the outreach is supported by GHARPII and the implementing NGOs coordinate the activities among themselves. This minimizes the risk of beneficiaries reached by more than one NGO, receiving the same service (Wills 2010; Edghill interview, 29 July 2010).

These two populations are probably a major source of infection. According to the BBSS 2008, CSW had an average of 3.4 (range of 0 to 30) clients within the last week (Singh, Alleyne et al. 2010). No data are available on the role of MSM in the transmission of HIV to non-MSM in Guyana; however, UNAIDS (Camara Email correspondence, 10 August 2010) provides regional data from some Caribbean countries, such as Trinidad and Tobago and the Dominican Republic, where 20 to 70 percent of MSM have sex with women. Trinidad and Tobago and Guyana share common cultural and ethnic make-up: Indian descents, African descents, Chinese descents, and a small amount of indigenous populations. Religious affiliation is similar in the two countries as well. Taking into account the high prevalence of HIV among MSM in the Caribbean, varying between 6 percent (in Suriname) and 32 percent (in Jamaica), and the frequency in the Caribbean in which MSM are married to women or have sex with women, it is very probable that the transmission of HIV from MSM to lower-risk populations is an important route of HIV transmission in Guyana (Camara Email correspondence, 10 August 2010).

Reaching MSM with prevention outreach is challenging due to elevated levels of stigma and discrimination. In addition, difficulties are posed in accessing MSM who do not self-identify as MSM (Wills 2010). Several NGOs, such as Artistes In Direct Support, FACT, GRPA, GUYBOW, and United Bricklayers, have established networks through which they reach MSM.

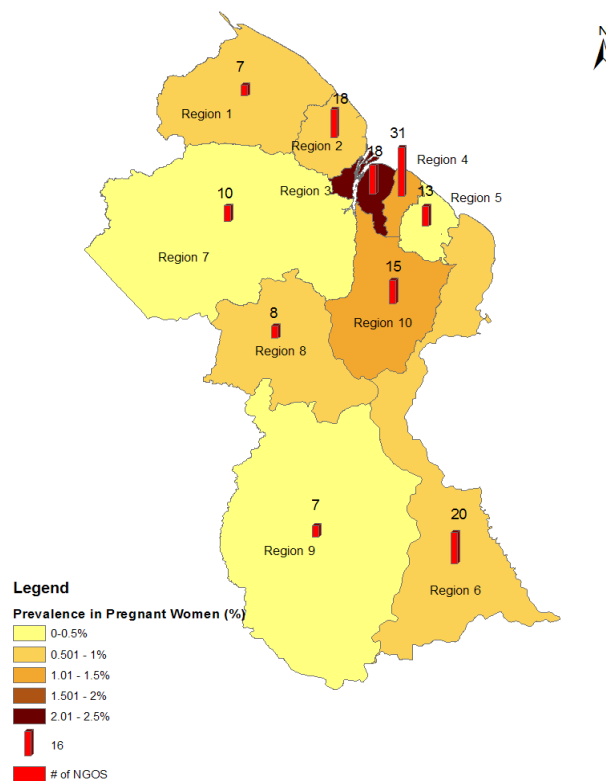
Targeting MSM and CSWs with prevention outreach has the highest unit cost of all types of prevention outreach, as detailed in Table 12. A yearly support group (monthly meetings) costs US\$109 for MSM and US\$96 for CSWs. An outreach activity will cost US\$78 and US\$72 for MSM and CSWs, respectively. These activities are typically conducted in small groups, and the target population is identified through informal networks. All these activities are likely to increase the unit cost; however, outreach programs for MSM appear to be one of the most effective ways of reaching out to this community (Wills 2010). Support groups are of particular value, and deploying them further is recommended in the UNAIDS report on stigma and discrimination in Guyana previously discussed

(Choy, Thomas et al. 2009). According to the report, through support groups, PLWH gain a positive self-image through the support groups, which empowers them when facing both potential stigmatization from others and internal stigma. Positive self-image will also ensure adherence to ART, as discussed in section 3.1.

CSWs may benefit more from vocational skills training for alternative income or supplemental income. The cost of entrepreneurial and vocational training for PLWH is US\$99 (Table 17). Such programs could be considered further for CSWs.

While the majority of sex workers in the more populous regions are reached with HIV prevention, there is lack of such services in rural and hinterland communities (Barrier 6.3.1b in Presidential Commission on HIV and AIDS 2010a). Other groups which are at relatively high risk of being infected with HIV in these areas are miners and loggers. As of July 2010, these mobile populations, located in hard-to-reach interior regions of Guyana, are now reached by NGOs (Presidential Commission on HIV and AIDS 2010b). The coverage of current HIV-prevention activities is unclear. HIV prevention outreach could most probably be scaled up through existing NGOs operating in these areas: the number of NGOs working in the interior areas ranges from 7 to 10 per region (Figure 12). One NGO reaching loggers reported the cost per person for a single prevention session to be US\$10. Guyana's HIV response has already partnerships with mining operators, such as the Guyana Geology and Mines Commission and Guyana Forestry Commission. Their employees reach the interior areas and as such act as peer educators and as HIV testing counselors (Presidential Commission on HIV and AIDS 2010a). The National Malaria Control Program could be a key partner in the HIV prevention efforts among these populations as it interacts with both the mining and logging communities.

**FIGURE 12: 2009 HIV PREVALENCE IN PREGNANT WOMEN (SINGH 2010) AND NUMBER OF NGOS, BY REGION**



Source: (Singh 2010)



The participants of HAPSAT’s second stakeholder workshop have formulated a tentative workplan for expanding outreach to vulnerable groups in the interior. The workplan included an assessment of the need and current services, as well as a plan to improve condom distribution and adapt BCC material. The actions are detailed in Table 11.

**TABLE 11: TENTATIVE WORKPLAN FOR EXPANDING OUTREACH TO VULNERABLE GROUPS IN THE INTERIOR**

| <b>Action</b>   | <b>Timeline</b>    | <b>Lead</b>                             |
|---|--------------------|---|
| Conduct a size estimation of vulnerable groups and their need   | TBD                | NAPS                                    |
| Conduct a mapping of available services in regions 1,7,8, 9, and 10   | 3 months           | NAPS/community mobilization coordinator |
| Develop a condom distribution plan for regions selected above, including exploring private-public partnership | 12 months, ongoing | NAPS/community mobilization coordinator |
| Adapt BCC material to vulnerable groups   | 12 months          | NAPS/community mobilization coordinator |

### 3.4.4 YOUTH

Several stakeholders, including the Ministry of Education, GHARPII (in 130 schools), the MoH, and the Health and Family Life Education (HFLE) program conduct HIV prevention for in-school youth. HFLE, a Caribbean Community (CARICOM) multi-agency activity, trained 2,000 teachers from 180 schools nationwide between 2006 and 2009. A survey conducted on 73 schools found 62 percent delivered HFLE to all grades in the 2009 academic year (Presidential Commission on HIV and AIDS 2010b).

UNICEF and other organizations carry out smaller initiatives whereby youth are reached by teachers and frequently by peer educators. In out-of-school settings, youth are reached through health clubs, youth clubs, faith-based organizations, and sports clubs. Edutainment such as music events, sports events, and story writing competitions are other types of HIV/AIDS outreach.

The unit cost of outreach prevention among in- and out-of-school youth is relatively low, ranging from US\$1 to US\$45 per student (Table 12). Unit costs for a school’s theater activity cost US\$1 per student reached. Quarterly half-day sessions for parents of in-school youth cost US\$11 per parent reached.

In line with the recommendations of the report on stigma and discrimination in Guyana, sex education needs to be promoted among the approximately 70,000 students in secondary schools to address the sex taboo issue, including through peer educators. Sex education could be strengthened in some of the existing HIV prevention programs in schools; however, the amount allocated to HIV prevention among youth should not be at the expense of HIV prevention among higher-risk groups.

**TABLE 12: UNIT COST FOR 10 PREVENTION OUTREACH ACTIVITIES**

| Services   | Annual unit cost (US\$) | Method                        |
|--|-------------------------|-------------------------------|
| Outreach activity for MSM by peer educators (each outreach two-months long, 13 sessions, average 20 participants)              | 78                      | Bottom-up costing of NGO data |
| Support group for MSM by peer educators (monthly meetings, 34 participants)  | 109                     | Bottom-up costing of NGO data |
| Outreach activity for CSWs by peer educators (each outreach two-months long, 13 sessions, average 20 participants)             | 72                      | Bottom-up costing of NGO data |
| Support group for CSWs by peer educators (monthly meetings, 35 participants)   | 96                      | Bottom-up costing of NGO data |
| Amerindians and loggers reached with a one-off session   | 10                      | Top-down costing of NGO data  |
| Peer educators trained (educators are expected to provide one-to-one BCC education; budget excludes reimbursement for travels) | 34                      | Top-down costing of NAPS data |
| In-school youth reached in programs in secondary schools (14 sessions per year, each one-hour long)                            | 11                      | Top-down costing of NGO data  |
| In-school youth reached with theatre activity in schools   | 1                       | Top-down costing of NGO data  |
| Parents of in-school youths reached with quarterly half-day sessions   | 45                      | Top-down costing of NGO data  |
| Youth reached with out-of-school sessions (low cost since they are near the NGO's location – no transportation cost)           | 3                       | Top-down costing of NGO data  |

### 3.4.5 CONSIDERATIONS FOR TARGET SETTING OF PREVENTION

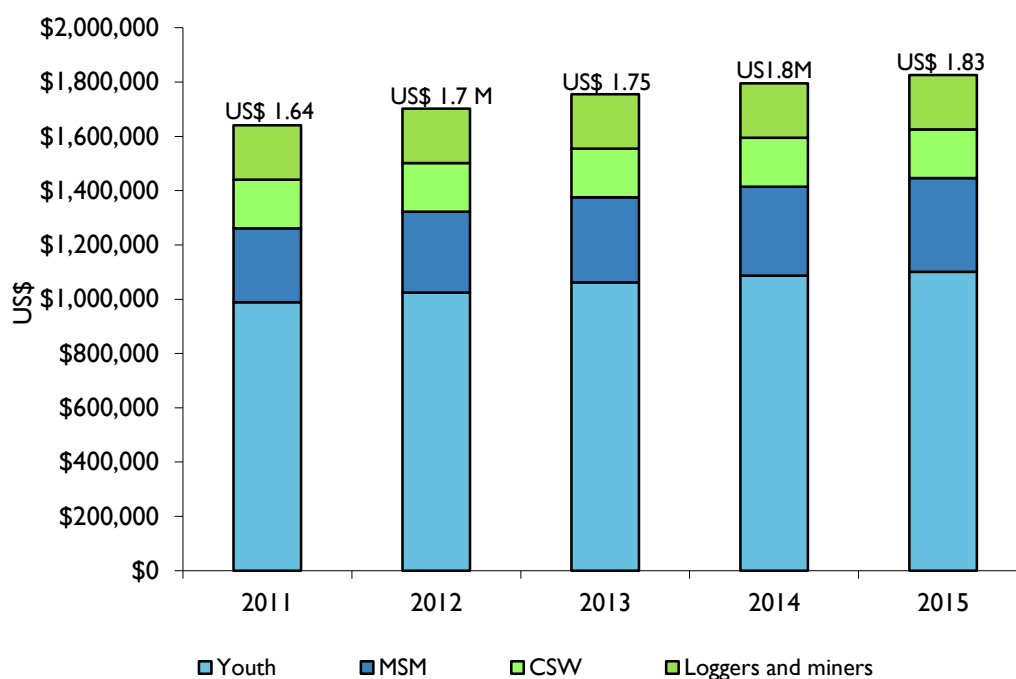
Table 13 and Figure 13 show the annual budget for 2011–2015 required for implementation of the prevention outreach costed above. The targets were mainly based on need, although for the peer-education training, the HAPSAT analysis obtained targets from the HIV Round 3 RCC proposal.

If all of the costed activities are implemented, the cost for outreach prevention will be US\$1.64 million in 2011 and US\$1.83 million in 2015. MSM and female CSW populations should be prioritized in prevention outreach. Prevention outreach should be intensified among MSM, in order to identify more MSM. Support groups for these populations will be most relevant for stigma reduction. Reaching vulnerable groups as well as miners and loggers in interior regions should also be a priority, and this work can be accomplished through the National Malaria Control Program, NGOs, and mining operators.

A large proportion of the budgeted outreach for prevention in Figure 13 is allocated to youth. Youth must be reached through sex education in order to reduce stigma. This can be done by various combinations of the activities in Table 13, though not necessarily all of them.

Given the high levels of correct knowledge on HIV/AIDS and the ongoing mass media campaigns, prevention outreach among lower-risk adults does not need to be prioritized. Any new campaign that requires reaching large segments of the population would benefit from short, intense campaigns using multiple mass mediums that generate approximately nine exposures, so that the target population of a given campaign will be reached preferably three times.

**FIGURE 13: ANNUAL BUDGET REQUIRED FOR IMPLEMENTATION OF ALL COSTED OUTREACH PREVENTION, BY POPULATION**



**TABLE 13: POTENTIAL TARGETS FOR OUTREACH PREVENTION**

| Service   | Rationale for targets  |                      | 2011    | 2012    | 2013     | 2014    | 2015    |
|---|--|----------------------|---------|---------|----------|---------|---------|
| Outreach activity for MSM by peer educators       | Given the difficulties in reaching MSM, assumed an annual increase of 5% from 2009 reach of 1,375              | Annual target        | 1,375   | 1,592   | 1,671    | 1,755   | 1,843   |
|   |  | Annual budget (US\$) | 107,250 | 124,155 | 130,363  | 136,881 | 143,725 |
| Support group for MSM by peer educators           | Assumed no increase in 2009's reach of 986, as this might exceed the number of CSWs                            | Annual target        | 1,516   | 1,592   | 1,671    | 1,755   | 1,843   |
|   |  | Annual budget (US\$) | 165,237 | 173,499 | 182,174  | 191,283 | 200,847 |
| Outreach activity for CSWs by peer educators      | Assumed no increase in 2009's reach of 986, as this might exceed the number of CSWs                            | Annual target        |         |         | 986      |         |         |
|   |  | Annual budget (US\$) |         |         | 70,992   |         |         |
| Support group for CSWs by peer educators          | 15 percent of 2009 reach   | Annual target        |         |         | 986      |         |         |
|   |  | Annual budget (US\$) |         |         | 94,656   |         |         |
| Entrepreneurial and vocational training for CSWs  | Guyana Geology and Mines Commission reports <8000 miners and Guyana Forestry Commission reports 12,700 loggers | Annual target        |         |         | 148      |         |         |
|   |  | Annual budget (US\$) |         |         | 14,652   |         |         |
| Miners and Loggers reached with a one-off session | Target as presented in the HIV Round 3 RCC proposal  | Annual target        |         |         | 20,000   |         |         |
|   |  | Annual budget (US\$) |         |         | 200,000. |         |         |
| Peer educators trained                            | Assumed entire grade is reached with an in-depth program   | Annual target        | 132     | 125     | 250      | 150     |         |
|   |  | Annual budget (US\$) | 4,488   | 4,250   | 8,500    | 5,100   |         |
| In-school youth reached in programs               |  | Annual target        | 14,491  | 15,011  | 15,508   | 15,926  | 16,210  |
|   |  | Annual budget        | 159,403 | 165,125 | 170,592  | 175,184 | 178,314 |

| Service   | Rationale for targets  |                      | 2011    | 2012    | 2013    | 2014    | 2015    |
|---|--|----------------------|---------|---------|---------|---------|---------|
| in secondary schools  |  | (US\$)               |         |         |         |         |         |
| In-school youth reached with theatre activity in schools            | Assumed all secondary schools are reached with theatre activity      | Annual target        | 86,947  | 90,068  | 93,050  | 95,555  | 97,262  |
|   |  | Annual budget (US\$) | 86,947  | 90,068  | 93,050  | 95,555  | 97,262  |
| Parents of in-school youth reached with quarterly half-day sessions | Assumed parents of entire grade are reached with an in-depth program | Annual target        | 14,491  | 15,011  | 15,508  | 15,926  | 16,210  |
|   |  | Annual budget (US\$) | 652,104 | 675,513 | 697,878 | 716,661 | 729,468 |
| Youth reached with out-of-school sessions                           | Assumed a target of one-third of 14–18 year olds                     | Annual target        | 28,693  | 29,723  | 30,707  | 31,533  | 32,097  |
|   |  | Annual budget (US\$) | 86,078  | 89,168  | 92,120  | 94,599  | 96,290  |

## 3.5 CARE AND SUPPORT ACTIVITIES

### 3.5.1 CARE AND SUPPORT FOR OVC

In 2008 and 2009, 5,710 services were provided to OVC, as shown in Table 14 (Presidential Commission on HIV and AIDS 2010b). Although some OVC might have benefited from more than one service, this large number of services is the result of Guyana's definition for OVC, which is not limited to those children affected by HIV. This expands the target population and explains why as much as 20 percent of Global Fund resources are invested in support for OVC, and PEPFAR invests an additional unspecified amount to such support. In comparison, only 10 percent of Global Fund expenditures were spent in 2008 on all care and support activities, of which OVC is part (Addai E., Atun R. et al. 2010). As of mid-2010, approximately 900 HIV-infected and affected OVC were supported by NAPS: half of them in orphanages and the other half identified through ART sites. Socioeconomic status and CD4 count are the major criteria for qualifying for OVC support in ART sites.

**TABLE 14: LARGE-SCALE OVC ACTIVITIES, 2008 AND 2009**

| Activity   | Number of OVC |
|--|---------------|
| Education items (textbooks, school bags, rain coats, and stationery) through Amenities Program (NAPS)  | 1,206         |
| Support for OVC via targeted institutions  | 917           |
| A package of services, including educational/vocational skills training, psychosocial support, nutritional counseling, general health care, and other services | 1,418         |
| Food and nutritional supplementation   | 971           |
| After-school programs  | 1,400         |
| Recreation activities in 2009 summer break   | 715           |
| <b>Total services provided to OVC</b>  | <b>5,710</b>  |

Source: (Presidential Commission on HIV and AIDS 2010b; The Global Fund to Fight AIDS Tuberculosis and Malaria 2011b)

The number of infected and affected OVC expected to receive HIV-related care and support in 2010 and 2011 is 2,100 and 2,700, respectively, according to the MoH Report on Target Setting Workshop (Ministry of Health (MOH) [Guyana] 2009). Table 15 presents 10 OVC services with unit costs ranging from US\$8 per OVC for two recreation activities during a summer break to US\$340 per OVC provided with foster families when parents work away from home.

**TABLE 15: UNIT COST FOR 10 OVC SERVICES**

| OVC Services  | Annual unit cost (US\$) | Method                         |
|---|-------------------------|--------------------------------|
| OVC participating in two recreation activities in summer break  | 8                       | Top-down costing of NAPS data  |
| OVC receiving education items (textbooks, school bags, rain coats, and stationery) through Amenities Program (NAPS) | 137                     | Top-down costing of NAPS data  |
| OVC participating in two-week summer program & public forum   | 36                      | Top-down costing of NGO data   |
| OVC receiving vocational training on hair dressing  | 153                     | Top-down costing of NAPS data  |
| OVC supported with literacy & remedial reading  | 239                     | Top-down costing of NGO data   |
| OVC reached with home and school visits   | 24                      | Top-down costing of NGO data   |
| OVC reached with psychosocial support   | 45                      | Top-down costing of NGO data   |
| Parents of OVC reached with full-day parenting session  | 58                      | Top-down costing of NGO data   |
| Caregivers trained  | 51                      | Top-down costing of NGO data   |
| OVC provided with foster families when parents work away from home  | 340                     | Bottom-up costing of NAPS data |

### 3.5.2 CARE AND SUPPORT FOR PEOPLE LIVING WITH HIV

Guyana's care and support for PLWH is another strategy that is implemented very comprehensively. In 2009, Guyana provided a total of 8,598 services to PLWH. Considering 4,055 PLWH were registered in the HIV program at the end of 2009 (Singh 2010), every person received on average more than two services a year; however, with the exception of nutritional support by the Food Bank, no database exists to track which PLWH receives what services.

**TABLE 16: LARGE-SCALE CARE AND SUPPORT ACTIVITIES FOR PLWH, 2009**

| Activity  | Services provided to PLWH |
|---|---------------------------|
| PLWH reached with home-based care   | 826                       |
| PLWH receiving economic support through the voucher program at treatment sites  | 1,324                     |
| Members of support groups   | 684                       |
| PLWH provided with vocational training (2006–2009)  | 635                       |
| PLWH receiving food hampers from the Food Bank  | 1,129                     |
| PLWH provided with palliative care as part of the Community Home and Palliative Care program (October 2008 to September 2009) | 4,000                     |
| Total services provided to PLWH   | 8,598                     |

Source: (Presidential Commission on HIV and AIDS 2010b; Singh 2010)

The targets for 2010 and 2011 for adult PLWH receiving HIV-related care and support are 3,500 and 4,500, respectively (Ministry of Health (MOH) [Guyana] 2009). Unit costs for care and support for PLWH were obtained for five services, ranging from US\$99 per PLWH provided with entrepreneurial and vocational training to US\$324 per PLWH reached with economic support through the voucher program (see Table 17). Two activities in particular, support groups and entrepreneurial and vocational training, are in line with the recommendations of the report on stigma and discrimination in Guyana. These two activities are empowering and educating PLWH and scaling up support groups.

**TABLE 17: UNIT COST FOR FIVE CARE AND SUPPORT SERVICES FOR PLWH**

| Service   | Annual unit cost (US\$) | Method                         |
|---|-------------------------|--------------------------------|
| PLWH reached with economic support through the voucher program  | 324                     | Top-down costing of NAPS data  |
| PLWH reached with nutritional support   | 240                     | Bottom-up costing of NAPS data |
| Infected & affected persons reached with home visits (including home-based care kits)   | 113                     | Top-down costing of NGO data   |
| PLWH and caregivers reached with support group (costly due to transportation costs; enables patients to visit clinic for treatment) | 239                     | Top-down costing of NGO data   |
| PLWH and caregivers reached with entrepreneurial and vocational training  | 99                      | Top-down costing of NGO data   |

### 3.5.3 CONSIDERATIONS FOR TARGET SETTING OF CARE AND SUPPORT

Table 18 and Table 19 provide potential targets for the care and support of OVC and PLWH costed in Table 15 and Table 17. The targets of all activities were based on the Report on Target Setting Workshop (Ministry of Health (MOH) [Guyana] 2009) and on targets from the HIV Round 3 RCC proposal (Country Coordinating Mechanism Guyana 2009). For certain activities it was assumed these targets might be too high and, therefore, only a portion of the target was used in the HAPSAT analysis (see Table 18 and Table 19).

If all OVC support activities were to be implemented, the annual cost would reach US\$810,000. Although annual budgets for OVC support have exceeded this amount in past years, those budgets included capital costs such as US\$740,000 for the renovation of orphanages. If all of the care and support activities for PLWH are to be implemented, the 2015 annual budget for those activities would be US\$975,000. If stigma reduction is a priority in this area, the focus should be on support groups and entrepreneurial and vocational training.

The large number of services that the many different implementers provide to PLWH and OVC require the establishment of a data system to track and eliminate any duplication of effort between the different service providers.

**TABLE 18: POTENTIAL TARGETS FOR OVC SUPPORT SERVICES**

| Service   | Rationale for targets  |                      | 2011–2015 |
|---|--|----------------------|-----------|
| OVC participating in two recreation activities in summer break  | 2011 target is from the Report on Target Setting workshop; 2012–2015 targets reflect maintaining the 2011 target | Annual target        | 2,700     |
|   |  | Annual budget (US\$) | 21,600    |
| OVC receiving education items (textbooks, school bags, rain coats, and stationery) through Amenities Program (NAPS) |  | Annual target        | 2,700     |
|   |  | Annual budget (US\$) | 369,900   |
| OVC participating in two-week summer program & public forum   |  | Annual target        | 2,700     |
|   |  | Annual budget (US\$) | 97,200    |
| OVC receiving vocational training on hair dressing  | Assumed 20 OVC per year since only 12 were trained in 2009   | Annual target        | 20        |
|   |  | Annual budget (US\$) | 3,060     |

| Service  | Rationale for targets   |                      | 2011–2015 |
|--|---|----------------------|-----------|
| OVC supported with literacy & remedial reading                     | Assumed only 20 percent of targeted OVC will require this service | Annual target        | 540       |
|  |   | Annual budget (US\$) | 129,060   |
| OVC reached with home and school visits                            |   | Annual target        | 540       |
|  |   | Annual budget (US\$) | 12,960    |
| OVC reached with psychosocial support                              |   | Annual target        | 540       |
|  |   | Annual budget (US\$) | 24,300    |
| Parents of OVC reached with full-day parenting session             |   | Annual target        | 540       |
|  |   | Annual budget (US\$) | 31,320    |
| Caregivers trained   |   | Annual target        | 540       |
|  |   | Annual budget (US\$) | 27,540    |
| OVC provided with foster families when parents work away from home | Assumed only 10 percent of targeted OVC will require this service | Annual target        | 270       |
|  |   | Annual budget (US\$) | 91,800    |

**TABLE 19: POTENTIAL TARGETS FOR CARE AND SUPPORT**

| Service   | Rationale for targets  |   | 2011                 | 2012    | 2013    | 2014    | 2015    |  |
|---|--|---|----------------------|---------|---------|---------|---------|--|
| PLWH reached with economic support through the voucher program                        | Target as in HIV Round 3 RCC proposal and its Grant Performance report | Annual target   | 716                  | 600     | 800     | 600     | 600     |  |
|   |  | Annual budget (US\$)  | 231,984              | 194,400 | 259,200 | 194,400 | 194,400 |  |
| PLWH reached with nutritional support   |  | Annual target   | 1,200                |         |         |         |         |  |
|   |  | Annual budget (US\$)  | 288,000              |         |         |         |         |  |
| Infected & affected persons reached with home visits (including home-based care kits) |  | Annual target   | 900                  |         |         |         |         |  |
|   |  | Annual budget (US\$)  | 101,700              |         |         |         |         |  |
| PLWH and caregivers reached with support group  |  | Assumed only 20 percent of targeted PLWH (4,500 will require this service (Ministry of Health (MOH) [Guyana] 2009)) | Annual target        | 900     |         |         |         |  |
|   |  |   | Annual budget (US\$) | 86,400  |         |         |         |  |
| PLWH and caregivers reached with support group in remote areas                        |  |   | Annual target        | 900     |         |         |         |  |
|   |  |   | Annual budget (US\$) | 215,100 |         |         |         |  |
| PLWH and caregivers reached with entrepreneurial and vocational training              | Annual target  |   | 900                  |         |         |         |         |  |
|   | Annual budget (US\$)   |   | 89,100               |         |         |         |         |  |

The need for PLWH to sustain themselves, in particular in light of the decrease in HIV funding, requires establishing both entry and exit criteria for social services. A draft guideline of entry and exit criteria for nutritional support has already been formulated by NAPS's Food Bank. The participants in HAPSAT's second stakeholder workshop formulated a workplan for establishing entry/exit criteria for social services, detailed in Table 20.

**TABLE 20: TENTATIVE WORKPLAN FOR ESTABLISHING ENTRY/EXIT CRITERIA FOR SOCIAL SERVICES**

| Action   | Timeline  | Lead  |
|--|-----------|---|
| Assess the entry criteria for social support services          | 2 months  | NAPS (social services coordinator, support group coordinator, and Food Bank manager), human resources |
| Develop procedures for channeling PLWH to appropriate support  | 4 months  |   |
| Develop guidelines and criteria for exit from support services | 12 months |   |

**Box 1: NAPS' Food Bank**

The major nutritional support provider for PLWH is NAPS' Food Bank. In 2008, 803 people received 1,989 food hampers. In 2009, 1,129 people received 3,983 food hampers. The Food Bank partners with 25 local businesses and other organizations. This activity is an excellent example of maximizing synergies. For example, in 2009 the private sector donated 22.8 percent of the cost of food items. Moreover, the transportation of the food hampers is highly cost-effective. The facilities that distribute the food hampers obtain them when a staff member is visiting Georgetown. Alternately, the hampers are sent with the NAPS support group coordinator when she conducts her monthly visits to support groups in the different regions. As such, transportation costs do not need to be incorporated into the budget. The large amount of food items the Food Bank purchases and receives enables it to embed the delivery costs into the food price (Presidential Commission on HIV and AIDS 2010b; Singh 2010; Ramessar interview, August 4 2010).

### 3.6 BUDGET NEED BASED ON POLICY SCENARIOS

The analysis above provides estimated costs for programmatic targets for ART, HIV testing and counseling, PMTCT treatment, stigma reduction, prevention outreach, and care and support for PLWH and OVC in 2011 through 2015. The cost by services is summarized in Table 21 and Figure 14.

ART is estimated to cost US\$9.3 million in 2011, decreasing to US\$6.8 million in 2012 followed by an increase through 2014, and then decreasing again to US\$6.5 million in 2015. The annual cost for maintaining universal access to PMTCT treatment will range from US\$53,500 to US\$55,800 between 2011 and 2015. To provide HIV testing and counseling, the annual cost will range between US\$550,000 and US\$950,000 from 2011 to 2015.

A wide range of outreach and care and support services were costed. If all of these activities were to be implemented with the targets outlined in sections 3.4 and 3.5, in 2015 the annual cost would reach US\$1.1 million for youth, US\$725,000 for vulnerable groups, US\$975,000 for care and support for PLWH, US\$809,000 for OVC support, and US\$64,500 for stigma reduction among health workers. The cost of these services is expected to be US\$13.5 million in 2011, eventually decreasing to US\$11.2 million in 2015. Although important, HIV services such as sexually transmitted infections diagnosis and treatment, treatment for opportunistic infections including TB, hotline services, condom distribution, HIV awareness through mass media, one-off outreach prevention activities (e.g. Guyexpo initiative), blood safety, universal precaution, post-exposure prophylaxis, non-routine surveillance, and capital costs



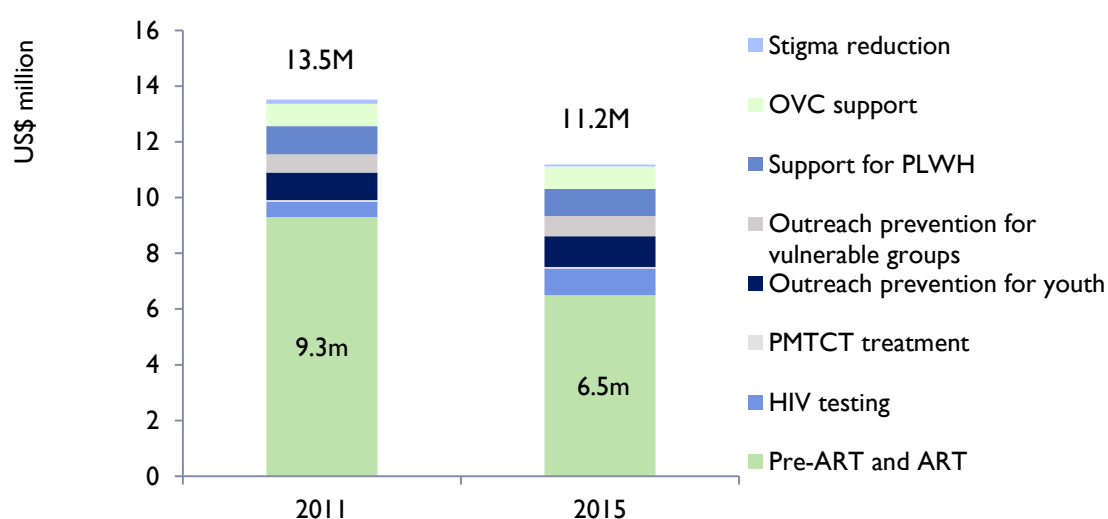
for supporting services such as supply management, laboratory strengthening, and monitoring and evaluation (M&E) were not costed. With the exception of the ART unit costs, provided by CDC, the HAPSAT analysis also excludes donor overheads, which vary greatly among implementers and donors.

**TABLE 21: TOTAL COST (US\$) OF REVIEWED SERVICES, 2011–2015**

| Service                                 | 2011 (US\$)  | 2012 (US\$)  | 2013 (US\$)  | 2014 (US\$) | 2015 (US\$)  |
|---|--------------|--------------|--------------|-------------|--------------|
| Pre-ART and ART                         | 9.3 million  | 6.8 million  | 7.1 million  | 7.5 million | 6.5 million  |
| Outreach prevention: youth              | 989,000      | 1,024,000    | 1,062,000    | 1,087,000   | 1,101,000    |
| Care & support                          | 1,012,000    | 975,000      | 1,040,000    | 975,000     | 975,000      |
| HIV counseling and testing              | 554,000      | 653,500      | 744,000      | 855,000     | 953,000      |
| OVC support                             | 809,000      | 809,000      | 809,000      | 809,000     | 809,000      |
| Outreach prevention: MSM                | 272,000      | 298,000      | 313,000      | 328,000     | 345,000      |
| Outreach prevention: CSWs               | 180,000      | 180,000      | 180,000      | 180,000     | 180,000      |
| Outreach prevention: loggers and miners | 200,000      | 200,000      | 200,000      | 200,000     | 200,000      |
| PMTCT treatment                         | 54,600       | 53,500       | 55,800       | 54,700      | 55,300       |
| Stigma reduction                        | 147,000      | 74,000       | 76,000       | 104,000     | 64,500       |
| Total cost of services reviewed         | 13.5 million | 11.1 million | 11.6 million | 12 million  | 11.2 million |

The cost of the HIV response is decreasing for three reasons. First, many past investments included the capital costs required for scaling up, but these costs are not necessary for maintaining a high level of coverage for HIV/AIDS services. Second, donors are transitioning their activities to the MoH, which has low-cost overheads and is best positioned to identify and address opportunities for health systems strengthening. Third, high levels of correct HIV knowledge and safe sex, as well as the substantial decline in HIV prevalence, will enable Guyana’s AIDS program to focus its resources on vulnerable groups and youth.

**FIGURE 14: TOTAL COST (US\$) OF REVIEWED SERVICES, 2011 AND 2015**



In order to sustain Guyana’s HIV response and maximize the impact of HIV funding, funds should be channeled into cross-cutting themes to achieve the following:

1. **A strengthened health system:** HIV funding has already been utilized for the construction of a modern warehouse to store and manage both HIV and non-HIV drugs and commodities (see Box 2). Such capital investments will provide Guyana’s health system with long-term benefits that the government can maintain even before the donors pull out.
2. **Efficiency gains:** The marginal cost of expansion of existing activities frequently decreases, and, as such, it may be more efficient to extend relevant services beyond those people infected and affected by HIV rather than to establish parallel services for those not infected or affected by HIV.
3. **Improved budget allocation:** The HIV funding for 2010 is estimated at US\$29 million. In comparison, the total health budget of Guyana in the same year is US\$66.5 million. Although the HIV funding is also allocated to non-health services, it is necessary to increase the investment of the HIV funding in cross-cutting themes to ensure more balanced allocation of resources.
4. **Integration of HIV services into general health care and social services:** Funding cross-cutting issues will facilitate integration of HIV services into general health care, and integration will result in cost savings. Further integration into social services is recommended. This is already done in several areas. For example, work safety curriculum includes material on HIV prevention. The participants of HAPSAT’s second stakeholder workshop formulated a tentative workplan for integrating further social services, detailed in Table 22, mainly through developing HIV education curricula for different professions that provide social services.

**TABLE 22: TENTATIVE WORKPLAN FOR INTEGRATION OF SOCIAL SERVICES**

| <b>Action</b>   | <b>Timeline</b>    | <b>Lead</b>                             |
|---|--------------------|---|
| Coordinate with line ministries and NGOs on integrating HIV education into existing curriculum of relevant employees such as social workers, representative of NGOs | 6 months           | NAPS/community mobilization coordinator |
| Developing HIV education curricula  | 12 months          | NAPS/community mobilization coordinator |
| Training of trainers (for those training social workers and NGO representatives)  | 12 months, ongoing | NAPS/community mobilization coordinator |

### **Box 2: Integration of the supply chain management system**

Joint supply chain management of HIV and non-HIV commodities reduces costs by obviating the need for parallel supply chain management systems. This rationale led several donors funding HIV-related commodities to partner with the MoH to create one central warehouse for storing all commodities. In 2007, following the implementation of a computerized Warehouse Management System, MoH warehouse operations for all essential drugs and supplies was moved from Kingston to Annex and have since been jointly operated and managed within the one warehousing and inventory management system. Seven staff of the MoH have been trained in warehouse operations and management as well as other supply chain skills. Standard operations procedures for warehouse operations and management have been implemented and adhered to. The SCMS and MoH are working further to integrate the storage of all health commodities in a new state-of-the-art warehouse currently being constructed using a multi-donor funding, which will open in 2011. Of Guyana's total pharmaceuticals and supplies, essential pharmaceuticals constitute approximately 90 percent, and the remaining 10 percent are antiretroviral and HIV-related commodities.

SCMS retains responsibility for the storage and inventory management of all donor-funded HIV-related commodities. Capacity-building is taking place with the stepwise transitioning of some operations to the MoH, such as the co-management of storage. In order for the MoH to take over the warehouse, it will need to increase its share of funds supporting the warehouse. Since 2006, PEPFAR funds have supported the large capital costs associated in strengthening the supply chain systems both at the central and facility levels. These funds covered the construction of a state-of-the-art warehouse, trainings, and the first few years of operation. The warehouse is an example of how donor funding can be utilized to contribute to an efficient, sustainable supply chain management system.



## 4. PROJECTING HEALTH WORKFORCE AVAILABILITY FOR HIV/AIDS

Availability of health workers is a major constraint in Guyana due to severe attrition of health workers, which is largely caused by high levels of emigration of the professional health care workforce (Osika, Islam et al. 2010). In addition, Guyana faces a challenge in recruiting health workers because of low salaries. A human resources gap analysis conducted in 2009 revealed that one-half to one-third of positions across most cadres are unfilled (Ministry of Health (MOH) [Guyana] and WHO/Pan American Health Organization (PAHO) 2009). The WHO/PAHO's gap analysis estimates attrition rates of 8 percent for doctors and 6 percent for other cadres – figures that are based on regional estimates. As the gap analysis states, a minimal amount of data are available on health worker attrition and emigration in Guyana. The attrition rate for nurses in Guyana was reported to be 18.5 percent, according to a 2009 World Bank study (The World Bank 2009). Research conducted for the HAPSAT indicated an attrition rate across all cadres of 17 percent at a major hospital in Georgetown.

The impact of the human resources gap on the provision of HIV/AIDS services over the next five years is a key concern of stakeholders engaged in the HIV/AIDS response in Guyana. Effectively transitioning programs and services is another major concern. To determine the amount of human resources required for HIV/AIDS services from 2010 to 2015, the HAPSAT model incorporated 2011–2015 targets of clinically based HIV services detailed in Chapter 3, data collected from government guidelines on the provision of HIV/AIDS services (Ministry of Health (MOH) [Guyana] 2006), and facility-based data collected by the HAPSAT research team.

At health facilities, data were collected on the amount of full-time equivalent (FTE) health worker time that is expended on HIV/AIDS services in Guyana. The HAPSAT team used health worker interviews and observations of health workers to calculate the amount of FTE expended on HIV/AIDS services. The data were then used to estimate the amount of FTE needed per year, by each cadre, according to each of the following categories of HIV/AIDS services: HIV testing, PMTCT treatment, ART, and pre-ART. An FTE staff member for a given service (e.g., ART) is a health professional who spends all his/her working time allocated for patient visits to provide that service. Since FTE is measured in terms of time, one FTE supplied by a single full-time employee is the same as the combined FTE of two part-time workers who work 50 percent each. For example, a doctor has 220 working days per year and is assumed to spend 6 hours each working day attending to patients. If a doctor spends, on average, 20 minutes per ART patient visit and each ART patient makes six visits to the doctor per year, then one doctor FTE for ART can see 660 patients per year. The remainder of this chapter presents the HAPSAT findings on the need of human resources for HIV/AIDS services in Guyana between 2010 and 2015.

HAPSAT estimations of human resources required for pre-ART, ART, PMTCT treatment and HIV counseling and testing in Guyana from 2010 to 2015 are presented in Table 23.

**TABLE 23: FTE OF HEALTH WORKERS REQUIRED FOR PRE-ART, ART, PMTCT TREATMENT, AND HIV COUNSELING AND TESTING**

| <b>Cadre</b>                                | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> |
|---|-------------|-------------|-------------|-------------|-------------|-------------|
| Medical doctor/ medical superintendent      | 5.6         | 6.0         | 6.6         | 7.1         | 7.5         | 7.9         |
| Nurse (all categories, incl. medex)         | 9.2         | 9.8         | 10.6        | 11.4        | 12.2        | 13.0        |
| Pharmacist                                  | 2.4         | 2.6         | 2.9         | 3.1         | 3.3         | 3.5         |
| Medical technologist                        | 2.3         | 2.4         | 2.6         | 2.8         | 3.0         | 3.2         |
| Counselor/social worker                     | 47.9        | 49.2        | 55.3        | 60.8        | 66.7        | 72.6        |
| Home-based care worker, STI outreach worker | 18.4        | 20.1        | 21.9        | 23.5        | 25.0        | 26.4        |

The number of medical doctors required for monitoring and treating all patients on pre-ART and ART will be 6 in 2011, increasing to almost 8 by 2015. This assumes these doctors will receive three patients per hour, or 18 patients during one working day, and that they will work 44 weeks per year. The analysis further assumes patients' visits are evenly distributed during the working hours. The number of nurses required for providing the above services is almost 10 in 2011, increasing to 13 in 2015. The highest need is for HIV counselors/testers, who will perform all HIV counseling and testing. A relatively high number of home-based care workers and STI outreach workers will be required, as they must travel to patients, which requires more time per patient than receiving patients within facilities. Several recommendations stem from this analysis:

1. **One FTE for ART is not justified if there are less than 600 pre-ART and ART patients:** This analysis implies that facilities with fewer than 600 pre-ART and ART patients will ensure their health workers' time will be used more effectively if they treat other chronic diseases. As of August 2010, only two facilities have more than 600 pre-ART and ART patients: the National Center for Treatment and Care, with 1,098 ART patients, and St. Joseph's Mercy Hospital, with 628 ART patients. HIV/AIDS services that are integrated into other health care services, contribute to cost reductions over time, maximize HIV/AIDS funds, and make the HIV/AIDS program sustainable. Such an integration of services also contributes to reducing potential inefficiencies regarding the division of health workers' labor.
2. **HIV counselors in facilities with fewer than 3,300 tests should be provided with other tasks:** Similarly to what is suggested above in regards to ART services, counselors should also be distributed according to the number of clients expected. A FTE counselor should be stationed only in facilities that have an average of 15 tests per day, or 3,300 per year. In facilities where there are fewer than 3,300 tests, the counselor should be provided with other tasks, or the testing should be done by other trained staff. The duplication of efforts in HIV testing services of the voluntary counseling and testing (VCT) and PMTCT programs was discussed by the participants in HAPSAT's second stakeholder workshop, and it was agreed that this needs to be assessed and addressed.
3. **Implementers should map all the outreach workers that provide care and support to ART patients and ensure no duplications exist:** The extensive use of home-based care workers and STI outreach workers for ART services is beneficial, particularly for the patient: in Uganda, the cost of home-based care was found to be 6 percent lower than facility-based care, and resulted in 66 percent lower out-of-pocket costs for patients after the first year on ART (Jaffar, Amuron et al. 2009). However, anecdotal evidence suggests that there is overlap between STI outreach workers, home-based care nurses, community outreach workers, and Directly Observed Treatment Short-course (DOTS) outreach workers. Guyana's HIV response should map all the outreach workers that provide care and support to ART patients and ensure

no duplications exist, using the total FTE of outreach workers in Table 23. Particular attention should be paid to PLWH on DOTS treatment, as these patients are visited extensively by the DOTS outreach worker: 40 visits in the first two months, and 40 visits in the remaining four months of the treatment.

4. **Health facilities should set up an appointment system:** Health worker shortages can be further tackled by ensuring clinics are open for at least eight hours per weekday. In many clinics, most patients arrive in the morning. By evenly distributing the provision of HIV services over a full eight hour workday, the time current health workers spend at work can be maximized. Participants in HAPSAT's second stakeholder workshop formulated a tentative workplan for adapting clinic hours to patients' needs, presented in Table 24.

**TABLE 24: TENTATIVE WORKPLAN FOR SETTING UP AN APPOINTMENT SYSTEM**

| Action   | Timeline of action |                                     |
|--|--------------------|-------------------------------------|
| (from start of project)  | Lead               |                                     |
| Assesses suitability of clinic hours in order to adapt opening hours to patients' needs    | 2 months           | NAPS/Care and treatment coordinator |
| Assess the disparity between the public and private clinics' appointment systems           | 3 months           | NAPS/Care and treatment coordinator |
| Train staff on using an appointment system, and educate patients on the appointment system | 4 months           | NAPS                                |

### **Box 3: PAHO's Integrated Management of Adolescent/Adult Illness program**

PAHO's Integrated Management of Adolescent/Adult Illness (IMAI) program in Guyana also plays a key role in working toward achieving better integration of HIV services into primary health care, while maximizing human resources for health. The program provides training for nurses, medical extension workers, doctors, community health workers, and outreach workers. A main obstacle in the integration of services is the stigma that health workers have towards patients receiving HIV/AIDS services. Stigma-reduction training for health workers, as previously discussed, is one area that could be expanded to overcome this obstacle.





## 5. IMPLEMENTATION OF AN INTEGRATED STRATEGIC INFORMATION DATABASE

A major challenge for Guyana’s HIV response is the coordination of donors to streamline the allocation of resources (Presidential Commission on HIV and AIDS 2010a; World Health Organisation (WHO) 2010). A strategic information database managed by NAPS’ M&E team will enable Guyana to coordinate data from multiple levels and sources, track the progress of the national response for national and international reporting, and provide regular feedback to actors at the subnational and national levels.

Table 25 details the HIV-specific surveillance mechanisms within the MoH (Osika, Islam et al. 2010). The major clinical HIV services, including ART, PMTCT, HIV-TB co-infection, and HIV testing, are monitored through the Registry of HIV Patient Monitoring System, surveillance forms, and monthly reports. An information system, HIVCARE, tracks the information related to HIV/AIDS patients on ART in three facilities (Osika, Islam et al. 2010). An additional database records the patients receiving nutritional support (Ramessar interview, August 4 2010).

**TABLE 25: HIV-SPECIFIC SURVEILLANCE MECHANISMS WITHIN THE MINISTRY OF HEALTH**

| Data source  | Description   | Responsible program  |
|--|---|--|
| Registry of Patient Monitoring System (HIV)  | Provides detailed and updated information on individuals. Monitors patients’ progression with the disease.  | NAPS   |
| Surveillance Forms <ul style="list-style-type: none"> <li>• Disease notification system</li> <li>• HIV/AIDS case surveillance forms</li> <li>• Chest Clinic/TB reporting form</li> </ul> | Diseases such as Dengue, Malaria, HIV, etc., are required by law to be reported to the Ministry of Health on a Disease Notification form, bearing information as it regards to the patient’s demographics and clinical diagnosis<br><br>A “Unified Form for Requesting HIV Test and Reporting HIV Cases, AIDS Cases and AIDS Deaths” form is usually completed for anyone accessing HIV/AIDS testing services in any part of the country. Upon completion, the form is sent to the Health Statistics Unit (HSU) for anyone who has been tested positive. At the HSU, the form is entered into a database and quarterly reports are generated for NAPS and other reports are generated as requested. | Surveillance/Health Statistics Unit/Relevant Programs<br>Health Statistics Unit/NAPS |
| PMTCT: <ul style="list-style-type: none"> <li>• Maternity Ward (L&amp;D) Monthly Monitoring Report</li> <li>• ANC/Postnatal Monthly Monitoring Report</li> </ul>                         | Monthly reporting form<br>The PMTCT system comprises three reporting forms: the Maternity Ward (L&D) Monthly Monitoring Report, ANC/Postnatal Monthly Monitoring Report, and Laboratory forms. The Maternity Ward form is usually completed by hospital facilities while the ANC and Laboratory forms are usually completed by  | TB Program<br>Health Statistics/PMTCT/MCH  |

| Data source   | Description  | Responsible program |
|---|--|---------------------|
| <ul style="list-style-type: none"> <li>Laboratory form</li> </ul> | facilities at the lower level of health care. The forms are usually completed on time and sent to the MCH Department and then forwarded to the HSU. The exception is the Laboratory forms, which are usually uplifted by the EPI nurses (nurses who collect data on vaccination) whenever they visit selected health facilities. Reports are usually generated on request. |                     |

Source: (Osika, Islam et al. 2010)

Challenges remain in effectively using the M&E data for coordination, in particular of nonclinical services, namely outreach prevention and care and support. Such activities are implemented by NAPS, Red Cross/Red Crescent, UNDP, UNICEF, the Peace Corps, and as of July 2010, another 59 NGOs. NAPS and the NGOs supported by GHARPII, a USAID-funded project, carry out the majority of the outreach prevention and care and support, including most of the outreach to vulnerable groups. Both NAPS and GHARPII are required to submit progress reports to their donors, the Global Fund and PEPFAR, respectively, and, as a result, data exist regarding their target and reach.

The Guyana National HIV/AIDS M&E Operational Plan for 2008–2011 has the potential to address the above issue. The plan, costed at US\$3.8 million as of April 2008, is composed of 11 components and is to be implemented at the national and regional levels (Table 26).

**TABLE 26: COST OF THE COMPONENTS OF THE GUYANA NATIONAL HIV/AIDS M&E OPERATIONAL PLAN, APRIL 2008**

| Components                               | Total     | Percent of total cost |
|--|-----------|-----------------------|
| The M&E Planning Process                 | 130,856   | 3.4 percent           |
| Responsibilities for the M&E System      | 5,000     | 0.1 percent           |
| Human Capacity for M&E                   | 1,174,555 | 30.9 percent          |
| Coordinating the M&E System              | -         | 0.0 percent           |
| Advocacy for M&E                         | -         | 0.0 percent           |
| Data Collection, Flow, and Storage       | 11,500    | 0.3 percent           |
| Surveys and Surveillance                 | 1,375,723 | 36.2 percent          |
| Evaluation and Research Agenda           | 600,000   | 15.8 percent          |
| National HIV Database                    | 107,840   | 2.8 percent           |
| Supportive Supervision and Data Auditing | 291,472   | 7.7 percent           |
| Data Dissemination and Use               | 101,400   | 2.7 percent           |
| Total                                    | 3,798,346 | 100 percent           |

The full implementation of the HIV/AIDS M&E Operational Plan is yet to be completed. In order to progress in the construction of a strategic information database of HIV services, there is a need for the following steps:

1. Consolidate a list of indicators.
2. Computerize data collection for all HIV services.
3. Centralize the computerized data in one domain.
4. Disseminate the M&E data.

The recommendations below for each of these steps were formulated with participants in HAPSAT's second stakeholder workshop.

## 5.1 CONSOLIDATE A LIST OF INDICATORS

All implementers should agree on the indicators to be used for reporting on their activities to NAPS. It is possible to use one or more of the lists of indicators for PEPFAR (The President’s Emergency Plan for AIDS Relief 2009), National AIDS Spending Accounts (NASA) (UNAIDS 2009), and/or the Global Fund (World Health Organisation (WHO), UNAIDS et al. 2006), which major implementers are already using. The list of indicators should reflect at least the existing and planned activities. The agreed-upon indicators will be provided with an identifier (indicator ID) to ensure each indicator has a unique ID. NAPS and UNAIDS have already identified a consultant to carry out this task.

## 5.2 COMPUTERIZE DATA COLLECTION FOR HIV SERVICES

Reach data of ART, PMTCT, VCT, condom distribution, and nutritional support are already captured electronically. Reach data of home-based care, STI diagnosis and treatment, and the voucher program are captured only by paper-based forms. Tentative workplans were developed by participants in HAPSAT’s second stakeholder workshop, and are presented in Table 27, Table 28, and Table 29. For HBC and STI diagnosis and treatment services, there is a need to review the data collection forms. Data for voucher programs can be easily computerized once an Excel worksheet is designed in line with the current data collection form.

**TABLE 27: TENTATIVE WORKPLAN FOR COMPUTERIZING HBC REACH DATA**

| Action                                       | Timeline of action<br>(from start of project) | Lead                 |
|--|---|----------------------|
| Review data collection form for HBC services | 4 weeks                                       | NAPS/HBC coordinator |
| Structure Excel worksheet                    | 5 weeks                                       | NAPS/HBC coordinator |
| Train data entry clerk                       | 6 weeks                                       | NAPS/M&E             |
| Supervise data entry                         | Ongoing                                       | NAPS/M&E             |

**TABLE 28: TENTATIVE WORKPLAN FOR COMPUTERIZING VOUCHER PROGRAM’S REACH DATA**

| Action                    | Timeline of action<br>(from start of project) | Lead                 |
|---------------------------|---|----------------------|
| Structure Excel worksheet | 5 weeks                                       | NAPS/OVC coordinator |
| Train data entry clerk    | 6 weeks                                       | NAPS/M&E             |
| Supervise data entry      | Ongoing                                       | NAPS/M&E             |

**TABLE 29: TENTATIVE WORKPLAN FOR COMPUTERIZING THE STI PROGRAM’S REACH DATA**

| Action  | Timeline of action<br>(from start of project) | Lead                 |
|---|---|----------------------|
| Structure Excel worksheet once the M&E plan for STI is determined | 5 weeks                                       | NAPS/STI coordinator |
| Train data entry clerk  | 6 weeks                                       | NAPS/M&E             |
| Supervise data entry  | Ongoing                                       | NAPS/M&E             |

To further enhance the range of computerized data, stakeholders raised the need to train operators of the hotline on input of the data collected into the Excel worksheet.

Computerizing the reach data for HIV prevention has yet to be explored. Reporting on prevention, including among vulnerable groups, is harder at the beneficiary level, either because such activities tend to be large or because of confidentiality issues. For example, MSM might be reluctant to receive support if they need to identify themselves. However, prevention data can be aggregated and reported on a monthly basis to NAPS. Each report should include the list of services provided (using the indicator ID), region, city (if applicable), and implementer. Through this mechanism it will be also possible to collect data for the HIV Prevention Standard Scorecard, which obtains a quantitative rating on the quality of HIV prevention interventions, as noted in The Guyana National HIV Prevention: Principles, Standards and Guidelines (National AIDS Programme Secretariat and UNAIDS 2010).

### **5.3 CENTRALIZE THE COMPUTERIZED DATA IN ONE DOMAIN**

The different datasets of the different HIV services need to be stored in one domain, to enhance the linkages between the data, as well as the analysis. At the indicator level, the stakeholders decided to continue with the plan to establish UNAIDS' CRIS software, including training on data input. As CRIS does not capture the types of data NAPS currently has, computerized data on different services can be linked in an off-the-shelf software package, such as MS Access. Both processes will be done in coordination with the MoH's Management Information Systems Unit.

### **5.4 DISSEMINATION OF THE M&E DATA**

The M&E Operational Plan mentioned above has a procedure for data dissemination, and covers the following areas:

1. Information needs of NAPS stakeholders.
2. Addressing ad hoc information needs.
3. Archiving HIV M&E data in a NAPS HIV M&E library.
4. Data dissemination channels.
5. Performance indicators.

The participants in HAPSAT's second stakeholder workshop decided to ensure this procedure is followed and to provide training on advanced data analysis for the M&E staff. The M&E data and its analysis can also be fed into existing coordination meetings between donors and implementers, to support evidence-based decision making processes.

The above recommendations were formulated with stakeholders in response to the sustainability issues they raised in HAPSAT's first stakeholder workshop. Their implementation will greatly enhance the coordination of the different HIV services delivered by the various implementers.

# 6. RECOMMENDATIONS AND CONCLUSIONS

## 6.1 RECOMMENDATIONS

### **Maintain high-level coverage of services**

Guyana has achieved universal access in many of the key HIV services, including ART, PMTCT treatment, blood screening, HIV/TB treatment, and comprehensive care and support for PLWH and OVC. Guyana's HIV response needs to ensure that high levels of coverage are maintained.

The targets presented in the HAPSAT report will need to be revisited once new estimates are derived, to ensure targets are not exceeding the population need. Guyana has already achieved universal coverage of ART, and as such the HIV incidence might further decrease, and with it the number of new patients in need of ART.

Establishing entry/exit criteria for social services, such as nutritional support, will be beneficial to ensure the HIV program supports only those in real need of such services, while providing PLWH with the capacity to sustain themselves through income-generating activities.

### **Scale up outreach for vulnerable groups**

MSM and CSWs are the populations with the highest HIV prevalence in Guyana. These two populations are likely a major source of infection. There is a need to continue to reach MSM and CSWs with HIV prevention to reduce HIV incidence among these populations and beyond.

In the interior regions there is a need to scale up HIV prevention among vulnerable groups, in particular CSWs, as well as miners and loggers. Prevention scale-up can be coordinated through the National Malaria Control Program, NGOs, and mining operators.

### **Deploy a more targeted mass media prevention strategy**

An assessment of the number of television and radio spots required for adequate, but not excessive, exposure to Guyana's 2010 BCC campaign suggests that one-fifth of the exposure generated in 2009 will be sufficient for reaching targeted populations in 2010. The adult population already possesses a high level of accurate knowledge about HIV/AIDS. A large proportion of the adult population reported practicing safe sex as far back as 2005, and has continued to report practicing safe sex into 2009.

### **Increase the use of effective stigma reduction interventions**

A major concern raised by stakeholders is the stigma and discrimination associated with HIV. Stigma reduction training is needed for all health professionals across all of Guyana's health facilities. In addition, community leaders should be trained on stigma reduction. Stigma reduction should be integrated into prevention and care and support through the following mechanisms:

- Support groups for vulnerable populations.
- Sex education sessions for youth.
- Support groups and entrepreneurial and vocational training for PLWH.

Stigma reduction is likely to increase adherence to ART, as adherence is linked to self-HIV stigma. This will assist in maintaining ART patients on first-line treatment, which is 58 percent and 79 percent cheaper than second-line and third-line treatments, respectively.

### **Construct a strategic information database**

Many stakeholders are involved in the HIV response, yet no comprehensive database exists on the activities of each donor and implementer. A national HIV/AIDS M&E Operational Plan for 2008–2011 is underway. The following recommendations, devised with stakeholders in Guyana's HIV response, will facilitate the construction of a strategic information database and the more effective use of data for improving coordination between different implementers:

1. Consolidate a list of all indicators of HIV services, to enable consistent reporting by all implementers. NAPS and UNAIDS have already identified a consultant to carry out this task.
2. Computerize data collection from various services: Reach data of ART, PMTCT, VCT, condom distribution, and nutritional support are already captured electronically; as detailed in Chapter 5, reach data of HBC, STI diagnosis and treatment, and the voucher program can be easily computerized.
3. Centralize the computerized data in one domain: UNAIDS' CRIS software can be used for capturing reach data at the indicator level. For linkages between different datasets, an off-the-shelf software package, such as MS Access, could be an interim solution.
4. Disseminate the M&E data: Ensure data dissemination activities and the use of the M&E Operational Plan are fully implemented.

### **Utilize AIDS funding for nonrelated HIV services**

Utilizing AIDS funding for cross-cutting themes will strengthen the health system, gain efficiencies, improve budget allocation, and integrate HIV services into general health care.

### **Maximize human resources for health**

Integration is of particular importance for maximizing the limited human resources for health. HAPSAT estimations of human resources required for HIV counseling and testing indicate that an FTE counselor should be stationed only in facilities that have an average of 15 tests per day, or 3,300 per year. Where fewer than 3,300 tests exist, the counselor should be provided with other tasks, or the testing should be done by other trained staff. Guyana's HIV response should further map all the outreach workers that provide care and support to ART patients and ensure no duplications exist. Finally, health worker shortages can be further tackled by ensuring health workers receive patients throughout the full opening hours of clinics, and/or by setting up appointment systems in facilities.

The recommendation for integrating HIV services will require all health staff to receive stigma reduction training, as previously detailed. In addition, clinics will need to be open to patients at least six hours a day and will need to notify patients of the benefits of receiving services in the afternoon, namely shorter waiting time.

## **6.2 CONCLUSIONS**

The HAPSAT analysis provides costing information that addresses most of the high-priority sustainability issues that key stakeholders in Guyana's HIV program are currently raising. The cost analysis can guide policy development and resource allocation for Guyana's HIV program. Furthermore, since the scope of this analysis was determined through a participatory process involving stakeholders within Guyana, the HAPSAT team hopes this report will enable stakeholders to address their top priorities.

# ANNEX A: LIST OF INTERVIEWEES

1. Hon. Dr, Leslie Ramsammy, Minister of Health
2. Nafeza Ally, Social Support Coordinator, NAPS/Ministry of Health
3. Tarramattie Barker, Chief Nursing Officer, Ministry of Health
4. Pat Bass, Senior Program/Operations Advisor, Futures Group
5. Colin Blaize, Peer Educator, Artistes in Direct Support
6. Dale Browne, GHARPII
7. Keith Burrowes, Director, HSDU/Ministry of Health
8. Otilia St. Charles, Strategic Information Advisor, UNAIDS-Guyana
9. Shaan D. Chaturvedi, Global AIDS Program, CDC-Guyana
10. Afelete Cummings, Support Group Coordinator, NAPS/Ministry of Health
11. Ruben F. del Prado, Country Coordinator, UNAIDS-Guyana
12. Oswald Dey, Executive Director, Community Support & Development Services
13. Joseph Eastman, PEPFAR Coordinator
14. Desiree Edghill, Executive Director, Artistes in Direct Support
15. Lloyd Edwin, Most-at-risk Populations Coordinator, GHARP
16. Karen Gordon-Boyle, Prevention Director, GHARPII
17. Jennifer Ganesh, Prevention Coordinator, NAPS/Ministry of Health
18. Rosalinda Hernandez, HIV/STI Advisor, Pan American Health Organization
19. Annelise Hirschmann, Fund Portfolio Manager, Global Fund to Fight AIDS, Tuberculosis and Malaria
20. Noel Holder, HR Lead (training), Ministry of Health
21. Nazim Hussain, Community Mobilisation Coordinator, NAPS/Ministry of Health
22. Sarah Insanally, CCM Coordinator, Ministry of Health
23. Priya Iyer, PMTCT Coordinator, MCH/Ministry of Health
24. Cecil J. Jacques, SCMS
25. Nicole Jordan, Program Director, FXB-Guyana
26. Romona Khan, Webmaster, I-TECH Guyana
27. San San Min, Country Director, SCMS
28. Jeetendra Mohanlall, Program Manager, National TB Program, Department of Disease Control, Ministry of Health
29. Cheryl Morgan, Head of Office, AIDS Relief

30. Kavita Pullapilly, Program & Training Officer, Peace Corps-Guyana
31. Jadunauth Raghunauth, Director, National Care and Treatment Center
32. Somdatt (Amar) Ramessar, Food Bank Coordinator, NAPS/Ministry of Health
33. Ruth Ramos, Physician, National Care and Treatment Center/Ministry of Health
34. Colin Roach, Director, National Public Health Reference Laboratory/Ministry of Health
35. Anna Rudge, Economist, Health Economist, Expenditure, Planning and Management Unit, Ministry of Health
36. Shauna Scotland, STI Coordinator, NAPS/Ministry of Health
37. Narine Singh, Director of Regional Health Services/Ministry of Health
38. Trevelyn Smith, HR Lead, Ministry of Health
39. Tyler R. Smith, Economist, CDC-Atlanta
40. Dereck Springer, Independent Consultant
41. Terrence Trapnell, Director, Remote Area Medical
42. Lee Van De Santos, SCMS



# ANNEX B: CDC'S RAPID COST ASSESSMENT: MODIFIED GUYANA ART PROJECTIONS

September 30, 2010

Tyler Smith email: TSmith7@cdc.gov

The following tables summarize the results of a modeling exercise aimed at estimating the cost of Guyana's national ART program for fiscal years 2011–2015. Projections were undertaken using the PEPFAR ART Costing Model (PACM 2010) and inputs were derived from various primary and secondary data sources. The results below present an alternative scenario to the original projections presented in the report, Rapid Cost Assessment of HIV Care and Treatment in Guyana, September 2010. At the request of the HAPSAT team, the following input variables were modified and the projections updated:

## 1) PEPFAR agency and implementing partner (IP) central support and headquarter expenses (CSHQ)

Original figures derived from Rapid Cost Assessment data were reduced by a flat percentage (defined by Itamar Katz, Abt Associates) assuming anticipated savings from the a transition of direct service provision of ART from PEPFAR-supported IPs to local government entities. The Rapid Cost Assessment data indicate that IP CSHQ costs represented 46.5 percent of total IP expenditures in 2009, while PEPFAR agency costs represented 19.4 percent of the total PEPFAR expenditures for ART. Assuming the treatment transition takes place between 2011 and 2012, with a continued role for PEPFAR agencies and IPs in the remaining years of the projections, the HAPSAT team has estimated that PEPFAR CSHQ costs will be reduced by 33 percent in 2011 and an additional 17 percent in 2012. Therefore, in the modified projections the mark-up applied in 2011 for PEPFAR CSHQ costs changed from 46.5 percent to 31.2 percent for IPs and from 19.4 percent to 13 percent for PEPFAR agencies. In 2012, the mark-up for CSHQ costs was again reduced for IPs and PEPFAR agencies from 31.2 percent to 23.3 percent and from 13 percent to 9.7 percent, respectively. For years 2013–2015 the mark-ups were held constant at the 2012 values (23.3 percent for IPs and 9.7 percent for PEPFAR agencies).

## 2) Personnel costs

Expenditures for site-level personnel were collected in the Rapid Cost Assessment study in 2010 and represented a mix of PEPFAR employed staff and Government of Guyana staff. The HAPSAT team requested for the alternative scenario projections to assume all staff are remunerated according to the Guyana MoH pay scale (from 2012 onward). Itamar Katz provided the estimated annual personnel costs, disaggregated by patient type, and these figures were used in the modified projections. The personnel costs changed from \$933 to \$143 annually per newly initiating ART patient, \$491 to \$52 per established ART patient, and \$413 to \$16 per pre-ART patient.

## 3) Investment costs

The HAPSAT team also requested in the modified projections we assume no investments would be made on equipment or infrastructure between 2011 and 2015. The Rapid Cost Assessment data indicated about 14 percent of total costs were attributed to investments in equipment and infrastructure in 2009. The updated projections do not assume any capital investments between 2011 and 2015 as requested. Investments in training were not excluded or modified from the original analysis.

Estimates for the above changes were derived by Abt Associates through the HAPSAT costing activity. Tables B5 and B6 below present the majority of assumptions and input variables used for the model. For a complete list of inputs, please see the original projections in the Rapid Cost Assessment 2010 report.

## PROJECTION RESULTS: COST PER PATIENT

**TABLE B1: ANNUAL PER-PATIENT COST (ALL FUNDING SOURCES), DISAGGREGATED BY PATIENT TYPE**

| Time period | All pre-ART patients | Adult patients | Pediatric patients | 1st-line patients | 2nd-line patients | All ART patients |
|-------------|----------------------|----------------|--------------------|-------------------|-------------------|------------------|
| FY2011      | \$1,068              | \$2,385        | \$1,775            | \$2,249           | \$3,093           | \$2,345          |
| FY2012      | \$554                | \$1,695        | \$1,155            | \$1,552           | \$2,365           | \$1,659          |
| FY2013      | \$563                | \$1,663        | \$1,161            | \$1,512           | \$2,302           | \$1,629          |
| FY2014      | \$573                | \$1,635        | \$1,170            | \$1,478           | \$2,248           | \$1,603          |
| FY2015      | \$583                | \$1,610        | \$1,178            | \$1,449           | \$2,199           | \$1,581          |

**TABLE B2: ANNUAL PER-PATIENT COST (ALL FUNDING SOURCES, ART PATIENTS ONLY), DISAGGREGATED BY COST CATEGORY**

| Time period | Non-ARV recurrent costs | Non-ARV investment costs | Antiretroviral drugs | Country-level admin and support | Total   |
|-------------|-------------------------|--------------------------|----------------------|---------------------------------|---------|
| FY2011      | \$1,015                 | \$209                    | \$776                | \$345                           | \$2,345 |
| FY2012      | \$531                   | \$206                    | \$746                | \$176                           | \$1,659 |
| FY2013      | \$537                   | \$203                    | \$714                | \$174                           | \$1,629 |
| FY2014      | \$544                   | \$203                    | \$682                | \$173                           | \$1,603 |
| FY2015      | \$553                   | \$203                    | \$652                | \$173                           | \$1,581 |

**TABLE B3: ANNUAL PER-PATIENT COST (PEPFAR SUPPORT ONLY), DISAGGREGATED BY PATIENT TYPE**

| Time period | ALL Pre-ART patients | Adult ART patients | Pediatric ART patients | 1st-line patients | 2nd-line patients | All ART patients |
|-------------|----------------------|--------------------|------------------------|-------------------|-------------------|------------------|
| FY2011      | \$546                | \$1,287            | \$895                  | \$1,206           | \$1,694           | \$1,261          |
| FY2012      | \$263                | \$896              | \$561                  | \$811             | \$1,282           | \$873            |
| FY2013      | \$267                | \$877              | \$566                  | \$788             | \$1,245           | \$856            |
| FY2014      | \$272                | \$859              | \$571                  | \$767             | \$1,212           | \$840            |
| FY2015      | \$277                | \$844              | \$576                  | \$749             | \$1,183           | \$825            |

**TABLE B4: ANNUAL PER-PATIENT COST (PEPFAR SUPPORT ONLY, ART PATIENTS ONLY), DISAGGREGATED BY COST CATEGORY**

| Time period | Non-ARV recurrent costs | Non-ARV investment costs | Antiretroviral drugs | Country-level admin and support | Total   |
|-------------|-------------------------|--------------------------|----------------------|---------------------------------|---------|
| FY2011      | \$445                   | \$64                     | \$449                | \$304                           | \$1,261 |
| FY2012      | \$233                   | \$63                     | \$432                | \$146                           | \$873   |
| FY2013      | \$235                   | \$62                     | \$413                | \$145                           | \$856   |
| FY2014      | \$238                   | \$62                     | \$395                | \$144                           | \$840   |
| FY2015      | \$242                   | \$62                     | \$377                | \$144                           | \$825   |

**TABLE B5: MODEL INPUTS: PATIENT CHARACTERISTICS AND PROGRAM ASSUMPTIONS**

| Parameter description  | Parameter Value | Comment/Source   |
|--|-----------------|--|
| <i>———— Patient population characteristics ————</i>                                    |                 |  |
| 1. Initial ART patient volume  | 3,053           | Rapid Cost Assessment (2010) indicator data for number of patients as of December 31, 2009, plus the estimated additional patients by October 1, 2010 (beginning of FY 2011)   |
| 2. Initial pre-ART patient volume  | 1,370           | See above  |
| 3. Monthly scale-up rate, ART patients   | 41              | Based on Guyana Treatment Target Setting for FY 2011; source: Shaan Chaturvedi, CDC Guyana   |
| 4. Monthly scale-up rate, pre-ART patients   | 18              | From ART: Pre-ART ratio from Rapid Cost Assessment (2010) indicator data   |
| 5. Percentage of pediatric, of current ART patients                                    | 6.4 percent     | Rapid Cost Assessment (2010) indicator data  |
| 6. Percentage of pediatric, of new ART patients  | 7.4 percent     | Based on projections in the Consumption Forecast and Supply Plan for ARV Drugs 2010-2011 for the Guyana National Program (SCMS, December 2009)   |
| 7. Percentage of current adult ART patients on 2nd-line regimens                       | 9.9 percent     | Supplied by NAPS via the Antiretroviral Dispensing Tool (ADT)  |
| 8. Percentage of current pediatric ART patients on 2nd-line regimens                   | 17.8 percent    | NAPS via ADT   |
| 9. Annual percentage of 1st-line adult ART patients transitioning to 2nd-line ART      | 5.3 percent     | Based on projections in the Consumption Forecast and Supply Plan for ARV Drugs 2010-2011 for the Guyana National Program (SCMS, 2009)  |
| 10. Annual percentage of 1st-line pediatric ART patients transitioning to 2nd-line ART | 13.0 percent    | NAPS via ADT   |
| 11. Annual percentage of mortality (newly initiating 1st-line ART patients)*           | 9.0 percent     | Annual risks for death and loss-to-follow-up in various patient groups are estimated from Rosen S., Fox M., Gill C.G., 2006, PLoS Med 4(10): 1-11, as well as three recent CDC-sponsored national ART program evaluations in Rwanda, Mozambique, and Malawi. This information was not available in Guyana from national sources or implementing partners |
| 12. Annual percentage of mortality (established 1st-line ART patients)*                | 3.0 percent     | See source for parameter 9   |
| 13. Annual percentage of mortality (established 2nd-line ART patients)*                | 5.0 percent     | See source for parameter 9   |
| 14. Annual percentage loss-to-follow-up (newly initiating 1st-line ART patients)*      | 10.0 percent    | See source for parameter 9   |
| 15. Annual percentage loss-to-follow-up (established 1st-line ART patients)*           | 3.0 percent     | See source for parameter 9   |

| Parameter description  | Parameter Value        | Comment/Source  |
|--|------------------------|---|
| 16. Annual percentage loss-to-follow-up (established 2nd-line ART patients)*<br>----- <i>Program characteristics</i> ----- | 3.0 percent            | See source for parameter 9  |
| 17. Months of ARV buffer stock held  | 5.5 months             | Average calculated by adding the minimum desired buffer stock held of four months plus half the average time between drug shipments (quarterly); source: SCMS Consumption Forecast (2009)   |
| 18. Expected ARV wastage   | 7.0 percent            | 5 percent expired, 2 percent damaged products; source: SCMS   |
| 19. Annual ARV price reductions  | 4.0 percent            | Conservative estimate based on global trends  |
| 20. Inflation rate for non-ARV costs   | 1.9–2.1 percent        | Different for each year; based on inflation assumptions by the U.S. Office of Management and Budget   |
| 21. Mark-up on ARV costs for supply-chain management   | 12.0 percent           | SCMS Consumption Forecast (2009)  |
| 22. Mark-ups for implementing partner central support costs (as percentage of PEPFAR non-ARV funding to sites)             | 31.2–23.3 percent      | Original input (46.5 percent) based on Rapid Cost Assessment (2010) data; Updated projections use estimates provided by Itamar Katz which assume a 33 percent reduction in year 1 (from 46.5 percent to 31.2 percent) and an additional 17 percent reduction in year 2 (from 31.2 percent to 23.3 percent); years 3–5 assume a constant mark-up of 23.3 percent |
| 23. Mark-ups for PEPFAR agency central support costs (as percentage of all other PEPFAR funding)                           | 13 percent–9.7 percent | Original input (19.4 percent) based on Rapid Cost Assessment (2010) data; Updated projections use estimates provided by Itamar Katz which assume a 33 percent reduction in year 1 (from 19.4 percent to 13 percent) and an additional 17 percent reduction in year 2 (from 13 percent to 9.7 percent); years 3–5 assume a constant mark-up of 9.7 percent       |
| 24. Mark-ups for national government central support costs (as percentage of all other non-PEPFAR funding)                 | 4.0 percent            | Based on average percentage of Government of Guyana CSHQ costs from Rapid Cost Assessment (2010) data; may underestimate the full cost of central support as Government of Guyana data was not comprehensive  |

\* Same value used for both adult and pediatric patients.

**TABLE B6: MODEL INPUTS: NON-ARV SERVICE PROVISION COSTS\* (2009 USD)**

| Cost category                                | Patient type   |                 |                       |                   |                           |
|--|----------------|-----------------|-----------------------|-------------------|---------------------------|
|  | Pre-ART        | New adult ART   | Established adult ART | New pediatric ART | Established pediatric ART |
| <i>Annual recurrent cost per patient</i>     |                |                 |                       |                   |                           |
| Personnel (2011)                             | \$413.08       | \$993.38        | \$491.35              | \$993.38          | \$491.35                  |
| Personnel (2012–2015)***                     | \$15.60        | \$142.50        | \$52.30               | \$142.50          | \$52.30                   |
| Lab supplies                                 | \$83.38        | \$200.52        | \$99.18               | \$200.52          | \$99.18                   |
| Other drugs                                  | \$72.73        | \$174.91        | \$86.52               | \$174.91          | \$86.52                   |
| Other recurrent costs                        | \$191.54       | \$460.61        | \$227.83              | \$460.61          | \$227.83                  |
| <i>Average investment cost per patient**</i> |                |                 |                       |                   |                           |
| Training                                     | \$86.68        | \$296.33        | \$146.57              | \$296.33          | \$146.57                  |
| Equipment                                    | --             | --              | --                    | --                | --                        |
| Construction/Renovation                      | --             | --              | --                    | --                | --                        |
| <b>Total</b>                                 | <b>\$86.68</b> | <b>\$296.33</b> | <b>\$146.57</b>       | <b>\$296.33</b>   | <b>\$146.57</b>           |

\* Data derived from Rapid Cost Assessment (2010)

\*\* Expected useful life of investments estimated at 1 year for training, 5 years for equipment, and 20 years for construction/renovation. Per-patient costs are divided by their useful life to estimate an annual per-patient cost for maintaining existing investments.

\*\*\* Based on calculations by Itamar Katz, Abt Associates; assumes all personnel remunerated according to MoH pay scale.



## ANNEX C: REFERENCES

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