



SUSTAINING THE HIV AND AIDS RESPONSE IN ANTIGUA AND BARBUDA: INVESTMENT CASE BRIEF

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ACRONYMS

ART	Antiretroviral Therapy
ARV	Antiretroviral
CHAA	Caribbean HIV/AIDS Alliance
CSW	Commercial Sex Workers
ECD	Eastern Caribbean Dollars
HTC	HIV Testing and Counseling
HFG	Health Finance and Governance
KfW	German Development Bank
MARPs	More-at-risk populations
MOH	Ministry of Health
MSM	Men who have sex with men
NAP	National AIDS Program
OECS	Organization of Eastern Caribbean States
OVC	Orphans and Vulnerable Children
PEPFAR	President's Emergency Plan for AIDS Relief
PLHIV	People living with HIV/AIDS
PMTCT	Prevention of Mother to Child Transmission
PSI	Population Services International
STI	Sexually transmitted infections
UNAIDS	Joint United Nations Program on HIV/AIDS
UNGASS	United Nations General Assembly Special Session
USAID	United States Agency for International Development



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I. BACKGROUND

I.1 Introduction

Antigua and Barbuda has made great strides in organizing its response to HIV and AIDS in recent years, and has managed to control the growth of the epidemic. The National AIDS Program (NAP) is now at a critical juncture as the country plans to adapt to the changing donor funding landscape, new clinical guidelines, strategic objectives, and changes in policy including greater program integration into primary care, which are designed to increase access and reduce the cost of service delivery.

This document provides analytic inputs that support a case for investment in the Antigua and Barbuda HIV and AIDS response. This report provides a quantitative analysis of trends in the HIV epidemic and the impact of various prevention and treatment efforts to date, along with a projection of possible future programming scenarios, their costs, and their implications for the epidemic. The report describes estimated funding available and gaps in funding that The Goals and Resource Needs models – part of the Spectrum/OneHealth modeling system that estimates the impact and costs of future prevention and treatment interventions – were used for this analysis.

UNAIDS and the U.S. President’s Emergency Plan for AIDS Relief (PEPFAR) have provided support to the six small-island countries of the Eastern Caribbean to develop HIV investment cases – reports that aim to help program leaders target investments on the interventions and populations where they will have maximum impact, given limited resources (UNAIDS 2012). With funding from the U.S. Agency for International Development (USAID), experts from the Health Finance and Governance Project have applied these tools to analyze available data from Antigua and Barbuda. The scenarios described in this report can help the Government of Antigua and Barbuda and civil society stakeholders to advocate for increased domestic funding for HIV and AIDS, and apply for available external funding from donors.

I.2 Background: HIV/AIDS Response in Antigua and Barbuda

The Caribbean region has the highest incidence of HIV/AIDS in the Americas and the second-highest prevalence in the world behind sub-Saharan Africa. Adult prevalence rates in the OECS Region range from 0.5 percent in St. Kitts and Nevis to 3 percent in the Bahamas.

With a population of approximately 89,000 people on its two small islands (World Bank, 2014), Antigua and Barbuda have been responding to the HIV and AIDS epidemic since identifying its first case in 1985. Estimates of overall prevalence have steadily increased over the past six years from 0.8 percent in 2005 to roughly 1.4 percent in 2011. A total of 919 cases of HIV have been diagnosed in Antigua and Barbuda

since 1985 (UNGASS 2012), with 771 currently alive and identified. Data suggest that the majority of cases are among persons between 15 and 49 years of age. Of these, 449(58.2%) are receiving care and 337(43.7%) are receiving anti-retroviral treatment (ART) (NAP, 2014). To facilitate a coordinated response to the epidemic, the Ministry of Health (MOH) in Antigua and Barbuda established the National HIV/AIDS Program (NAP) with a functioning secretariat, spearheaded by the AIDS program manager.

Since its beginnings, significant progress has been in many areas of the National HIV/AIDS Response outlined by the six strategic objectives contained in the 2012-2016 National HIV and AIDS Strategic Plan. To date, prevention efforts have been strengthened and expanded at workplaces, in schools, along with most-at-risk populations with support from the Caribbean HIV/AIDS Alliance (CHAA). Active participation of civil society has resulted in multiple initiatives, such as the 3H National network of support for PLHIV and MARPs. These initiatives have been product of collaborative public-private partnerships to implement multi-sectorial HIV and AIDS programming. Through collaborative efforts between public health facilities and midwives working at the District level, the PMTCT program has offered HIV testing and counseling (HTC) to 98% of pregnant women and close follow up during the prenatal and postpartum periods.

Despite these gains, important challenges for the National HIV and AIDS response remain. Relative to service delivery, 42% of known PLHIV are not accessing treatment and care, space is inadequate to provide services necessary for TB/HIV co-infected individuals, and the NAP lacks qualified personnel to provide psychological and support services to PLHIV to ensure a comprehensive approach. Weaknesses in the production of new strategic information, through studies, surveillance and monitoring and evaluation limit the ability to track AIDS deaths, provide follow up to PLHIV and identify ways by which to design and implement interventions directed to address these gaps.

Partners in the National HIV/AIDS Response

The AIDS secretariat within the MOH is the coordinating body for all HIV/AIDS efforts and serves as the focal point for the collection and dissemination of information about HIV, AIDS, and other sexually transmitted infections (STIs). It is tasked with working with government ministries, people living with HIV/AIDS (PLHIV), and civil society to implement national HIV/AIDS strategies and programs. The most recent National Strategic Plan for HIV/AIDS (2012-2016) was developed and enacted in December 2011. This plan supports the country's HIV response by ensuring that the national response is efficient, effective, and in line with national health priorities.

Though not systematically organized, numerous faith-based and civil society organizations work with the NAP to provide HIV/AIDS-related health education and support services; many target vulnerable populations like youth and the indigent. The Health, Hope and HIV Network is a support group for PLHIV that works on education promotion. Through September 2014 the Caribbean HIV/AIDS Alliance (CHAA)/Antigua was an important source of support for key populations to make safer sexual choices and enabled access to and utilization of services provided by government and community organizations. CHAA has also supported the development of a community-based counselling and rapid testing program. CHAA's work with key populations had been funded by a USAID project through September 2014, but there is not a current plan for a new USAID program to replace that project, leaving a

possible gap in the country's response, given that the epidemic has some concentrated characteristics with high prevalence in men who have sex with men (MSM) and commercial sex workers (CSW), both considered among the most vulnerable populations.

Public-private partnerships to address HIV/AIDS exist, including one between the MOH, Scotiabank, and the Caribbean Broadcast Media Partnership to organize annual testing days in Antigua and Barbuda. Another informal partnership with the private sector involves two private pharmacies. NAP refers HIV-positive clients to these pharmacies for drugs to treat opportunistic infections (not antiretrovirals [ARVs]) using coded prescriptions to ensure confidentiality. The pharmacies then submit monthly invoices to NAP for reimbursement.

The National AIDS Clinical Care Coordinator holds clinic office hours at the publically owned Mt. Saint John's Medical Center. The Government of Antigua and Barbuda, with USAID support, has made efforts to strengthen these partnerships by supporting the creation of a Public and Private Health Sector Task Force (a.k.a. "the Task Force") that brings health sector stakeholders together to discuss priority health sector issues and to develop and recommend policy and other initiatives to address these issues.

HIV and AIDS service delivery

HIV/AIDS treatment, including antiretroviral therapy (ART), is overseen by the MOH's Clinical Care Coordinator. ART is currently available at one public hospital though some private physicians provide additional HIV care and treatment services. ARVs are only available from the pharmacy at Mount St. John's Medical Centre.

HIV testing is offered at eight public health facilities, Planned Parenthood, and through various community outreach events, including the annual regional HIV testing day. Outreach programs for HCT are conducted by the AIDS secretariat, nongovernmental organizations, and some employers who sponsor HCT days. The private sector also contributes to the response: private practitioners provide HIV testing and outpatient services; private laboratories provide testing services, including STI and HIV blood screening; and private pharmacies make medications needed to treat opportunistic infections readily available. The government is currently exploring greater integration of counselling, testing and care into primary health care by training physicians and (with the support of the USAID-funded HS 20/20 project) costing HIV services, treatment of opportunistic infections and services offered at the primary care level.

How are HIV/AIDS data gathered and shared?

HIV/AIDS data collection is fragmented and incomplete. The AIDS secretariat gathers data on HCT and HIV-positive cases from all public HCT sites, outreach events, and some NGO providers like Planned Parenthood. Data on HIV treatment indicators are collected from the clinical care coordinator and aggregated for the MOH by the Health Information Division. There is no health information policy governing the procedures for data collection, processing, and dissemination of findings. The lack of policy and regulation has resulted in inadequate monitoring and evaluation and irregular reporting, especially by private sector providers who have no obligation to do so. However, a health information policy has been drafted with the support of PAHO, and will soon be ratified. In addition, SHOPS is currently supporting the newly formed Task Force to develop and roll-out a mobile reporting

mechanism for public and private sector providers to easily report notifiable conditions, including HIV, on a regular basis.

Funding for HIV/AIDS

The Round 9 grant to the Pan Caribbean Partnership against HIV/AIDS (PANCAP) from the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) supports first- and second-line ARVs for up to five years with an expectation of increased government contributions over the course of the five years as each year Global Fund contribution amounts decrease. It does not include a budget for prevention activities. Brazil had an agreement with the OECS Pharmaceutical Procurement Service (PPS) to provide free first-line ARVs through 2013 with shipment costs picked up by UNICEF. The last tranche was delivered in October of 2012. The Government of Antigua and Barbuda now directly avail of the low costs through the PPS.

2. METHODS AND MODELS

In this section, we describe the projection model developed to estimate trends in the HIV epidemic, the projected impact of HIV and AIDS programs on the epidemic in terms of expected new infections, AIDS deaths, and the number of people receiving anti-retroviral therapy (ART) under different scenarios, and the potential costs of these future program options.

2.1 Methodology and data

2.1.1 Methodology

This analysis uses the Goals model¹, a module implemented in the Spectrum modeling system that estimates the impact of future prevention and treatment interventions. The Goals model partitions the adult population aged 15-49 by age and sex and into six risk groups: not sexually active, low-risk heterosexual (stable monogamous couples), medium-risk heterosexual (people engaging in casual sex with multiple partners per year), high-risk heterosexual (female sex workers and their male clients), men who have sex with men, and injecting drug users. The Goals model implements a dynamical compartment model to project transmission forward in time, and to model the costs and impact of interventions that reduce transmission.

The Goals model calculates new HIV infections by sex and risk group as a function of behaviors and epidemiological factors such as prevalence among partners and stage of infection. The risk of transmission is determined by behaviors (number of partners, contacts per partners, condom use) and biomedical factors (ART use, male circumcision, prevalence of other sexually transmitted infections). Interventions can change any of these factors and, thus, affect the future course of the epidemic. The Goals model uses an impact matrix that summarizes the international literature on the average impact of each intervention type on these behaviors and biomedical factors to influence overall transmission in the modeled population.²

The Goals model is linked to the AIM module in Spectrum, which calculates the effects on children (aged 0-14) and individuals 50 and older. The AIM module also includes the effects of PMTCT programs on pediatric infections.

¹ Futures Institute. Goals manual: a model for estimating the effects of interventions and resource allocation on HIV infections and deaths, August 2011. www.FuturesInstitute.org. [Accessed October 23, 2014].

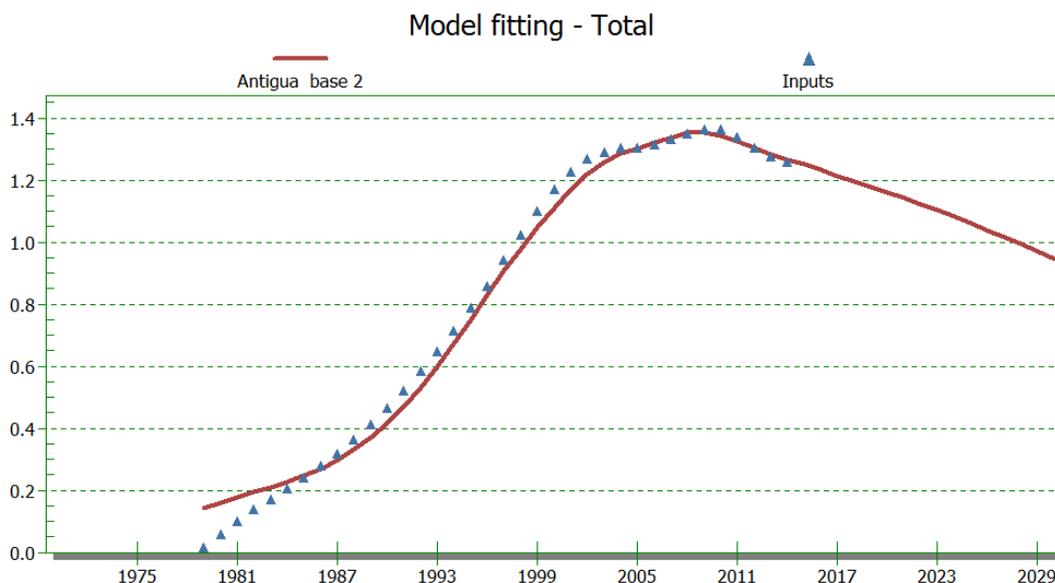
² Bollinger LA, How can we calculate the “E” in “CEA” *AIDS* 2008, 22(suppl 1): S51-S57.

2.1.2 Data and assumptions

The model parameters and sources used are provided in Annex A. Data on the epidemiology of HIV/AIDS in Antigua and Barbuda, including historical surveillance of HIV prevalence and the number of individuals receiving PMTCT and ART, were taken from the UNAIDS national estimates. Validated international studies were used to set values of epidemiological parameters such as the per-act probability of transmission and variation in risk of transmission by stage of infection, type of sex act, prevalence of other sexually transmitted infections (STI), and use of condoms. The model was further parameterized using a combination of country-specific published data sources whenever available. When country-specific estimates were unavailable, estimates from published Caribbean regional sources or expert opinion derived from interviews with clinicians and program staff familiar with the local epidemic were used.

The model was first fit to the historical pattern of HIV prevalence in Antigua and Barbuda in order to reproduce the historical epidemic dynamics. Figure 1 displays the closeness of fit between observed prevalence and the model-generated prevalence. The quality of this fit provides assurance that the model will accurately predict future dynamics, subject to projected changes in program coverage. In the figure, the blue triangles represent the trend in historical prevalence and the solid line reflects the projection model.

Figure 1: Goals model fit to historical trend in HIV prevalence.



The triangles are prevalence data from the Goals model and align well with existing surveillance data, suggesting that the Goals model developed to predict each scenario is strong. Current coverage estimates are based on service statistics. The full list of behavioral and unit cost data and sources is provided in Annex I.

2.2 Modeling scenarios

In consultation with the Antigua and Barbuda National AIDS Program, three model scenarios were developed. Each reflects a possible set of changes in program coverage, corresponding to an increase or decrease in resource expenditure. The scenarios are projected from a baseline year of 2013, the last full year for which any data are available. They begin to diverge in 2015, the first year in which program changes will begin. All three scenarios estimate changes in program coverage to be achieved by the year 2020. The following scenarios are presented in depth in Table I, which outline key indicators of the epidemic and coverage estimates from behavioral and treatment interventions. These figures are used in the Goals model to derive key outputs, such as the number of new HIV cases and AIDS deaths per annum.

2.2.1 Maintenance

This scenario reflects funding for components of the National HIV and AIDS response, to remain constant at current levels (as of 2013). The CD4 count threshold for ART eligibility remains constant at 350 cells/ μ L and ART coverage remains at present levels.

2.2.2 Moderate scale up

This scenario reflects a more gradual progression to increased coverage by 2020, as a point between maintenance and the 90-90-90 scenario. In this scenario, coverage of key intervention increases to the moderately aggressive targets by 2020 as reflected in Table I.

2.2.3 90-90-90 in 2020

This scenario reflects the UNAIDS proposed target levels of HIV program coverage by the year 2020 (90% of HIV positive individuals aware of their status; 90% of ART eligible individuals on ART; and 90% of people on treatment have suppressed viral loads). Funding to prevention programs remains constant. Voluntary counseling and testing coverage increases from 9% to 58% of the population in order to capture 90% of all PLHIV aged 15-49. The CD4 threshold for ART eligibility increases from 350 to 500 cells/ μ L in 2015. ART coverage increases to 90% in 2020 and remains constant thereafter.



Table 1: 2020 Target Coverage of Key Interventions-Three Model Scenarios

	Maintenance Scenario	Moderate scale up scenario	90/90/90 scenario
Intervention	% Target Population Coverage		
Percentage of the adult population tested every year	5.7%	8%	10%
Population covered by condom promotion and distribution	34%	34%	60%
Prevention for sex workers and clients	61.5%	80%	80%
Prevention for MSM	68.2%	80%	80%
STI treatment	80%	90%	
Blood safety	100%	100%	100%
ART for adults*	57%	80%	90%
ART for children*	54%	80%	90%
PMTCT**	100%	100%	100%

*Eligibility for ART for both adults and children changes in 2014 to the new WHO guideline recommendations. For adults that means eligibility at CD4 count < 500 cells/ μ l plus all HIV+ pregnant women, serodiscordant couples, and HIV/HBV co-infected individuals. For children that mean eligibility for all HIV+ children below the age of 5 and all others with CD4 counts < 500.

**PMTCT will continue to be provided under the Option B+ regimen.

2.3 Limitations

Goals is a globally-recognized tool for modeling the costs and impact of HIV programs, and is being used in all OECS countries as well as other countries in the region, such as Guyana and the Dominican Republic. However, the precision of any compartmental model can be limited in describing small populations (less than ~100,000) with low HIV prevalence.

As noted in *Annex A*, this analysis used regional or global estimates for some behavioral parameters (i.e. sex acts per partner, number of partners per year). Country-specific estimates were used whenever available, but in some cases, it was necessary to use regional or global estimates. Similarly, some cost estimates were drawn from regional estimates (i.e. treatment service delivery costs drawn from an Antigua and Barbuda study were used in calculating cost estimates in neighboring OECS countries).

The estimated average impact of interventions, expressed in the Goals software's impact matrix, is drawn from a global review of the literature. This is commonly-accepted standard practice for modeling

exercises of this type because sufficient intervention impact studies have not been performed at the local or even the regional level.

Coverage estimates for Antigua and Barbuda were unknown for interventions such as mass media and counseling and testing. We used estimates from published documents where available, supplemented with information from interviews with local stakeholders familiar with the programs.

3. SCENARIO RESULTS

3.1 Impact of scenarios

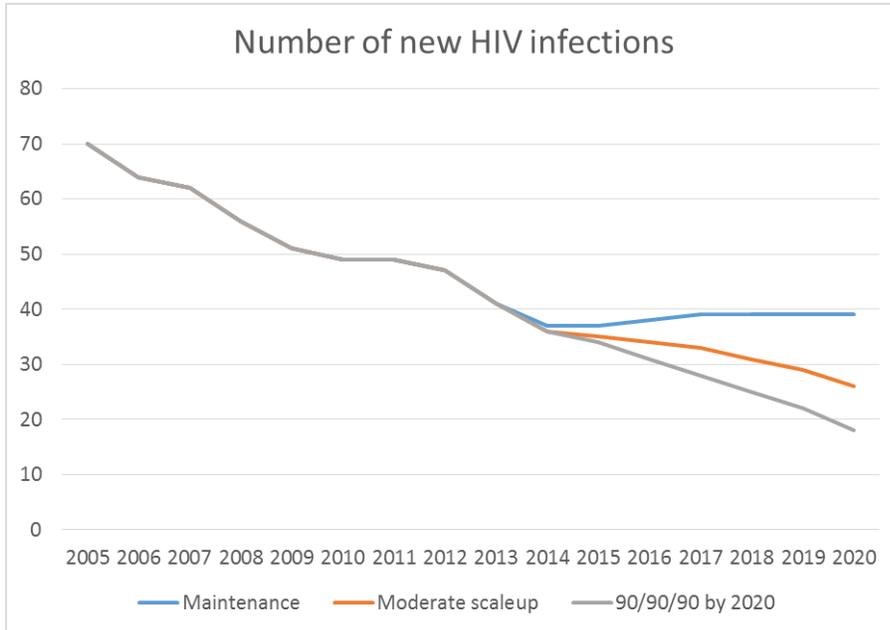
Scaling up programs to meet the targets of the 90/90/90 scenario would produce significant benefits including averting 73 new HIV infections and 93 AIDS-related deaths. Even the moderate scale up scenario would avert 43 infections and 70 deaths. Table 2 provides a summary of the impacts. The trend in new infections is shown in Figure 2 and AIDS deaths in Figure 3.

Table 2: Projected infections and AIDS deaths averted by Model Scenarios

Indicator	Moderate scenario		90/90/90 scenario	
	2015-2020	Percentage Reduction from 2013	2015-2020	Percentage Reduction from 2013
Infections averted	43	37%	73	56%
AIDS-related deaths averted	70	54%	93	68%

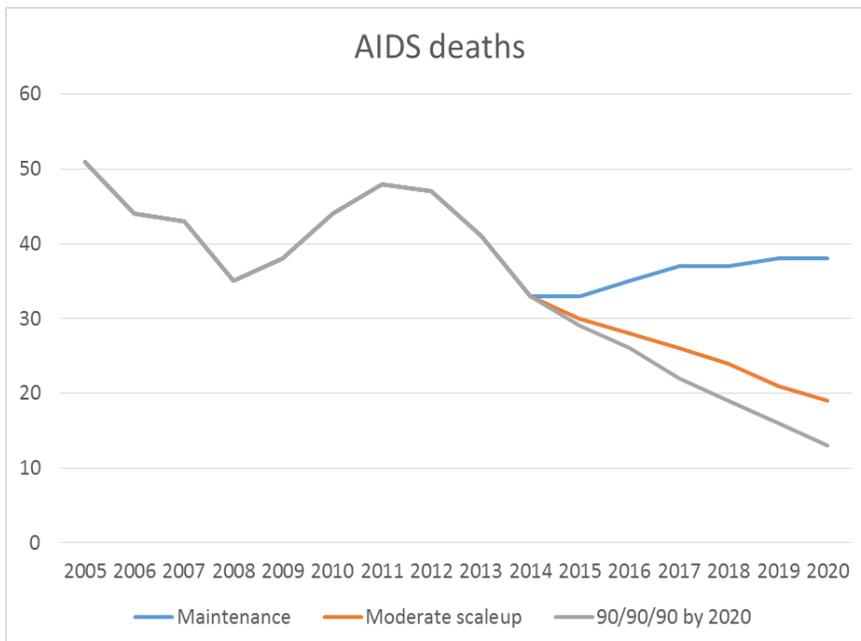
The number of new infections would be reduced by 56% by 2020 from 2013 in the 90/90/90 scenario (from 41 in 2013 to just 18 in 2020). If current coverage of interventions were maintained there would still be about 39 new infections annually in 2020. The moderate scale up of interventions would avert 43 new infections and reduce the annual rate of infections by 37%, from 41 in 2013 to 26 in 2020.

Figure 2: Model projection of the total number of new HIV infections annually, 2010-2020, for each model scenario.



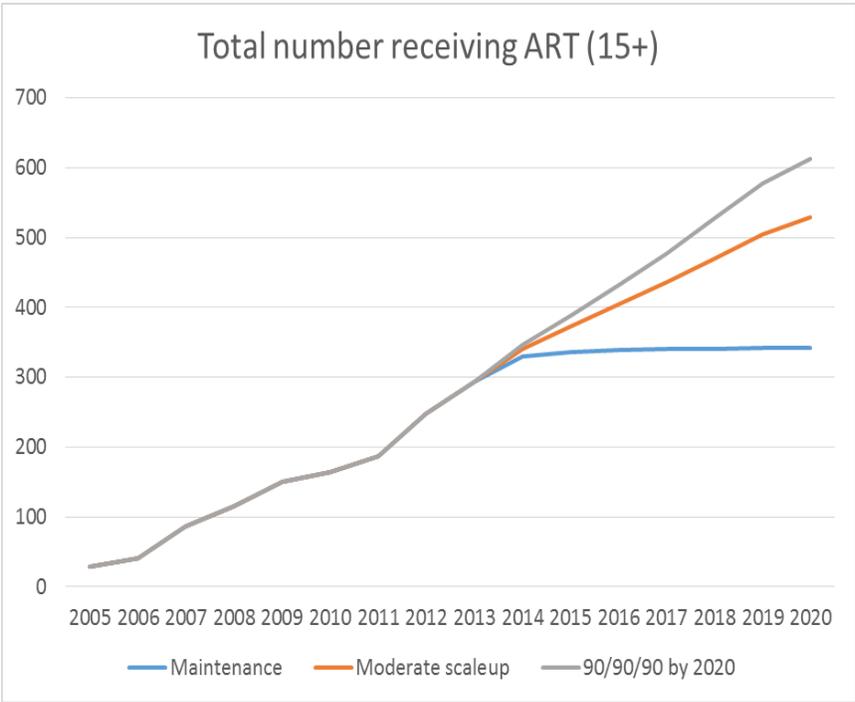
The number of AIDS deaths would also drop sharply due to the effects of scaling up ART. Deaths would be more than 2/3 lower in 2019 if the 90/90/90 scenario is implemented and more than 50% lower if the 80% treatment target in the moderate scenario were reached.

Figure 3: Model projection of the annual number of AIDS deaths among adults aged 15 and over, 2010-2020, for each model scenario.



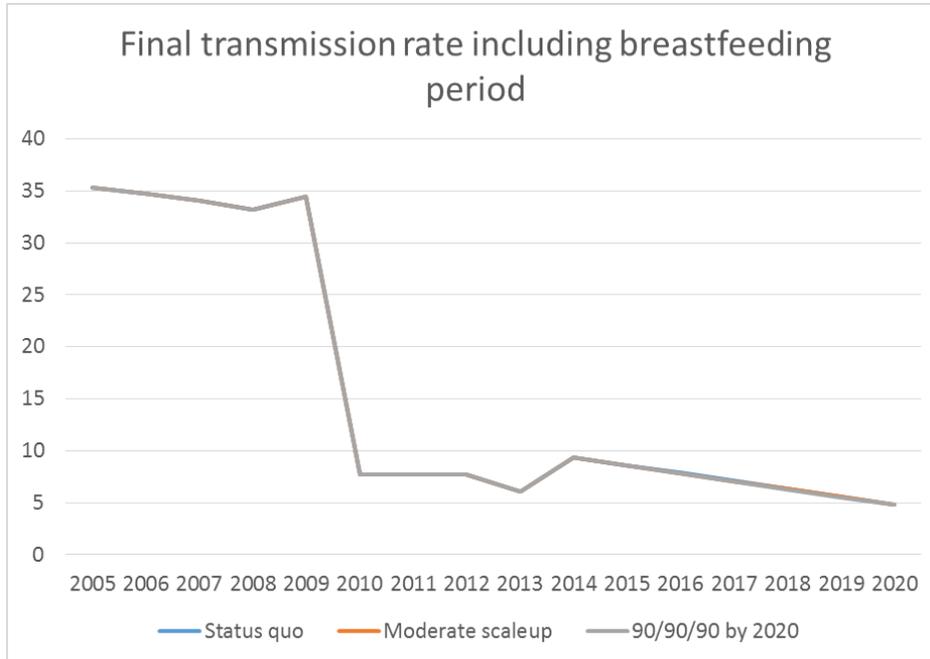
In the 90/90/90 scenario the large decline in the number of AIDS-related deaths results from the increasing number of people receiving ART. The combination of achieving 90% coverage and the expanded eligibility guidelines means that the number of adults receiving ART would increase to more than 600 by 2020, almost doubling the current number on treatment.

Figure 4: Model projection of the annual number of adults aged 15 and over receiving ART, 2010-2020, for each model scenario



The maintained success of the PMTCT program all scenarios will maintain the achievements of the PMTCT program to date. The PMTCT program has brought transmission down to about 5%, but continued vigilance will be required to maintain these gains, including early screening of pregnant women, and continued implementation of the Option B+ protocol.

Figure 5: Model projection of the transmission rate for PMTCT, 2010-2020, for each model scenario



Given the recent closure of the USAID-funded EC CAP II program, current funding for prevention with key populations like sex workers and MSM is anticipated to be cut drastically. Table 3 below shows that cutting these funds could lead to an additional two to three new infections annually. This translates into nine new infections from 2015-2020, or 33 new infections from 2015 to 2030.

Table 3. New infections per annum in Maintenance scenario, as compared to cutting key population prevention.

Year	Cut in key population funding	Maintenance
2015	37	37
2016	40	38
2017	41	39
2018	41	39
2019	41	39
2020	41	39
2021	41	39
2022	41	39
2023	40	38
2024	40	38
2025	40	37

3.2 Scenario costs

The Resource Needs Model (RNM) is a tool to estimate the future cost of each scenario and is developed in parallel with the Goal model. Table 4 provides treatment and prevention interventions, their respective unit costs, and the source from which data were derived.

Table 4: Costs and data sources used for resource needs estimates

Intervention	Unit Cost	Source
Testing and counseling	\$30 per person	Routh, Subrata, Josef Tayag. September 2012. Costing of Primary Health Care and HIV/AIDS Services in Antigua and Barbuda: A Preliminary Report. Bethesda, MD: Health Systems 20/20 project, Abt Associates Inc.
ART (first line)	\$174.38 per patient per year	OECS purchase price for TDF/3TC/EFV
ART (second line)	\$518.78 per patient per year	OECS purchase price for TDF/FTC/LPV/ritonavir
PMTCT	\$607 per mother-baby pair	Average; Financial Resources Required to Achieve National Goals for HIV Prevention, Treatment, Care and Support
Condoms	\$0.29 per condom	LAC regional average; Financial Resources Required to Achieve National Goals for HIV Prevention, Treatment, Care and Support, 2014
Prevention for MSM	\$215 per person per year	McLean R., V. Menon, A. Scott, T. Couture, S. Alkenbrack . 2013. The Cost of HIV Prevention Interventions for Key Populations in the Eastern Caribbean and Barbados. Washington, DC: Caribbean HIV/AIDS Alliance and Futures Group, Health Policy Project
Prevention for sex workers and clients	\$215 per person per year	McLean R., V. Menon, A. Scott, T. Couture, S. Alkenbrack . 2013. The Cost of HIV Prevention Interventions for Key Populations in the Eastern Caribbean and Barbados. Washington, DC: Caribbean HIV/AIDS Alliance and Futures Group, Health Policy Project

STI Treatment

\$65 per case

Global average; Financial Resources
Required to Achieve National Goals for
HIV Prevention, Treatment, Care and
Support, 2014

The costs of program support were included as percentages of the direct costs (prevention, care and treatment). This includes enabling environment (0.3%), administration (5.5%), research (0.3%), M&E (1%), communications (.2%), program level HR (.9%) and training (1%) based on NASA regional averages. This sums to 9.2%, which corresponds well with recent health accounts estimation findings in the region, which found 9% spending on administration and overhead. (Bhuwatee et al., 2013)

Figure 6 and 7 reflect the resources required for each scenario and by program area to include prevention, care and treatment and policy and program support.

Figure 6: Per annum break down of resources required for all scenarios

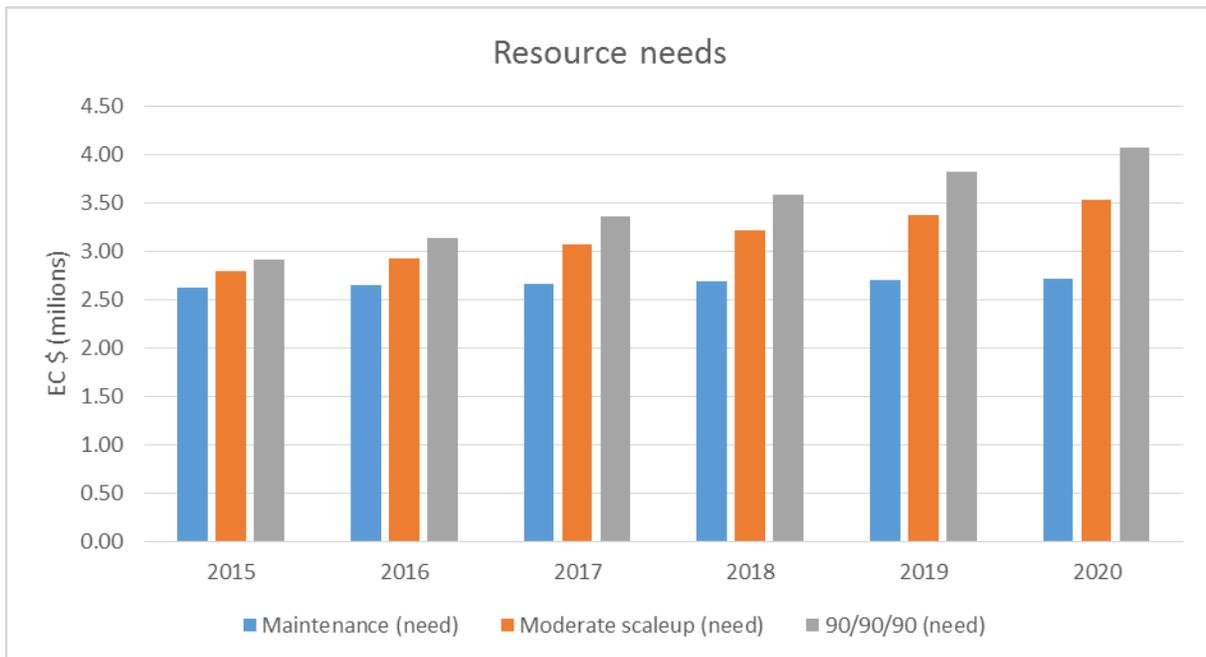
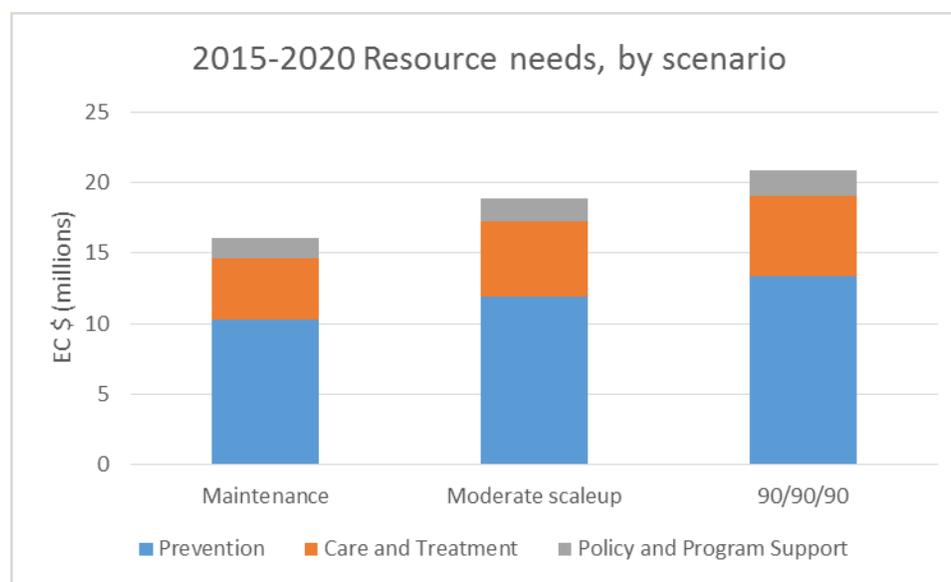


Figure 7: Break down of resources required by program area (2015-2020)



3.3 Resource Availability Analysis

In the past three years, spending on Antigua and Barbuda's HIV response has been characterized by a high cost of government-financed inpatient care, donor support for outreach to key populations, some prevention, and ARVs (which have been decreasing in cost over time), and corporate donations in support of one-off events or programs (such as "Regional Testing Day.") See Table 5 for an estimation of

Table 5: Estimated past spending on HIV in Antigua and Barbuda

Source of funds*		2012	2013	2014
Government funding	MOH (outpatient care and prevention)	974	984	996
	Inpatient care	1,232	1,245	1,259
	Medical Benefit Scheme (ARVs)	13	44	37
International Donors	Global Fund Round 9 (ARVs)	66	118	61
	PEPFAR (direct)	766	774	783
	KfW (CARISMA project)	70	38	72
Private Sector	Corporate donations	28	29	29
Total		3,149	3,232	3,237

*Sources: National AIDS Program financial records 2013 & 2014. Estimates discounted back to 2012 assuming level spending, and discounted by the rate of inflation in Antigua and Barbuda; Routh, Subrata. June 2013. Costing of Service Provision at the Mount St. John's Medical Center in Antigua and Barbuda: Final Report. Bethesda, MD: Health Systems 20/20 Caribbean project, Abt Associates Inc. Government spending for 2012 in inpatient care expected to have increased by the rate of inflation in 2013 and 2014; MBS and PPS records.

spending in 2012-2014.

In an effort to provide strategic information reflecting the cost implications of each scenario and illustrate the potential funding gap for this investment case study, the model has included estimates of the financial resources required for outlined scenarios as well as funding available. These two pieces of information serve to clearly visualize the funding gap that exists to execute each of the scenarios.

Table 6 below provides data on estimated projected resources available for Antigua and Barbuda (2015-2020), broken down by funding source and area of support.

Table 6: Estimated resources available to support the HIV/AIDS response by funding source (ECD 000)

Source of funds		2015	2016	2017	2018	2019	2020
Government funding	MOH (outpatient care and prevention)*	1,006	1,016	1,026	1,036	1,046	1,057
	Inpatient care**	1,272	1,285	1,297	1,310	1,324	1,337
	Medical Benefit Scheme (ARVs)***	78	103	165	167	169	170
International Donors	Global Fund Round 9 (ARVs)***	70	62	0	0	0	0
	PEPFAR (direct)	169	135	101	68	0	0
	KfW (CARISMA project)	18	0	0	0	0	0
Private Sector	Corporate donations****	29	29	29	29	29	29
Total		2,642	2,629	2,619	2,610	2,567	2,593

*Source: National AIDS Program financial records 2014. Estimates discounted back to 2012 assuming level spending, and using the rate of inflation for 2012 and 2013 in Antigua and Barbuda.

** Routh, Subrata. June 2013. Costing of Service Provision at the Mount St. John's Medical Center in Antigua and Barbuda: Final Report. Bethesda, MD: Health Systems 20/20 Caribbean project, Abt Associates Inc.

***MBS and PPS records (2014)

****National AIDS Program financial records and receipts (2013 and 2014)

Note that the table above depicts estimates for PEPFAR support that is directly funding the HIV response, defined as funds that contribute to prevention, HTC, care and treatment. See Table 7 below for an explanation of how these estimates were derived.

Table 7: Current and expected PEPFAR funding to Antigua and Barbuda (ECD)

	2014	2015	2016	2017	2018	2019	2020
Total indicated PEPFAR funding to all implementing partners working in A&B*	3,131,744	675,000	540,000	405,000	270,000	0	0
<i>Of which:</i>							
Estimated PEPFAR resources available for direct HIV programming in A&B (25%)**	782,936	168,750	135,000	101,250	67,500	0	0
Estimated PEPFAR resources available for training and technical assistance to A&B (75%)	2,348,808	506,250	405,000	303,750	202,500	\$0	\$0

*Source: August 26, 2014 email from PEPFAR Regional Coordinator to the author.

** Estimate based on findings of the St. Kitts and Nevis and Dominica's recent health accounts estimations in 2013 with similar percentages of PEPFAR spending going for direct support (Bhuwanee et. al., 2013).

3.4 Resource gap analysis

The resource gap analysis presents the financial gap (surplus, deficit, or budget neutral) between the cost of each scenario and the expected resources available. In Table 8 below resource needs from each of the three scenarios are presented along with the projected resources available in Antigua and Barbuda for its HIV and AIDS program through 2020. The difference between the resource needs and the available resources is projected and represents the funding gap that will exist and must be filled if Antigua and Barbuda intends to achieve each scenario's coverage goals.

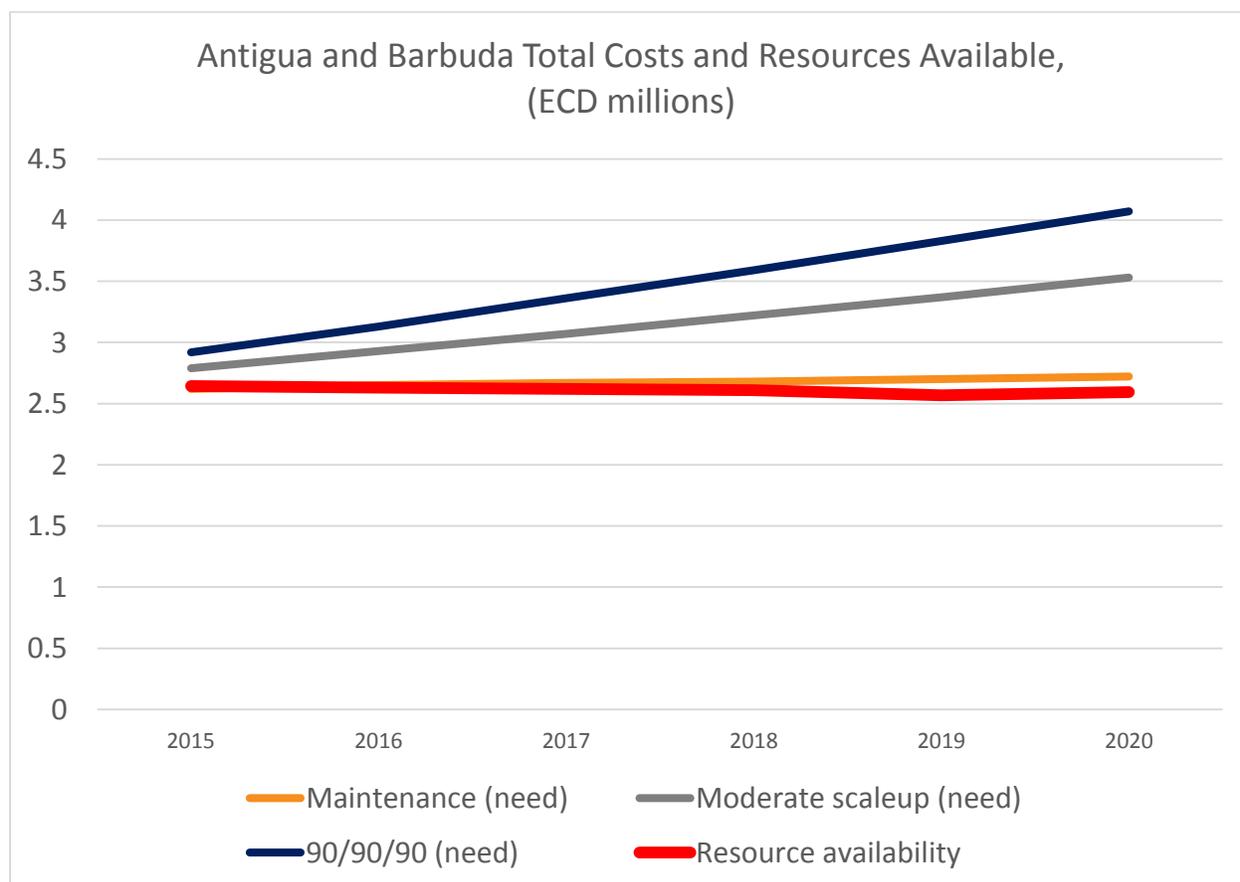
Beginning in 2016, the resources available fall short of what is required for all three scenarios. Maintaining the status quo would be possible in 2015 with a small increase in government contribution to fighting the disease of 1% per annum. In 2016, maintaining current program levels would require an additional EC\$2,000 and a total of over EC \$16million through 2020. The funding gap for maintaining current coverage levels increases each year, leading to a growing deficit of EC\$130,000 by 2020. This deficit is largest for the 90-90-90 scenario, which is EC\$28,000 in 2015 and as high as \$1.48 million by 2020, followed by the moderate scale up (EC\$3.25 million total funding gap for the six years) .

Table 8: Scenarios' costs and resource availability from 2015-20, in millions of ECD.

	2015	2016	2017	2018	2019	2020
Maintenance (need)	2.62	2.65	2.67	2.68	2.7	2.72
Moderate scaleup (need)	2.79	2.93	3.07	3.22	3.37	3.53
90/90/90 (need)	2.92	3.13	3.36	3.59	3.83	4.07
Resource availability	2.64	2.63	2.62	2.61	2.57	2.59
Resource gap (maintenance)	0.02	-0.02	-0.05	-0.07	-0.13	-0.13
Resource gap (moderate scaleup)	-0.15	-0.30	-0.45	-0.61	-0.80	-0.94
Resource gap (90/90/90)	-0.28	-0.50	-0.74	-0.98	-1.26	-1.48

Data presented in Figure 8 shows the resource gap by scenario and year from 2015 to 2020. The maintenance scenario initially costs less than available resources (2015) but the resource deficit to fund this option grows positive in 2016 when the country would require 1% more funding than is currently available. The figures are more exaggerated for the moderate scale up and 90-90-90 scenarios, such that by 2020 Antigua and Barbuda would require 27% and 33% more resources than are currently available, respectively.

Figure 8: Estimated Total Costs and Resources Available (2015-2020)



V. CONCLUSIONS

Through the modeling of these scenarios in Antigua and Barbuda, it is clear that the country is in a relatively stable position compared to other OECS nations, but that starting in 2015, the National HIV and AIDS response requires additional financial resources to adequately respond to the epidemic. Simply maintaining the status quo requires additional investment to cover gaps such as that resulting from the recent discontinuation of donor funding for some prevention and outreach services among key populations.

While the Caribbean Region has committed to scaling to a 90/90/90 scenario, making this a reality in each of the countries will require a targeting of existing domestic resources available to evidence-based strategies proven most effective to reduce transmission. Antigua and Barbuda will also need to seek cost-effective approaches to service delivery. These may include, but are not limited to defining and targeting the country's most-at-risk populations, targeted identification of high risk populations through HIV testing and counseling efforts and linking to care and treatment, and integration of HTC into primary health care, and better leveraging of the private sector, including oversight of quality of care.

If domestic government resources to fund the fight against HIV and AIDS increase by 1% per annum, (see Tables 6 & 8 above), and prevention and treatment coverage levels are maintained, Antigua and Barbuda will face a moderate resource gap of about EC\$6,000 per annum over the period of 2015-2020. But in that case, HIV incidence will stay relatively constant.

The ambitious 90-90-90 by 2020 scenario has the greatest impact on the epidemic, dramatically curtailing new HIV infections and saving many lives through its greater emphasis on counseling, testing, and expanded ART eligibility and coverage. Over the long-term, this approach will eventually mean overtaking and potentially ending the epidemic. But it is also very costly, as it entails testing many more individuals and long-term maintenance of a substantial number of people on ART. Under this scenario, the projected resource gap over the next four years is EC\$5.24 million or about EC\$870,000 per year.

Potential sources of funding to bridge these gaps include traditional donors such as the Global Fund – Antigua and Barbuda is a member of an OECS multicountry application. Other sources include increases in government funding, increased outreach to the private sector, and maintaining reliance on regional public goods and services such as the PPS, policy and advocacy support of PANCAP and its members, and reaching out to other donors to fund health system strengthening and other support to the NAP. Regardless, the country has made significant strides in combatting the disease and these efforts and progress should be built on in future years to achieve an AIDS Free Generation in the Caribbean.

ANNEX A: INPUTS TO THE GOALS & RESOURCE NEEDS MODELS

	Value	Source
Distribution of the Population by Risk Group		
Percentage of males		
Not sexually active (Never had sex)	8.0%	KAPB, 2011, p. 94
Low risk heterosexual (One partner in the last year)	63.8%	Remaindered
Medium risk heterosexual (more than one partner in last year)	24.0%	KAPB, 2011, p. 149
High risk heterosexual (Client of sex worker)	2.4%	KAPB, 2011, p. 116
IDU	0.0%	
MSM	1.8%	KAPB, 2011, p. 111
Percentage of females		
Not sexually active (Never had sex)	11.0%	KAPB, 2011, p. 94
Low risk heterosexual (One partner in the last year)	77.2%	Remaindered
Medium risk heterosexual (more than one partner in last year)	8.8%	KAPB, 2011, p. 149
High risk heterosexual (Sex worker)	3.0%	KAPB, 2011, p. 116
IDU		
Percentage of IDU sharing needles		



		Value	Source
Condom use in last sex act (Latest available, plus earlier years if available)			
	Low risk	34.4%	KAPB, p. 132
	Medium risk	65.2%	KAPB, p. 135
	High risk	71.0%	TrAC 2010, p. 6
	MSM	72.6%	Epidemiological profile, 2013, p. 26
Number of partners per year			
Males			
	Low risk	1.0	By definition
	Medium risk	2.8	KAPB, p. 120
	High risk	2.9	KAPB, p. 123
	MSM	6.0	
Females			
	Low risk	1.0	By definition
	Medium risk	1.2	KAPB, p. 121
	High risk	101.0	TrAC 2010, p. 6
Sex acts per partner			
	Low risk	70.0	Global Default
	Medium risk	40.0	Global Default
	High risk	1.3	TrAC 2010, p. 6
	MSM	14.0	Global Default

		Value	Source
Age at first sex			
	Males	15.0	KAPB, 2011, p. 95
	Females	17.0	KAPB, 2011, p. 95
Percent married or in union			
Males			
	Low risk	100%	By definition
	Medium risk	39%	KAPB, p. 10
	High risk	39%	KAPB, p. 10
	IDU	0%	
	MSM	39%	KAPB, p. 10
Females			
	Low risk	100%	By definition
	Medium risk	39%	KAPB, p. 11
	High risk	39%	KAPB, p. 11
	IDU	39%	KAPB, p. 11
STI prevalence			
Males			
	Low risk	2.8%	
	Medium risk	8.0%	
	High risk	20.0%	
	MSM	15.0%	
Females			



		Value	Source
	Low risk	5.6%	
	Medium risk	8.0%	
	High risk	30.0%	
Key population sizes			
	Prisoners	302	
	Migrants	20,700	
Coverage of behavior change interventions			
General populations			
	Community mobilization		
	Mass media		
	VCT (percent of adults tested in the last year)	5.7%	Epi profile, p. 34
	Condoms	34.0%	Overall condom program reach
	Youth in school	5.4%	50 teachers reached; 931 teachers; Educational Statistics Digest 2012
	Youth out of school		
	Workplace	0.7%	200 persons'; communication w/ deputy director of NAP; Labor force = 30,000; IndexMundi
Most-at-risk populations			
	Female sex workers	61.5%	CHAA Country Data Report, Antigua and Barbuda, March 2012 - February 2013, 472 persons reached, p. 6
	MSM outreach	68.2%	CHAA Country Data Report, Antigua and Barbuda, March 2012 - February 2013, 317 persons reached, p. 7
	Prisoners	15.2%	Communication from Department of Gender Affairs; 46 prisoners reached in 2013

		Value	Source
	Migrants	0.0%	
Medical Services			
	STI treatment	80.0%	"Most have sought treatment" UNGASS p. 18
	Blood safety	100.0%	
	Post exposure prophylaxis	58.5%	82 assaults, estimated by .85 assaults per 1,000; CCC report notes 4 PEP clients per month
Care and treatment			
	Adult ART	57%	370 adults in treatment; 7 children
	Pediatric ART	54%	
Unit Costs			
General populations			
	Community mobilization	\$ 3.29	LAC regional average; Financial Resources Required to Achieve National Goals for HIV Prevention, Treatment, Care and Support, 2014
	VCT (percent of adults tested in the last year)	\$ 30.00	Routh, Subrata, Josef Tayag. September 2012. Costing of Primary Health Care and HIV/AIDS Services in Antigua and Barbuda: A Preliminary Report. Bethesda, MD: Health Systems 20/20 project, Abt Associates Inc. Abt
	Condoms	\$ 0.29	LAC regional average; Financial Resources Required to Achieve National Goals for HIV Prevention, Treatment, Care and Support, 2014
	Youth in school	\$ 68.61	LAC regional average; Financial Resources Required to Achieve National Goals for HIV Prevention, Treatment, Care and Support, 2014
	Youth out of school	\$ 16.22	LAC regional average; Financial Resources Required to Achieve National Goals for HIV Prevention, Treatment, Care and Support, 2014



		Value	Source
	Workplace	\$ 9.65	LAC regional average; Financial Resources Required to Achieve National Goals for HIV Prevention, Treatment, Care and Support, 2014
	Blood safety	\$ 18.57	LAC regional average; Financial Resources Required to Achieve National Goals for HIV Prevention, Treatment, Care and Support, 2014
Most-at-risk populations			
	Female sex workers	\$ 214.95	McLean R., V. Menon, A. Scott, T. Couture, S. Alkenbrack . 2013. The Cost of HIV Prevention Interventions for Key Populations in the Eastern Caribbean and Barbados. Washington, DC: Caribbean HIV/AIDS Alliance and Futures Group, Health Policy Project
	MSM outreach	\$ 214.95	McLean R., V. Menon, A. Scott, T. Couture, S. Alkenbrack . 2013. The Cost of HIV Prevention Interventions for Key Populations in the Eastern Caribbean and Barbados. Washington, DC: Caribbean HIV/AIDS Alliance and Futures Group, Health Policy Project
	Migrant workers	\$ 4.30	Cost drawn from HIV/AIDS Unit cost repository: http://policytools.futuresinstitute.org/UC/
	Prisoners	\$ 45.00	Belize National Resource Needs Estimates, Health Policy Project. 2010.
Medical Services			
	STI treatment	\$ 65.00	Global average; Financial Resources Required to Achieve National Goals for HIV Prevention, Treatment, Care and Support, 2014
	Blood safety	\$ 18.57	LAC regional average; Financial Resources Required to Achieve National Goals for HIV Prevention, Treatment, Care and Support, 2014
	Post exposure prophylaxis	\$ 14.53	LAC regional average; Financial Resources Required to Achieve National Goals for HIV Prevention, Treatment, Care and Support, 2014
	ART (ARVs)	\$ 174.38	OECS data point from GPRM: TDF/3TC/EFV

		Value	Source
	ART (second line)	\$ 518.78	OECS data point from GPRM: TDF/FTC/LPV/ritonavir
	Diagnostic tests	\$ 216.00	Routh, Subrata, Josef Tayag. September 2012. Costing of Primary Health Care and HIV/AIDS Services in Antigua and Barbuda: A Preliminary Report. Bethesda, MD: Health Systems 20/20 project, Abt Associates Inc. Abt
	PMTCT	\$ 607.00	SAS regional average; Financial Resources Required to Achieve National Goals for HIV Prevention, Treatment, Care and Support, 2014
	PCR for infant	\$ 62.00	Default
ART outpatient care		\$ 233.70	Routh, Subrata, Josef Tayag. September 2012. Costing of Primary Health Care and HIV/AIDS Services in Antigua and Barbuda: A Preliminary Report. Bethesda, MD: Health Systems 20/20 project, Abt Associates Inc. Abt
	ART inpatient care	\$ 243.45	Average cost per HIV/AIDS associated inpatient day, drawn from Routh, Subrata. June 2013. Costing of Service Provision at the Mount St. John's Medical Center in Antigua and Barbuda: Final Report. Bethesda, MD: Health Systems 20/20 Caribbean project, Abt Associates Inc. Abt
Policy and Program Support		% over direct costs	
	Enabling environment	0.3	Regional NASA average
	Program management	5.5	Regional NASA average
	Research	0.3	Regional NASA average
	Monitoring and evaluation	1	Default
	Strategic communication	0.2	Regional NASA average
	Program-level HR	0.9	Regional NASA average
	Training	1	Regional NASA average



ANNEX B: EPIDEMIOLOGICAL PARAMETERS

Parameter	Value	Source
Transmission of HIV per act (female to male)	0.0019	Baggeley <i>et al.</i> ⁱ , Gray <i>et al.</i>
Multiplier on transmission per act for		
Male to female	1.0	Galvin and Cohen ⁱⁱ , 2.2-11.3
Presence of STI	5.5	Powers <i>et al.</i> ⁱⁱⁱ , 5.1-8.2
MSM contacts	2.6	Vittinghoff <i>et al.</i> ^{iv}
Relative infectiousness by stage of infection		
Primary infection	9 –40	Boily <i>et al.</i> ^v , 9.17 (4.47-18.81)
Asymptomatic	1	Pinkerton ^{vi}
Symptomatic	7	Boily <i>et al.</i> ⁶ , 7.27 (4.45-11.88)
On ART	0.04 – 0.08	Cohen <i>et al.</i> ^{vii}
Efficacy in reducing HIV transmission		Weller and Davis ^{viii}
Condom use	0.8	Weller and Davis ^{ix} , Auvert <i>et al.</i> ^v , Gray <i>et al.</i> (2007) ^{xi} , Bailey <i>et al.</i> ^{xii}
Male circumcision	0.6	Grant <i>et al.</i> ^{xiii} Partners PrEP Study
PrEP	0.55 – 0.73	Partners PrEP Study
Microbicide	0.6	Abdool Karim <i>et al.</i> ^{xiv}

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