INVESTMENT CASE TO FAST-TRACK AND SUSTAIN THE HIV RESPONSE IN THE DOMINICAN REPUBLIC

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INDEX

Table List

Figure List

EXECUTIVE SUMMARY

Background: The HIV epidemic in the Dominican Republic is characterized by a significant prevalence in key populations (men who have sex with men and sex workers) as well as in the migrant worker population, the majority of whom are from Haiti.

The national response to HIV has shown considerable progress – there is an increased mobilization of domestic resources to fund antiretroviral drugs, public information on HIV, condom distribution at public facilities and sufficient access to condoms for purchase at private pharmacies. The public and private service network is large and extends throughout the country, and 70 percent of the population is enrolled in the Family Healthcare Insurance scheme. However, there are still challenges to accessing treatment and HIV prevention services, including stigma and discrimination of key populations, complicating the eventual control the HIV epidemic.

Objective: The objective of the investment case was to evaluate the costs, goals, and impact that implementation of the 2014-2018 National Strategic Plan (NSP) would have, comparing it with a Fast-Track (FT) strategy to ensure control of the epidemic.

Methods: The methodology utilizes different tools that combine demographic, epidemiological, cost and impact models of specific interventions. The scenarios are compared by objectives, interventions, impact, and levels of investment. The '*Goals Model*' is a dynamic simulation model that is based on epidemiological prevalence surveys, household and risk group surveys, health information system data, cost records, and estimates. The programmatic and coverage goals were defined by a workgroup in collaboration with the Ministry of Health, technical partners, and NGOs delivering services, considering NSP policies and international commitments around HIV control.

Results: For estimations of impact and cost, a baseline (status-quo) scenario was used as reference, where current intervention type and coverage levels were kept constant until 2030. This permits the modeling of the potential impact of interventions with different coverage levels. Implementation of the NSP would reduce the number of new infections by 66 percent from 2,918 in 2015 to 1,010 in 2030. The number of deaths would be reduced by 50 percent from 3,128 to 1,550 during the same period. The FT strategy, calling for the implementation of the 90-90-90 goals that focus on services for key populations, would reduce the number of new infections by 90 percent to 310 and the number of deaths by 75% to 742 by 2030. The programmatic investment required in 2020 for NSP implementation would be US$104 million while US$74 million would be needed to implement the FT strategy. An accelerated approach would reduce the cost per infection averted by focusing services on key populations and expanding ART to limit secondary infections. Both the cost and deaths averted are influenced by ART, which accounts for 46 percent of the investment costs. The FT approach also shows a higher return on investment, with a cost per infection averted of US$17,500 much lower than the US$74,754 cost per infection averted for the NSP approach.

Conclusions: The study results show that implementation of a FT strategy, designed to achieve the 90-90-90 goals, is the more cost-effective option if focused on providing universal coverage to key populations. This accelerated approach would reduce HIV mortality by 57 percent compared to the current approach, but above all, it could reduce new HIV infections by 90 percent, representing significant progress in control of the epidemic. FT requires universal coverage for treatment and preventative interventions that target groups whose level of risk is crucial for controlling the epidemic.

ACRONYMS

AD	Auto-Destruct
ART	Antiretroviral Therapy
ARV	Antiretroviral
AZT	Azidothymidine
CONAVIHSIDA	National HIV/AIDS Council
FT	Fast-Track
GDP	Gross Domestic Product
HFG	Health Finance and Governance project
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
IDU	Injection Drug User
IEC	Information, Education, and Communication
MARP	Most-At-Risk-Population
MSM	Men Who Have Sex With Men
NSP	National Strategic Plan
OI	Opportunistic Infections
PEP	Post-Exposure Prophylaxis
PLHIV	People Living With HIV
PMTCT	Prevention of Mother-to-Child Transmission of HIV
PWID	People Who Inject Drugs
QALY	Quality-Adjusted Life Years
STI	Sexually Transmitted Infection
SW	Sex Worker
TB	Tuberculosis
USAID	United States Agency for International Development
VCT	Voluntary Counseling and Testing

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1. INTRODUCTION

This study aims to support the government of the Dominican Republic in the development of an investment case to inform decisions around implementing an accelerated human immunodeficiency virus (HIV) response. The scenarios presented pinpoint the best way to achieve sufficient and proper resource allocation in the fight against HIV and acquired immunodeficiency syndrome (AIDS). This report focuses on interventions and populations with the highest potential to decrease the incidence of HIV and HIV-related deaths. The results offer a mechanism with which to identify and then implement actions that will have the greatest impact on achieving the result of the National Strategic Plan (NSP) and policies related to HIV, including those established under the National Development Strategy and the HIV and AIDS Law.

The study of the costs and impact of investments in HIV-related actions considers current and future levels of technical efficiency to ultimately establish the most cost-effective HIV response over the next 15 years. The study calculates cost-effectiveness using both the cost of averting one infection and the cost of averting one HIV-related death. The study uses the Spectrum model to estimate financing needs and cost-effectiveness to achieve the government's goals.

The study was implemented in two phases. The first involved establishing a baseline of sorts, reviewing the country's HIV epidemic, existing national response, and challenges and progress to date. The second component, and the primary focus of this report, involved outlining the goals and unit costs as validated in the country, the methodology applied to analyze these data, and the resources needed to see an impactful investment that achieved the country's HIV response goals.

The goal of this report is to present options to achieve the country's goals. The investment options for each of the two scale-up scenarios show different coverage levels and return on investment. The analysis of these scenarios will help define the ideal strategy and approach to inform the new NSP.

2. METHODOLOGY

2.1 Data Collection

Data on demographic and epidemiological trends, sexual behavior, unit costs of services, and current service coverage were pulled from various sources compiled by the Dominican Republic's National Program for HIV, the Ministry of Health, and UNAIDS's regional team. Annex 1 shows these demographic and epidemiological inputs. Unit cost data are in Annex 2. The list and description of program interventions is Annex 3. We reviewed all data for consistency and completeness.

2.2 Epidemic and Financial Projections

We used the Goals Model to develop these projections. The Goals Model is a computer model designed to enhance strategic planning by linking program goals and financing levels (Stover et al., 2006, Hecht et al., 2009). It includes a transmission model that calculates the number of new infections each year as a result of population behaviors and epidemiological factors such as prevalence among partners and stage of infection.

The population is first divided into male and female adults and then into six risk groups: high risk (female sex workers and their male clients), medium risk (people with casual partners), low risk (married people with a single partner), men who have sex with men (MSM), people who inject drugs (PWID) and those who are not sexually active.

The behaviors are specified for each group and lead to calculations of the number of new infections by risk group. The risk of transmission is based on two key factors – behaviors such as average number of sexual partners per year and condom use and biomedical factors such as prevalence of other sexually transmitted infections (STIs), use of antiretroviral (ARV), and male circumcision.

A key feature of the Goals Model is that it estimates how coverage of behavior change interventions impacts changes in behavior. This is done through the Impact Matrix, which describes the amount and type of behavior change to be expected from exposure to each prevention intervention.

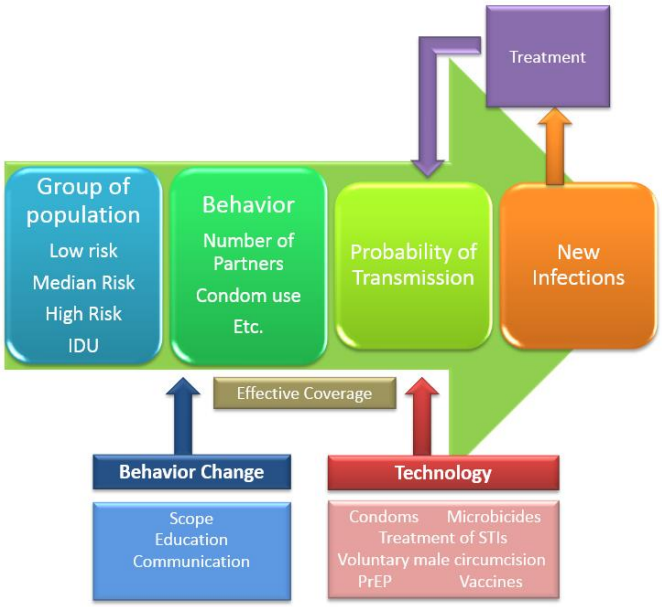
There are different impact matrices for each risk group. The matrices are summaries of published intervention research studies. The current version of the matrix contains about 130 studies on the impact of prevention interventions on sexual behavior (Bollinger, 2008).

The model focuses on four major types of interventions:

1. **Interventions for the general population** that are intended to promote safer behaviors among the general population, such as community mobilization, mass media, voluntary counseling and testing (VCT), condom distribution, social marketing, and prevention programs for youth in and out of school and in workplaces.
2. **Interventions that target Most-At-Risk-Populations (MARPs)**, including prevention activities focused on specific risk groups like sex workers (SWs), PWID, and MSM.
3. **Medical services** including services provided by the health sector such as blood safety, treatment of STIs, universal precautions, and post-exposure prophylaxis (PEP).

4. **Care and treatment services for those living with HIV/AIDS** including palliative care, treatment of opportunistic infections (OIs), OI prophylaxis, antiretroviral therapy (ART) and tuberculosis (TB) treatment.

Figure 1. Goals Model



The Goals Model links to the AIDS Impact Model (AIM) module in Spectrum to estimate the impact of interventions on the population between the ages of 15 and 49. Additionally, AIM includes the impact of prevention-of-mother-to-child transmission (PMTCT) programs on the number of pediatric infections. A full description of the methods used in the Goals Model can be found in the model's manual (Stover, 2011).

For each intervention outlined above, the Goals Model calculates the cost of achieving specified levels of coverage, with achievement characterized by the percentage of people in need of a service who receive it. The calculation is done by first estimating the target population (i.e., the total number of people requiring the service). For example, the size of the target population for youth-in-school programs would be the number of students who are of appropriate age to receive education on life skills. The size of the target population for treatment programs would be the total number of HIV-infected individuals in the country who are eligible for treatment. To estimate the resource requirements from the level of coverage, the target population is multiplied by the coverage and then by the unit cost (the cost to deliver the service to each person).

The impact from coverage of HIV/AIDS interventions is often measured by changes in adult HIV prevalence. The advantage of this indicator is that it can be monitored with surveillance and surveys. However, prevalence is a measure of the number of people living with HIV. Therefore, it reflects new infections over the past and only declines when people die. As ART improves one's quality of life and postpones death, prevalence may increase even if the number of new infections declines.

An alternate indicator of the impact of prevention is HIV incidence. It is the most precise measure of prevention effectiveness; however, it generally cannot be measured directly but must be estimated with

models. Both HIV prevalence and incidence are outcome indicators in the Goals Model, and will be presented for each of the resource allocation scenarios.

Cost-effectiveness for each scenario is derived by dividing the additional prevention expenditures incurred in each scenario by the total number of infections averted. The incremental cost per infection averted is the incremental cost of a particular scenario, that is, the difference between the costs in the baseline (current coverage levels) and the alternative scale-up scenario divided by the difference between infections in each scale-up scenario relative to the baseline scenarios. The deduction of the life years gained is the measurement of the burden of premature death and morbidity in economic terms to evaluate the quality of life in relation to the value of the necessary resources for an intervention. This is calculated by applying an annual discount rate (usually 3 percent) to the number of deaths averted and the cost for the intervention. The cost deducted for each life gained is calculated by deducting the cost per year (2015-2021) and diving by the number of lives gained[1] for the same years.

[1] Life years gained is the difference between the intervention scenario population from 2013 to 2030 and the baseline scenario population for the same years.

3. SCENARIO ANALYSIS

This report includes three different resource allocation scenarios: a baseline scenario and two scale-up scenarios whose descriptions can be found in Table 1. These are:

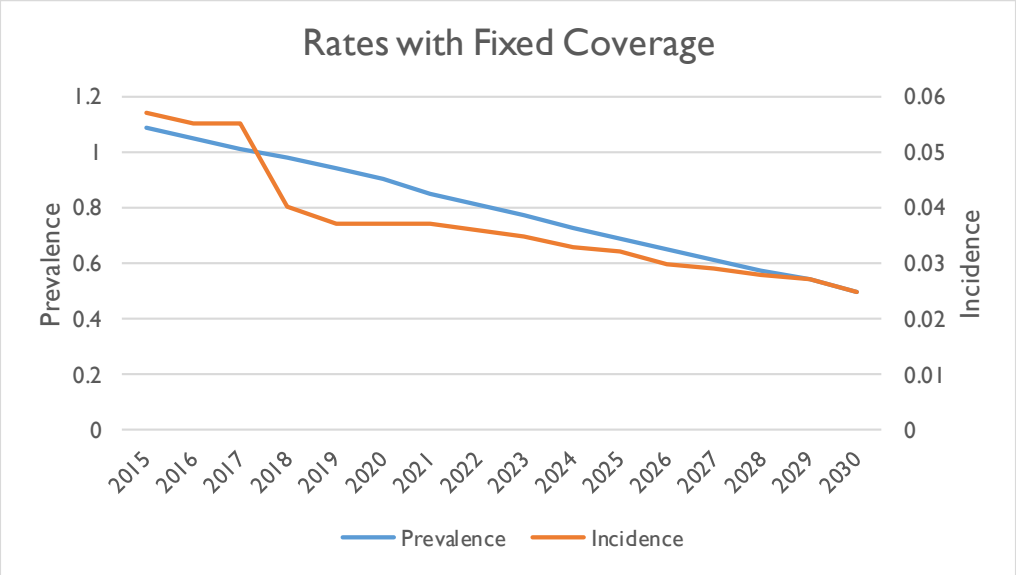
Table 1: Key Scenario Descriptions

	Baseline	National Strategic Plan	Fast-Track
Coverage Level	Maintained at the same level as in 2016	Coverage increase based on the NSP	Increase coverage to 81% by 2020 according to the 2015 WHO guidelines
CD4 cell count criteria in adults	500 until 2030	500 until 2018, and no CD4 cell count criteria from 2020	No CD4 cell count criteria in 2018
PMTCT CD4 cell count criteria	All women with no CD4 cell count criteria	All women with no CD4 cell count criteria	All women with no CD4 cell count criteria
Vulnerable Groups and Key Populations	Same as an adult	Same as an adult	Same as an adult
Maximum age at which all pediatric HIV patients are eligible for treatment	24 months	24 months	All
Initiation of ART before current pregnancy	0%	10%	10%
Initiation of ART during current pregnancy and more than four weeks before delivery	75%	80%	85%

3.1 Scenario 1: Fixed Coverage Rate (Status quo)

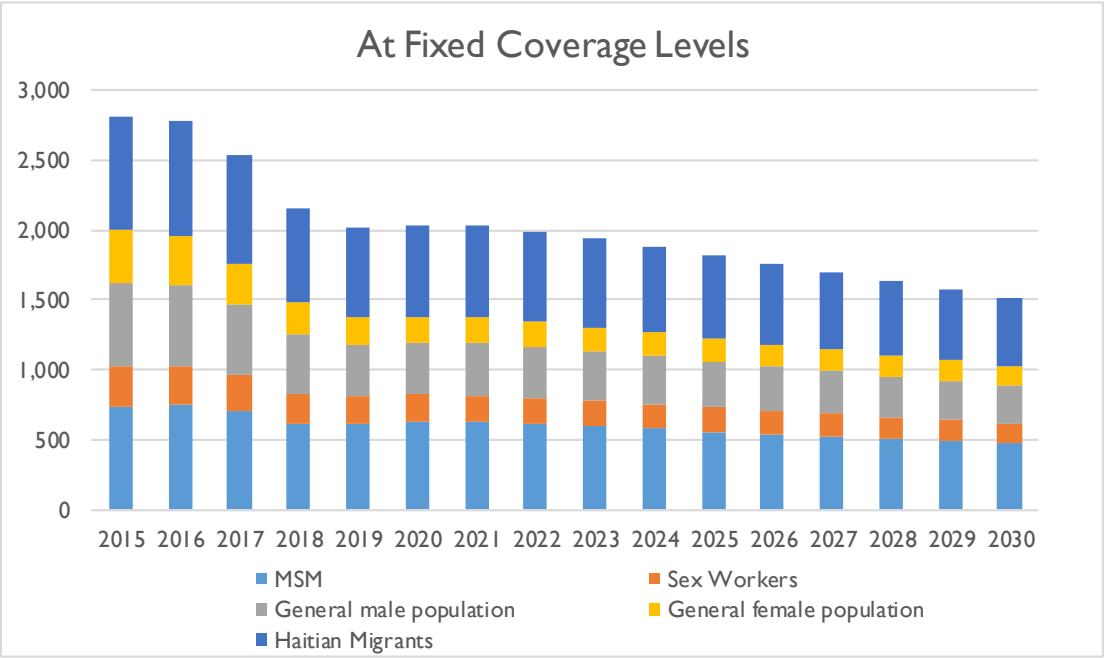
This scenario assumes that between 2015 and 2030, the service coverage levels will remain at the same level as in 2016 (with adjustments due to changes in the population and inflation). Assuming that the HIV/AIDS program funding in the Dominican Republic remains at current levels, HIV incidence is expected to decrease from 0.057 percent in 2016 to 0.025 percent in 2030. Adult HIV prevalence is expected to decrease from 1.02 percent in 2015 to 0.48 percent in 2030. The cumulative number of new HIV infections between 2015 and 2030 is estimated to be 33,368.

Figure 2: HIV Incidence and Prevalence Projections with Fixed Coverage Rate



The number of new infections by population group is in Figure 2. Since the epidemic in the Dominican Republic is concentrated, the largest number of new infections is estimated to occur among the Haitian migrants and MSM, who account for approximately 31.6 percent and 29.6 percent, respectively. The remaining new infections would occur among the general adult population (male 18.8 percent and female 10.2 percent) and sex workers (9.8 percent). Although the injection drug user (IDU) population has a higher probability of infection, existing and projected demographic data indicate that the IDU population accounts for a small proportion of the population.

Figure 3: Number of New Infections by Population Group



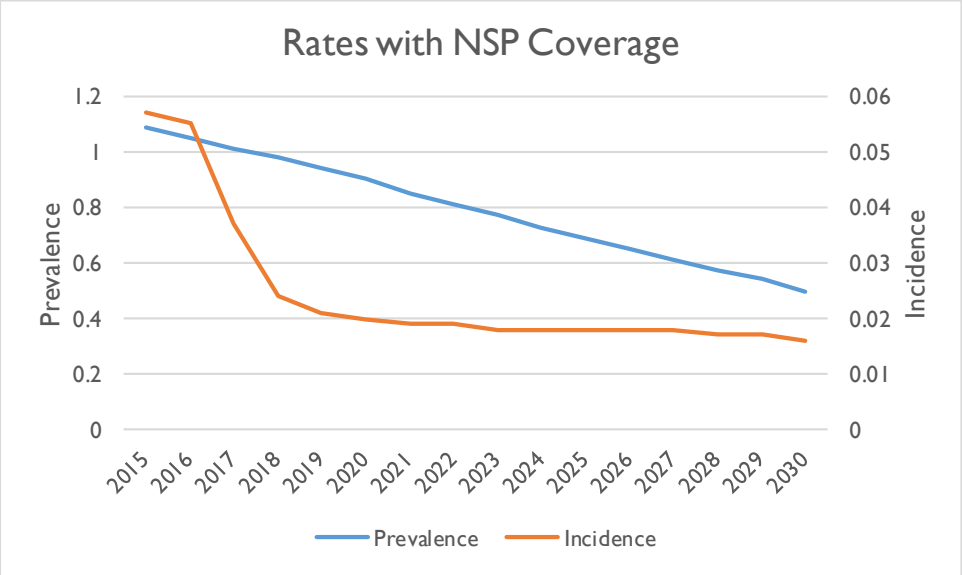
To determine how HIV/AIDS resources are allocated, it is important to review the estimated expenses. In this scenario, the cumulative cost from 2015 to 2030 is an estimated US$801 million, the largest portion of which is estimated to be incurred by treatment (40.6 percent), followed by prevention programs (26.3 percent), policy and programs (24.7 percent), and medical services (8.4 percent).

3.2 Scenario 2: National Strategic Plan

This scenario estimates the cost and impact based on the objectives and expected coverage outlined in the Dominican Republic's NSP. Under this plan, treatment coverage for adults is raised from 46.7 percent in 2016 to 90 percent by 2030 while coverage for pediatric treatment is similarly increased from 53.8 percent in 2018 to 81 percent by 2018 and 90 percent by 2030. Coverage for PMTCT was increased from 75 percent in 2015 to 90 percent by 2018, remaining constant at 90 percent coverage to 2030. Coverage was raised for programs for key populations in 2016--female sex workers (45.9 percent), MSM (19 percent) and IDUs (23.9 percent) -- for each to 90 percent by 2018 and 95 percent by 2030. Coverage for condom distribution for the general population was raised from 41.72 percent in 2016 to 75 percent by 2018 and 80 percent by 2030 while coverage for the remaining programs stayed constant at the 2015 rate until 2030.

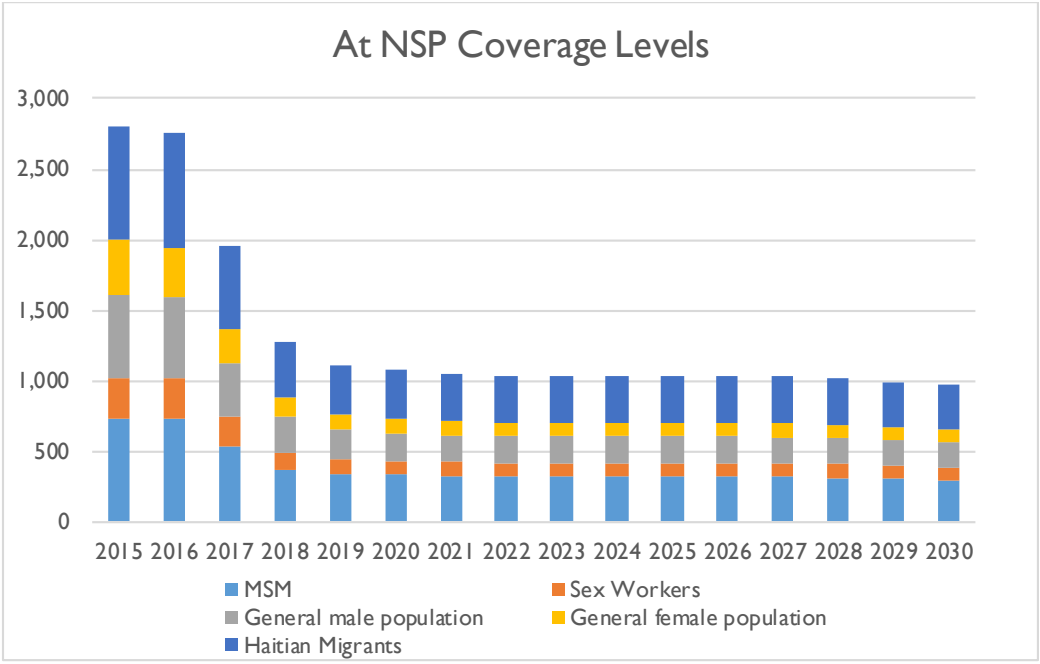
The estimated cumulative cost to reach NSP goals is US$1.396 billion. Prevention programs account for 32.8 percent, treatment programs represent 30.9 percent, policy and program support represent 29.9 percent, and medical services represent 6.4 percent of total costs. Based on this scenario, the Goals Model estimates that the NSP would prevent approximately 11,220 new infections relative to the baseline scenario. And the NSP would reduce HIV incidence to 0.016 percent in 2030. The adult HIV prevalence would be expected to decrease from 1.02 percent in 2015 to 0.48 percent in 2030 (See Figure 3). Under NSP scenario, 22,148 new infections would be expected. The cost for achieving this goal would be US$74,754 per infection averted.

Figure 4: HIV Incidence and Prevalence Projections at NSP Financial Levels



The estimated number of new infections by risk group based on the implementation of the NSP is in Figure 4. Relative to the baseline scenario, the NSP shows a substantial decrease in the number of new infections among the Haitian migrant population and MSM.

Figure 5: Number of New Infections by Population Group



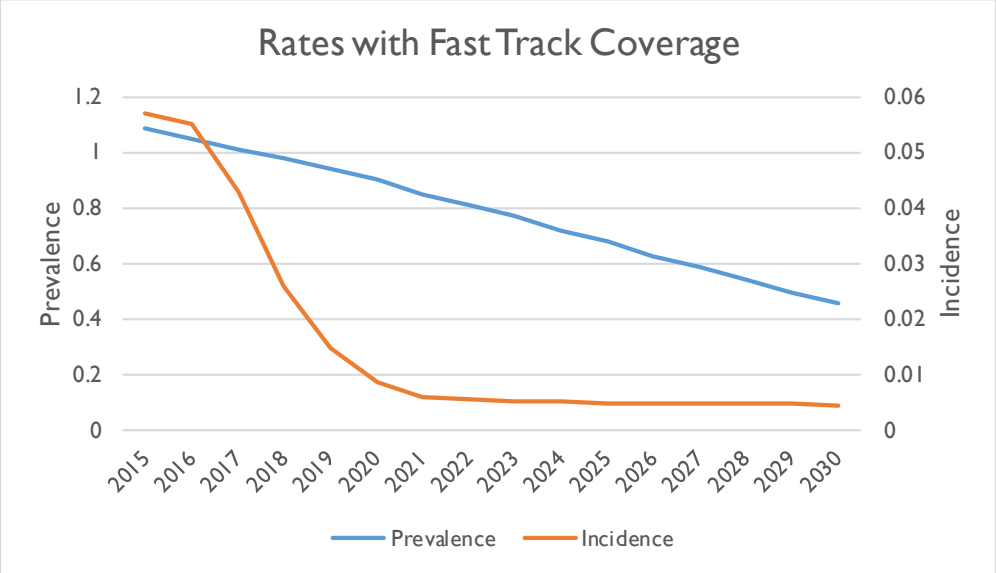
3.3 Scenario 3: Fast-Track (FT)

This scenario assumes that by 2020, 90 percent of all people living with HIV will know their status, 90 percent of people of those who know their status will receive treatment, and 90 percent of people on treatment will achieve viral suppression. The Goals Model estimates survival on ART as a function of CD4 count at treatment initiation and includes the effect of ART on viral suppression and reductions in infectivity.

Since this scenario assumes rapid expansion of services, coverage for adult treatment lifts to 81 percent in 2020 and 90 percent in 2030. Pediatric treatment coverage was increased to 90 percent in 2020 and remained at this level until 2030 while coverage for PMTCT was raised to 82 percent in 2020 and 95 percent by 2030. Coverage of condoms was raised to 80 percent by 2020 and kept at this level until 2030, while coverage for testing and counseling was reduced from 19.2 percent in 2016 to 7 percent in 2020 and kept constant until 2030. The coverage of prevention programs for key populations (MSM, sex workers, and IDUs) was raised to 95 percent by 2020 and kept at this level at 2030 while coverage for STI treatment was increased to 90 percent by 2020 and kept at this level until 2030. Coverage for all other programs was kept constant at the 2015 rate.

Based on this scenario, it is estimated that implementing the FT approach would result in 14,248 new infections between 2015 and 2030 while preventing 19,120 new infections in relation to the baseline scenario. This would reduce HIV incidence in adults to 0.005 percent in 2030 and reduce HIV prevalence in adults from 1.02 percent in 2015 to 0.43 percent in 2030 (See Figure 5).

Figure 6: HIV Incidence and Prevalence Projections with FT Coverage Financial Levels

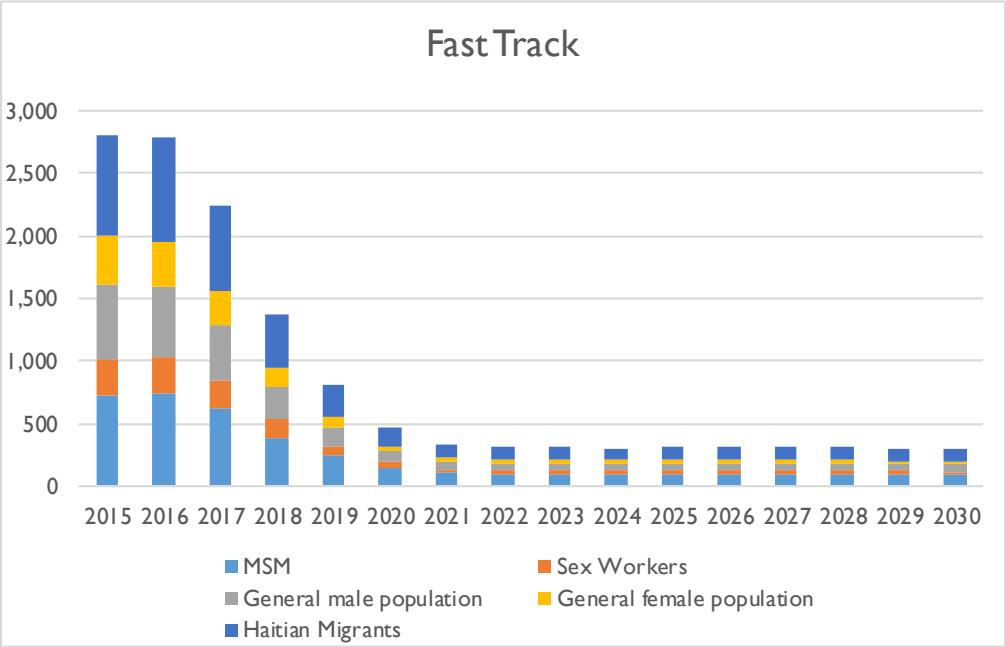


The estimated cost to implement the FT strategy would come to a cumulative US$1.127 billion between 2015 and 2030. Treatment programs would hold the largest share of the cost at 46 percent while prevention programs, policy and programs, and medical services would account for 35.5 percent, 10.7 and 7.8 percent, respectively. The cost for achieving this goal would be US$17,501 per infection averted.

The estimated number of new infections by risk group based on the implementation of FT in Dominican Republic is shown in Figure 6. As with the NSP, implementation of the FT approach would see

considerable decrease in the number of new infections among Haitian migrants and MSM, as well as in men who have sex with men.

Figure 7: Number of New Infections by Population Group



4. SCENARIO COMPARISON AND IDENTIFICATION OF THE MOST EFFECTIVE STRATEGY

The three different scenarios assume that financing increases above the levels observed in the baseline scenario where coverage remains fixed and there are no changes in programmatic goals. These scenarios enable policy makers to see the impact of increasing and reassigning funds to different programs while achieving reductions in the number of new HIV infections. This analysis compares infections and deaths averted in each scenario relative to the resource investment, enabling estimates of the effectiveness of each decision.

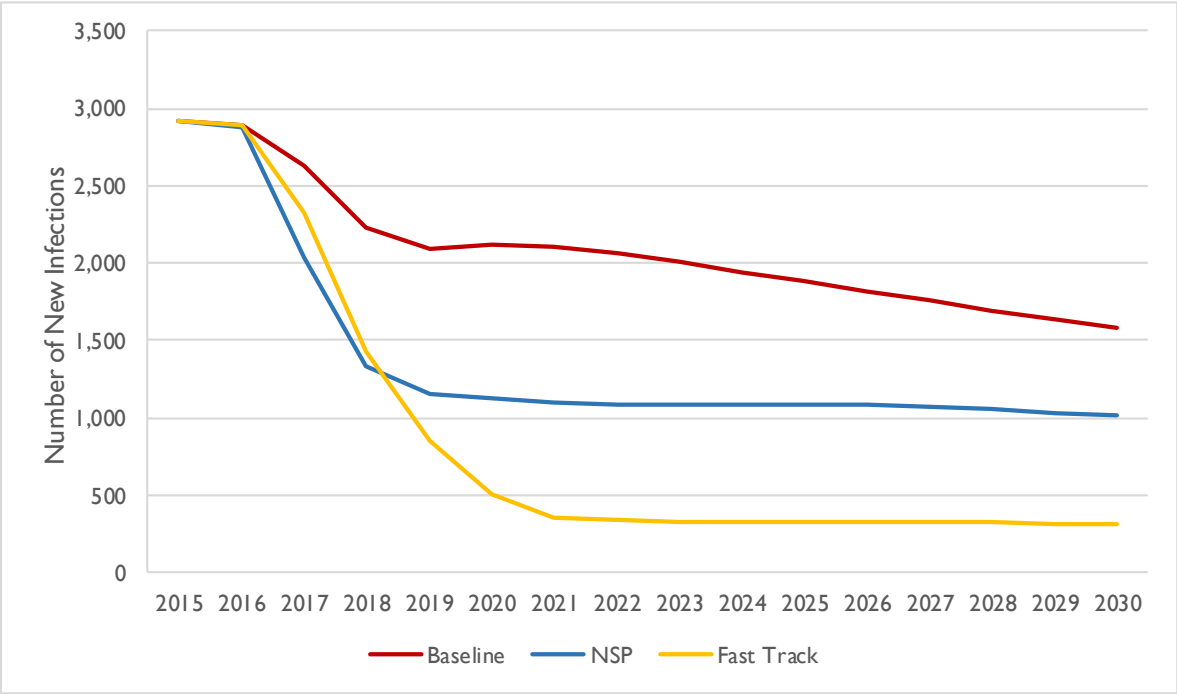
To ensure that the comparisons are valid, the same epidemiological model, cost information and impact matrix was used. As such, the only modified variables are the level of service coverage and financing levels necessary for that coverage level in terms of community mobilization, mass media, STI treatment programs, ART, supply of condoms, and SW outreach between 2020 and 2030. Table 2 shows changes in the coverages used in each scenario using the current coverage, also known as the baseline, as a reference point.

Table 2: Scenario comparison of HIV/AIDS program and service coverage levels for 2030

Interventions	Baseline	NSP	Fast-Track
Community Mobilization	60	60	60
Mass Media	30	30	30
VCT	19.2	19.2	10
Condoms	41.72	80	80
HIV Education	24	24	24
Youth out of school	80	80	80
Workplace programs	20	20	20
PMTCT	75	90	95
Adult ART	44.03	90	90
Pediatric ART	53.84	90	90
Outreach to SWs	45.9	95	95
Outreach to MSM	19	95	95
IDU	23.9	95	95
STI Management - Men (m) Women (w)	81(m) 44(w)	90	90
Blood Safety	100	100	100
PEP	0.05	0.05	0.05

Figure 7 represents the number of estimated new HIV infections between 2015 and 2030 for each scenario. The FT scenario shows the most infections averted by reducing the number of new infections from approximately 3,000 in 2015 to fewer than 500 new infections in 2030. This represents a significant decrease—80 percent--in new infections.

Figure 8: Number of New Infections for Each Scenario



The estimated cost to scale-up interventions and expand access to services between 2015 and 2030 represents annual investments between US$50 million in a baseline scenario and more than US$100 million with the NSP by 2030. On the other hand, the FT strategy not only implements 90-90-90 goals, but also provides outreach services for key populations and the general population (See Figure 8).

Figure 9: Annual Investment on Programmatic Strategies (Millions of USD)

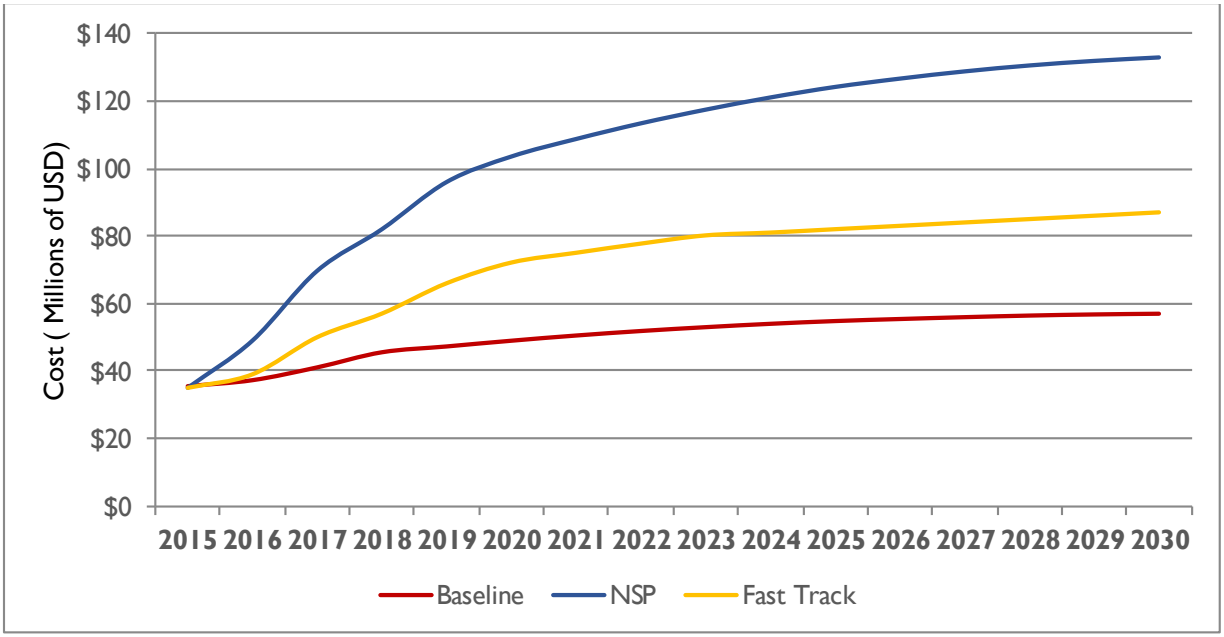


Table 3 shows a summary of the costs and accumulated benefits for the 2015-2030 period for the different scenarios in terms of infections prevented, life years gained, total investment, and cost per infection prevented. As shown, investing in the FT approach provides the highest benefits and the best return on investment.

The FT scenario, with an increase over the status quo in terms of scaled-up testing and treatment coverage, would be expected to positively impact the number of infections and deaths prevented. Less specific programs such as mass media, education, intervention at the workplace, and STI treatment show moderate to negligible effect on reducing new infections and almost none on preventing premature deaths.

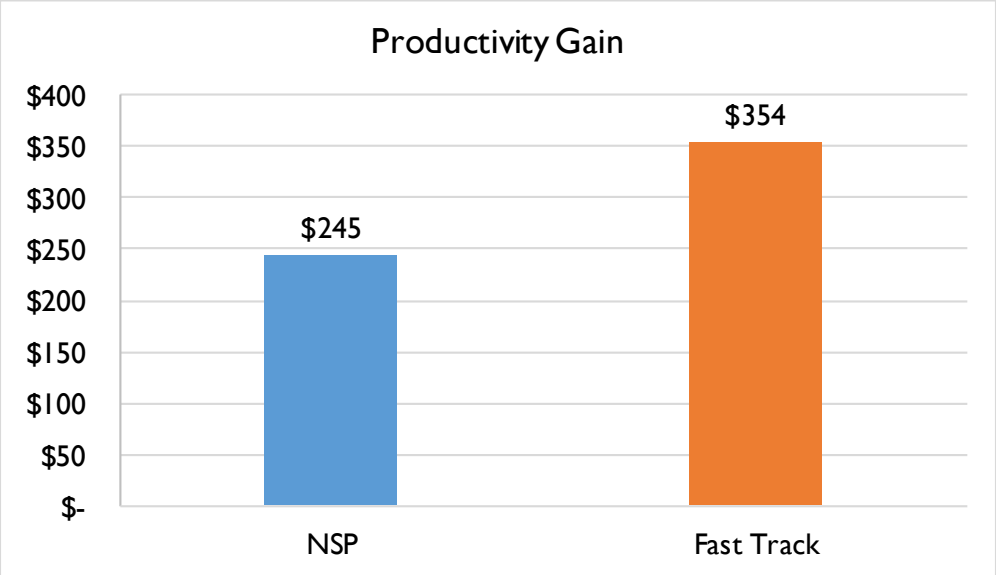
Table 3: Indicator summary for the 2015 to 2030 period under different scale-up scenarios

Indicator	NSP	Fast-Track
Cumulative Resources required 2015 – 2030 (US$ billions)	1.67	1.14
Incremental cost (US$ millions)	869.53	338.96
New infections averted	11,220.00	19,120.00
AIDS-related deaths averted	16,126.00	24,492.00
Cost per infection averted (US$)	77,498.52	17,728.29
Cost per life year gained (US$)	53,921.21	13,839.82
Discounted infections averted	8,646.42	14,339.94
Discounted Life years gained	12,283.45	18,302.71
Discounted incremental cost (US$ millions)	646.35	250.96
Discounted cost per infection averted	74,753.89	17,500.57
Discounted Life years gained	52,619.88	13,711.47
Discounted Productivity Gain (US$ millions)	244.53	353.90

The Commission on Macroeconomics and Health and the World Health Organization suggest considering health interventions very cost-effective if the cost per quality-adjusted life years (QALY) is less than gross national income (GNI) per capita and cost-effective if less than 3 times GNI per capita (Commission on Macroeconomics and Health, 2001). With a GNI per capita currently of $12,600 (in purchasing power parity), the FT scenario could be considered a cost-effective strategy for controlling the epidemic (World Bank, 2014).

From a macroeconomic perspective, the investment in treatment generates net benefits for the economy since it reduces disabilities, improves the quality of life, and increases the productivity of people living with HIV. People living with HIV present different levels of symptoms since it is a chronic and limiting disease. However, ART increases life expectancy and can enable people living with HIV (PLHIV) to live life at a quality similar to the sero-negative population. Using the productivity gained methodology developed by Resch et al., Figure 9 shows the productivity gains for both scale-up scenarios. By comparing the net income in productivity (GNI per-person per-year), there are net benefits of US$245 million from implementing the NSP strategy and a gain of US$354 million from implementing the FT strategy (Resch et. al. 2011).

Figure 10: Estimated net productivity gains for scale-up scenarios in GDP per-person per-year (millions of US$ discounted)



5. CONCLUSIONS

This investment case models possible courses of action and provides comparisons of potential program scale-up strategies to achieve desired goals and objectives. This exercise also clearly illustrates the investment required under different scopes of coverage and presents the return on investment in terms of health benefits for the country. In addition, it is important to evaluate long-term sustainability, which requires a targeted response and a reasonable degree of investment.

When investing in an HIV response with priority services and a well-documented impact (incidence and mortality), it is crucial to focus on the most cost-effective strategy. It is important to make sure that all the necessary social and programmatic structural conditions are in place. The healthcare system in the Dominican Republic is advanced in having a strong network of public and private providers, drug supply chains, and strategic information systems. Healthcare system reform has achieved important progress, and 70 percent of the population currently has health insurance. Nevertheless, there are likely barriers such as social stigma, discrimination, and lack of knowledge of healthcare rights that prevent access for PLHIV, especially key populations, from accessing healthcare services. Addressing these barriers requires investment of additional resources to expand access and ultimately reduce the HIV disease burden.

As data on actions to control the epidemic have become more prevalent and thus illuminating, it has become increasingly clearer that an accelerated approach would be the most effective in achieving the goal of ending AIDS. This investment case provides data to support such an approach, showing how an incremental increase in priority interventions would not sufficiently control the epidemic. Only the adoption of the Fast Track approach would bring about a turning point in epidemiological control by 2020, with an 80 percent decrease in new infections, and this is the only way to achieve programmatic sustainability for 2030. The benefits in terms of impact are not linear, but rather in line with the financial resource increments.

To eliminate AIDS in the Dominican Republic, resources need to be mobilized to support a consolidated and sustainable strategy, focusing efforts on interventions that have proven to be effective and targeting population groups with high infection rates.

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ANNEX I. DEMOGRAPHIC AND EPIDEMIOLOGICAL DATA

Indicator	Value
Percentage of Males	
Not sexually active (Never had sex)	1.1%
Low risk heterosexual (One partner in the last year)	19.56%
Medium risk heterosexual (more than one partner in last year)	59.8%
High risk heterosexual (Client of sex worker)	13.5%
IDU	0.04%
MSM	6%
Percentage of Females	
Not sexually active (Never had sex)	5.1%
Low risk heterosexual (One partner in the last year)	62.29%
Medium risk heterosexual (more than one partner in last year)	28.1%
High risk heterosexual (Sex worker)	4.5%
IDU	0.01%
Condom use in last sex act (Latest available, plus earlier years if available)	
Low risk	34%
Medium risk	71%
High risk	85.1%
MSM	66%
Number of partners per year	
Males	
Low risk	1
Medium risk	1.3
High risk	31
MSM	3
Females	
Low risk	1
Medium risk	2.4
High risk	95
Sex acts per partner	
Low risk	75

Indicator	Value
Medium risk	55
High risk	2
MSM	28
Age at first sex	
Males	16.5
Females	18
Percent married or in union	
Males	
Low risk	100%
Medium risk	49.3%
High risk	30%
IDU	30%
MSM	30%
Females	
Low risk	100%
Medium risk	54%
High risk	30%
IDU	30%
STI Prevalence (Latest available, plus earlier years if available)	
Males	
Low risk	2.3%
Medium risk	3%
High risk	3.5%
MSM	5.3%
Females	
Low risk	2.3%
Medium risk	5%
High risk	7%

ANNEX 2. UNIT COST INFORMATION

Program Service	Cost in USD
General Population	
Community Mobilization	2.79
Mass Media	N/A
VCT (% of adults who were tested during the previous year)	20.01
Condoms	0.027
High-Risk Population	
SW	74.03
MSM Outreach	91.9
IDU	113.41
Medical Services	
STI Treatment	43.60
Blood Safety	N/A
Post-exposure Prophylaxis	134.12
Pre-exposure Prophylaxis	95
Safe medical injection	N/A
Universal precautions	N/A
Adults (costs per patient per year)	
First-Line ARV	100
Second-Line ARV	299
Additional ARV-related costs for patients with TB (male)	N/A
Additional ARV-related costs for patients with TB (female)	N/A
ART laboratory costs	261.40
Opportunistic infection-related lab and medicine costs	11.6
Prophylaxis with Cotrimoxazole	N/A
TB Prophylaxis	N/A
Nutritional supplements during the first 6 months	N/A

Program Service	Cost in USD
Children (costs per patient per year)	
ARV	1,522.60
ART laboratory costs	225.40
Cost for Service Delivery	
Cost per inpatient day	72.60
Cost per Ambulatory Care Visit	18.50
Requirements for service delivery (per patient per year)	
ART: inpatient days	1
ART: ambulatory care visit	4
OI Treatment: inpatient days	N/A
OI Treatment: ambulatory care days	2
First- to Second-Line Treatment Migration (% per year)	2%
Counseling (per mother)	
Pre-Test	2
Post-Test for HIV+ result	2
Postnatal (including breastfeeding)	4
HIV Tests (per test)	
Mother	20
Polymerase chain reaction (PCR) on newborns	26
Newborn after discontinuing breastfeeding	N/A
ARVs (cost per person per day)	
Nevirapine, 200mg for mother	N/A
Nevirapine for newborns	N/A
Azidothymidine (AZT)	N/A
3TC	N/A
Triple Treatment (AZT+3TC+NVP/EVF)	4.17
Triple Prophylaxis	N/A
Service Delivery (per mother)	N/A
Formula (per baby)	N/A
Policies and Program Support (program's total cost percentage)	
Program Facilitators	14%
Social Facilitators	8%
Health System	6.1%

ANNEX 3. PROGRAM DESCRIPTIONS

Program	Description
Services for the general population	General population coverage refers to the most recent data of the proportion of people in the adult population (aged 15-49) who are currently receiving services.
Community mobilization	Community mobilization programs may include a wide variety of activities such as paid or volunteer community mobilizers who go door-to-door or organize special community events, church-based programs that include AIDS messages in sermons, church events and youth programs, and efforts to build support for HIV prevention among chiefs, elders, and other community leaders, by intervention per year. The percent of the adult population (aged 15-49) reached by community mobilization efforts.
Mass media	Mass media programs generally include print and radio channels and may also include television, hotlines, theater, and special events. The population in need of mass media is assumed to be the entire adult population. The percent of the adult population (aged 15-49) reached by mass media campaigns.
HCT (percent of adults tested in the last year)	Testing and counseling refers to the provision of counseling (both pre-test and post-test) as well as the actual HIV test. The services can be provided in a variety of settings, including VCT centers, medical clinics, mobile vans, or at home. The percentage of the adult population (aged 15-49) that was tested and counseled.
Condoms	This coverage rate refers to the condoms provided to the general population, excluding those condoms provided by outreach programs to key populations (female SW, male SW, MSM, IDU) and other interventions. The coverage rate refers specifically to the percentage of sex acts where a condom is needed, defined by the various parameters provided in the "Condom provision" entries for adults (aged 15-49). The percentage of the sex acts of the adult population using condoms.
Youth in school	The percentage of primary and secondary school students who have teachers trained in HIV/AIDS education.
Youth out of school	The percentage of youth not attending school reached by an HIV/AIDS intervention.
Workplace	The percentage of the formal sector workforce receiving peer education in the workplace each year.
Services for key populations	Key population coverage refers to the most recent data on the proportion of people in the adult population (aged 15-49) that are at high risk of HIV infection and are currently receiving services.
Female sex workers	Outreach for female SW may include peer education, general information, education, and communication (IEC), condom distribution, and/or STI treatment. The percentage of female SWs reached by outreach interventions each year.

Program	Description
MSM outreach	Outreach programs for MSM may include peer education, general IEC, and the distribution of condoms. The percentage of MSM that is reached by outreach interventions each year, excluding those interventions distributing lubricants.
MSM lubricants	Lubricant programs for MSM refer to the percentage of MSM receiving lubricants each year.
IDU outreach	There are a number of different interventions for IDUs, including risk reduction information; education and counseling through peer outreach or the community; access to sterile injection equipment through needle and syringe exchange, distribution, or sale, and/or decontamination programs; and drug substitution programs. The percentage of IDUs receiving community outreach or peer education each year.
IDU needle and syringe exchange	The percentage of IDUs participating in needle and syringe exchange programs each year.
IDU drug substitution	The percentage of IDUs participating in drug substitution programs each year.
Biomedical services	These are biomedical services targeted toward preventing HIV infection.
STI treatment - Males	The percentage of males with new and symptomatic STIs that receive treatment each year.
STI treatment - Females	The percentage of females with new and symptomatic STIs that receive treatment each year.
Blood safety	The percentage of blood units tested for HIV each year.
Post exposure prophylaxis	The need for PEP kits is the sum of the PEP kits needed for post-rape cases and the PEP kits required for medical personnel experiencing needle sticks and other medical accidents. The percentage of PEP kits needed that are supplied each year.
Safe medical injection - Unsafe injections replaced by AD injections	Interventions for safe medical injections consist of both using auto-destruct (AD) syringes and reducing unnecessary injections. The percentage of unsafe injections that are replaced with AD syringes each year.
Safe medical injection - Reducing unnecessary injections	The percentage reduction in the number of injections that are not replaced with AD syringes.
Universal precautions	Universal precautions refers to the use of gloves, masks, and gowns by health care personnel to avoid infection through contaminated blood. The need for universal precautions is estimated from the number of hospital beds. The percentage of hospital beds that is supplied with universal precautions each year.
Male circumcision	Male circumcision refers to the percentage of all males who are circumcised.

Program	Description
Treatment services	These are services related to the delivery of care and treatment for PLHIV.
Adult Treatment coverage	Proportion of adults who are in need of treatment that are receiving services.
Pediatric Treatment coverage	Proportion of children who are in need of treatment that are receiving services.
Option A - maternal	The total number or proportion of HIV+ pregnant women who are estimated to receive Option A (started at AZT 14 weeks, Nevirapine (NVP) at onset of labor, AZT+3TC from labor until seven days after delivery) divided by the total number of HIV+ pregnant women estimated to need PMTCT
Option B - triple prophylaxis from 14 weeks	The total number or proportion of HIV+ pregnant women who are estimated to receive triple ARVs (from 14 weeks until seven days after delivery) divided by the total number of HIV+ pregnant women estimated to need PMTCT
ART started before current pregnancy	The total number or proportion of HIV+ pregnant women who were receiving highly active antiretroviral therapy (HAART) before the current pregnancy divided by the total number of HIV+ pregnant women estimated to need PMTCT
ART started during current pregnancy	The total number or proportion of HIV+ pregnant women who start HAART during this current pregnancy divided by the total number of HIV+ pregnant women estimated to need PMTCT.

BOLD THINKERS DRIVING
REAL-WORLD IMPACT