# Antiretroviral Treatment in the Spotlight:

## A Public Health Analysis in Latin America and the Caribbean

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# Preface

Living through the three decades of the HIV epidemic, I have witnessed its significant impact on Latin America and the Caribbean (LAC) as well as remarkable progress in the understanding of HIV and its treatment. The obvious inequalities initially present between developed and developing countries—both in the risk of acquiring HIV and in access to diagnosis, care, and treatment—were a priority challenge in our technical cooperation in the region. Although many thought that costly combination antiretroviral treatment (ART) would not be made accessible to all, the Pan American Health Organization and the World Health Organization have supported countries in spearheading universal access. We are proud to see that the LAC region has staged an unprecedented response to HIV, with leading rates of ART coverage available free of charge through all national programs.

Many countries in the Americas have benefited from the large-scale investment from donors to support ART and to fuel additional responses in prevention. Of particular interest has been the trajectory of the Global Fund investment in ART. There has been a shift toward more restrictive criteria for presenting proposals to the Global Fund and reductions in the amount of funding available, which are mainly targeted to higher-risk populations for our region. Global Fund allocations for HIV in LAC have declined since 2003, and significantly, not a single project slated to begin in 2012 includes financing for ART. Currently, just one third of countries in the region are still dependent on external funds to provide antiretroviral treatment to those in need.

Solidarity and participation have been an inspiring aspect of the LAC response. I am convinced that community involvement and mobilization have played a significant role in accelerating the region's equitable response to HIV. Those dealing with other public health challenges could extract valuable lessons from this response and from the contribution of civil society movements.

Current scientific knowledge has demonstrated the importance of ART for curbing the epidemic, and we know that the provision of life-saving treatment is a cornerstone in the protection of human rights. I have always advocated the use of human rights instruments to leverage public health discourse regarding access to ART.

Concerned by the slow pace of progress towards universal access to ART, however, and by the negative impact the current international financial crisis is having on the Global Fund and other donors, I encouraged an in-depth analysis to address specific questions such as: What is the vulnerability of ART programs in LAC? Can the global financial crisis pose a threat to LAC achievements in the response to HIV? How can we protect the gains, while moving toward a broader response of preventing new infections and providing life-saving treatment to all those who need it?

I am pleased to present this report, which will prompt reflection and a greater response in our region. It collects epidemiological data and provides an analytical framework to guide PAHO's technical cooperation. Results from the analysis lead to concrete recommendations to optimize ART in countries, so that we are "achieving more and doing what we do better."

HIV is likely to be with us for decades to come. Recognizing the uniqueness of this epidemic, in order to be successful in the long run and continue protecting affected persons and communities, the HIV response has to become more sustainable and integrated based on public health principles, as exemplified in the joint WHO/UNAIDS Initiative of Treatment 2.0. As stated in the Renewing Primary Health Care in the Americas position paper, health systems oriented toward primary health care are more equitable and more resilient in responding to health challenges. Towards this end, PAHO is engaging Member States, civil society, and technical partners to move from the baseline described in this report through a series of programmatic steps that, supported by the provision of quality technical cooperation, will define the implementation of a new generation of HIV treatment programs in the Americas.

Mirta Roses Periago
*Pan American Health Organization*
*Director*

*The objective of this report, then, is to take a critical look at antiretroviral (ARV) treatment programs, assessing their main areas of sustainability and vulnerability, in order to make recommendations for improving them in the region*

# Executive summary

## Introduction and objectives

The region of Latin America and the Caribbean (LAC) has led the world in the provision of antiretroviral treatment (ART). After three decades of the epidemic, we are submersed in a major international financial crisis, which has led to a withdrawal of external assistance for HIV from the region. The objective of this report, then, is to take a critical look at antiretroviral (ARV) treatment programs, assessing their main areas of sustainability and vulnerability, in order to make recommendations for improving them in the region. The goal is to hasten the transition to a new phase of ARV treatment programs with a public health perspective in the framework of Treatment 2.0.

## Methodology

The operational criteria used to assess the sustainability and vulnerability of ART programs were cost per patient of ART; dependency of public ART programs on external financing; the margin for optimization; and programming effectiveness in terms of the returns on the investment made to achieve the objectives of universal access and decreased morbidity and mortality. The base data used for the study are drawn from secondary sources, most of them already published, including on-line databases and WHO, UNAIDS, and Global Fund publications. The study also used PAHO data on mortality in LAC and Strategic Fund purchases, and country reports to PAHO on antiretroviral consumption patterns, ARV stock-outs, and TB-HIV co-infection. The data and analyses were validated with the national AIDS programs in most of the countries.

*With a regional median of 12 different first-line and 15 second-line regimens for adults, the potential for optimization is significant.*

## Results

Eleven of the 36 countries studied report a high dependency on external financing for antiretrovirals (ARV). These countries account for more than 20% of the estimated number of people living with HIV in the region. The remaining countries either were never dependent on external funding sources for ARV (11 countries) or else presented a moderate level of dependency and have made some degree of progress in the past 4-5 years (14 countries). The estimated annual regional cost per patient is US $508 (weighted including first-, second- and third-line patients), based on standard international prices and the ARV combinations in use in LAC. The actual cost, however, is estimated to be higher, since local purchasing prices tend to be higher than international reference prices. In 2008-2009, the cost per patient of ART ranged from $232 in Belize—the country with the lowest rate—to $3,323 in Cuba.

With a regional median of 12 different first-line and 15 second-line regimens for adults (WHO recommends 6 per line), the potential for optimization is significant. The countries with the largest number of different regimens are Uruguay, Suriname, Dominican Republic, and Bolivia, and are joined by Guatemala for second-line treatment. Related to this is the adherence of regimens to WHO recommendations, which is greater for the first line than for the second line: 63% adults in first-line and 33% of those in second-line treatment were in WHO-recommended regimens in 2010.

*In 2011, 14 out of 26 countries reported at least one stock-out episode (54%)*

The majority of patients receiving ART in LAC are taking effective and safe ARV, although a low level of inappropriate ARV use persists, affecting 5% of first-line and 14% of second-line patients. That said, the countries have decided on measures to eliminate this completely and have already begun to implement them.

In 2011, 14 out of 26 countries reported at least one stock-out episode (54%). Indeed, 92 stock-out episodes with an average duration of 40 days occurred in just 12 countries. The most frequent causes were delays in bidding (29%) or procurement (13%), distribution problems (10%), or complications in ARV production (9%).

Compounding the gap in treatment coverage, most countries are facing the challenge of ensuring timely HIVdiagnosis, which would also help maximize the benefits of ART at the individual and community level.

*This study provides information to guide application of the principles of Treatment 2.0 in Latin America and the Caribbean*

## Conclusions

This report presents a baseline for progressing toward a proposed transition in ART services conducive to achieving the goals of universal access in consonance with human right principles. This study identifies opportunities to expand the application of public health principles in order to improve sustainability, effectiveness, efficiency, equity, and the protection of human rights and basic freedoms in antiretroviral therapy. The main challenges include ensuring the financial sustainability of ARV treatment; optimizing treatment; ensuring a continuous supply; expanding coverage; addressing inequities in access to treatment, including timely diagnosis of HIV infection; and including communities in the planning and implementation of these programs.

This public health approach makes it possible to respond to individual and collective needs, improving the quality of life of the population. The application of public health principles based on the best scientific evidence available will improve the situation for patients through safer regimens that are simpler to administer, which will strengthen adherence and prolong the effectiveness of treatment. It will also have the effect of reducing ARV stock-outs and costs and improving the quality of care and of life of patients living with HIV. Ultimately, this will boost the percentage of people with an undetectable HIV viral load, which reduces transmission and helps to control the epidemic. Close monitoring of these variables is important in order to ensure proper management of ART programs.

The availability and quality of information are a primary concern. This report presents key indicators that should be available for decision-making at multiple levels. An analysis broken down by sex and other socio-demographic variables will help promote actions to bridge the gaps in equity.

In conclusion, this study provides information to guide application of the principles of Treatment 2.0 in Latin America and the Caribbean. It shows how the application of public health principles to guide the simplification of regimens, the incorporation of WHO treatment recommendations, expanded access to timely diagnosis, and better retention in treatment is effective for achieving and preserving universal access to treatment and strengthening prevention of HIV transmission. This report will be the first in a series in which PAHO will monitor regional progress toward the new phase of antiretroviral Treatment 2.0 and achievement of the goal of universal access and Millennium Development Goal number 6.

# Introduction and objectives

Since 1996, when it was discovered that a combination of several drugs was effective in treating HIV, the region of Latin America and the Caribbean (LAC) has led the world in the provision of high efficacy antiretroviral treatment (ART). All the countries of the region have policies for free access to ART as part of every person's basic right to enjoy the highest attainable level of health.[a] The application of regional human right mechanisms has played an important role in this response to HIV.[b] By the end of 2010, 521,000 people were receiving ART in LAC, with a regional coverage of 63%; many more still require such treatment, however.

*The application of regional human right mechanisms has played an important role in this response to HIV. By the end of 2010, 521,000 people were receiving ART in LAC*

Today we also have the benefit of major scientific advances that show how the strategic use of antiretrovirals is key to controlling the HIV epidemic, since it significantly reduces transmission and is therefore an effective tool for prevention. This illustrates the importance of ART at many levels, such as reducing morbidity and mortality and controlling the HIV epidemic, which in turn contributes to the enjoyment of certain human rights.[c] The countries have clearly placed their bets on ART, with median spending on ARV accounting for approximately 0.5% of total public health expenditure in 2007-2010.[d]

a. According to the United Nations Committee on Economic, Social and Cultural Rights, Access to technologies and medicines is part of the right of all persons to enjoy the highest attainable level of health ("right to health"), which is enshrined in Article 12 of the International Covenant of Economic, Social and Cultural Rights. The Committee is responsible for helping States Parties to the Covenant to meet their obligations in regard to the right to health. This right is also envisaged in the WHO Constitution. See General Comment 14 of the Committee on Economic, Social and Cultural Rights on the right to health, available at: http://www1.umn.edu/humanrts/gencomm/escgencom14.htm

b. Under Article 25 of the Rules of Procedure of the Inter-American Commission on Human Rights, in serious and urgent situations, the Commission may, on its own initiative or at the request of a party, request that a State adopt precautionary measures to prevent irreparable harm to persons. In 2002, the Commission granted precautionary measures to ensure access to ARV for people living with HIV in Bolivia, Colombia, Dominican Republic, Ecuador, Guatemala, Honduras, Nicaragua, and the Peru. In 2011, the Commission granted these measures in relation to people living with HIV in Chile and El Salvador.

c. Facilitating access to medicines to fight HIV is one of the basic obligations undertaken by States Parties to the International Covenant on Economic, Social and Cultural Rights under Article 12. For more information on legal obligations in relation to access to health facilities, goods and services, see: http://www1.umn.edu/humanrts/gencomm/escgencom14.htm. Access to ART facilitates State protection of compliance with basic human rights such as the right to health, personal integrity, and equality before the law, the rights of the child, right to health and to access to the benefits of scientific progress, the right to education and to work, among others.

d. Based on data on ART expenditures from 21 countries in the AIDinfo database of UNAIDS, and public health spending reported in PAHO Basic Indicators.

In this context, the fragility of health systems in effectively ensuring access to ART is evident in several areas: ARV stock-outs in many countries; the extremely slow pace at which ART coverage is being expanded; the prices being paid for ARV, which are higher than the international median; and the global financial crisis, including its effects on critical multilateral partners such as the Global Fund.[1-3]

In light of the above, the objective of this report is to take a critical look at ARV treatment programs, examining their main areas of sustainability and vulnerability, challenges and opportunities, in order to make recommendations for their improvement in Latin America and the Caribbean (LAC). The goal is to hasten the transition to a new phase of ARV treatment programs with a public health perspective that combines individual and collective approaches in the framework of Treatment 2.0.

**Treatment 2.0**

Treatment 2.0 is intended to promote the next expansion of HIV treatment through innovation and improved efficiency. It will help the countries achieve and maintain universal access to treatment and maximize the preventive benefits of antiretroviral therapy through a focus on five priorities.
The five interrelated priority work areas of Treatment 2.0 are:

1. optimize drug regimens
2. provide access to point-of-care and other simplified platforms for diagnosis and monitoring
3. reduce costs
4. adapt delivery systems
5. mobilize communities

## Obligations with regard to human rights and HIV

According to the Committee on Economic, Social and Cultural Rights,[a] HIV medications should be available in a sufficient number of establishments, should be accessible to everyone without discrimination (physical and economic) and should be of good quality. For more information on the measures that PAHO Member States have adopted in relation to the supply of medicines to fight HIV and other sexually transmitted diseases as part of the right to health, see: http://www1.umn.edu/humanrts/gencomm/escgencom14.htm

a. This committee reviews the obligations undertaken by States party to the International Covenant on Economic, Social and Cultural Rights. The Covenant has been ratified by: Argentina, Barbados, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, and Venezuela.

# Methodology

Four operational criteria were used to assess the sustainability and vulnerability of ART programs: cost per patient of ART; dependency of public treatment programs on external financing; the margin for optimization, which has to do with such aspects as overburdening the health system and potential toxicity of antiretrovirals (ARV); and the effectiveness programming in terms of returns on the investment made to achieve universal access objectives, improve morbidity and mortality due to HIV, and reduce transmission.

The variables and categories used are:

1. **Cost per patient of ART:** by quartiles.
2. **External financing for ART,** with 4 categories of dependency:[a]

**Box 1**

| Category of dependency on external financing | % of ARV expenditure from external financing sources |
|---|---|
| High | >75% |
| Moderate | >20-75% |
| Low | >5-20% |
| No dependency | 0-5% |

3. **Margin for optimization:** four key areas will be examined:[b]
   a. Adherence to WHO recommendations (first and second line regimens).
   b. Number of first and second line regimens.
   c. Use of obsolete/inappropriate medicines. The percentage of patients taking the following medicines: d4t, indinavir, nelfinavir, and didanosine, which produce excessive toxicity or are less effective.
   d. Stock-out episodes.
4. **Programmatic effectiveness/vulnerability**
   e. ART coverage: universal access (more than 80%)/above the regional median (63%)/below the regional median (63%).
   f. Retention at 12 months: sufficient (80-100%); low (<80%).
   g. Rate of change from first to second line.
   h. Intensity of virological monitoring: number viral load tests per patient on ART per year.
   i. Percentage of patients in first-, second-, and third-line treatment: high rate of switching and large percentages of patients in second- and third-line indicate greater vulnerability.
   j. Early testing and access: based on the rate and percentage of HIV testing in >15 years, the percentage of testing in TB patients and pregnant women, and the percentage of patients that arrive at care with CD4s <200 cell/mm$^3$.

## Sources

The data are drawn from secondary sources, most of them already published, which were obtained from Internet databases, WHO, UNAIDS, and Global Fund publications, as well as country reports to PAHO on antiretroviral consumption patterns, ARV stock-outs, or TB-HIV co-infection. Specific data on patients in ARV treatment, retention at 12 months, HIV testing rates, testing coverage in pregnant women, and number

a. For the purposes of this document, the term dependence refers to "de facto" use of external funds to finance public ARV. It does not connote a country's ability to afford that expense, which must be examined using additional macroeconomic indicators. Indeed, based on these macroeconomic indicators, LAC countries should be able to cover the costs of acquiring ARV.

b. An additional essential element is the use of fixed-dose combinations, which is not included in this study due to a lack of information at the regional level on the percentage of patients receiving these types of formulations.

***Optimization*** *is the act or effect of optimizing.*
*Optimizing is to make the best or most effective use of (a situation or resource)(Concise Oxford Dictionary)*

***Optimization:***
*An act, process or methodology of making something as fully perfect, functional, or effective as possible ( Merriam-Webster)*

*Optimization of antiretroviral therapy includes the development and rational use of appropriate ART regimens . The ideal regimens should be affordable, simple, and potent, be available in fixed-dose or single daily dose combinations, with minimum toxicity and interactions, that can be used safely and effectively in all populations, including women and children.*

*Optimization proposals include:*

- *Defining a limited number of treatment options.*
- *Constructing a sequence of first, second and, ultimately, third line treatment options based on the best evidence.*
- *Standardizing criteria for treatment failure and change.*
- *Moving toward greater use of fixed dose combinations (FDC), especially those taken once a day.*
- *Migrating patients in treatment to the recommended preferential regimens.*

of establishments providing ART services come from the *2011 country reports on Progress reports on Universal Access towards HIV Prevention, Treatment and Care and Support* and WHO 2011 surveys on *antiretroviral use 2011*, both of which contain information reported by the competent agencies of each country to PAHO. The data on medicine stocks and stock-outs come from a special survey that was sent by PAHO to a limited number of countries of Latin America in 2010 and completed by the national HIV/AIDS programs in these countries.

Data on mortality from HIV are reported by the countries to PAHO. Data on ARV purchasing from the Strategic Fund come from PAHO. Data on TB-HIV co-infection come from the WHO report *Global Tuberculosis Control 2011*. Data on mortality from TB-HIV come from the country's responses to a PAHO special survey on TB Programs.

Data on HIV expenditures come from the MEGAS studies carried out by UNAIDS in collaboration with the countries. These data, and estimates of the HIV epidemic, are compiled in the UNAIDS *AIDSinfo database* (available in http:/www.unaids.org/en/data-analysis/tools/aidsinfo/). Health expenditure data come from PAHO Basic Indicators. The data on Global Fund projects are published on its website, and the data on purchases through the Strategic Fund are from PAHO.

These data and the country assessments were validated with each national HIV/AIDS program and some countries provided additional updated information. The following countries revised their data significantly: Argentina, Brazil, Belize, Bolivia, Chile, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Suriname, Trinidad and Tobago, and Uruguay.

## Definitions used on the country fact sheets

The following first two definitions were developed by consensus with the Horizontal Technical Cooperation Group of Latin America and the Caribbean, as well as the heads of national HIV programs and representatives of civil society organizations.

**ARV stock-out episode:** "A situation in which a product cannot be dispensed due to lack of stock and which causes the forced interruption of treatment in at least one patient."

**Stock-out risk:** "A stock level below the established minimum level or the need to take unplanned measures to prevent a stock-out (emergency purchases, loans, etc.)."

**% CD4<200 at start of care:** "Percentage of patients with basal CD4<200 cell/mm$^3$ relative to total patients with basal CD4."

Spending on ARV is a significant component of spending on HIV care

# Results

## 1. Per patient cost of ART

Spending on ARV is a significant component of spending on HIV care. It accounts for roughly 47% of the care and treatment budget of an average country in the region (for 2007-2009), ranging from 9% in Bahamas to 93% in Chile and 94% in Venezuela.[1, 4] It is helpful to look at the per-patient cost when assessing the burden that countries must shoulder in order to finance ART and identifying measures to optimize efficiency in spending. The per-patient cost of ARV treatment is the result of several factors generally related to the purchase price of antiretroviral medicines. Patient distribution among treatment lines also influences this cost, since the second line is three times more expensive than the first line and the third line, seven times more expensive (based on standard prices). Several authors have already shown the fluctuations in the purchase price of antiretrovirals among countries. The two main predictive variables in these differences are the use of generics and the use of international purchasing mechanisms.[5, 6]

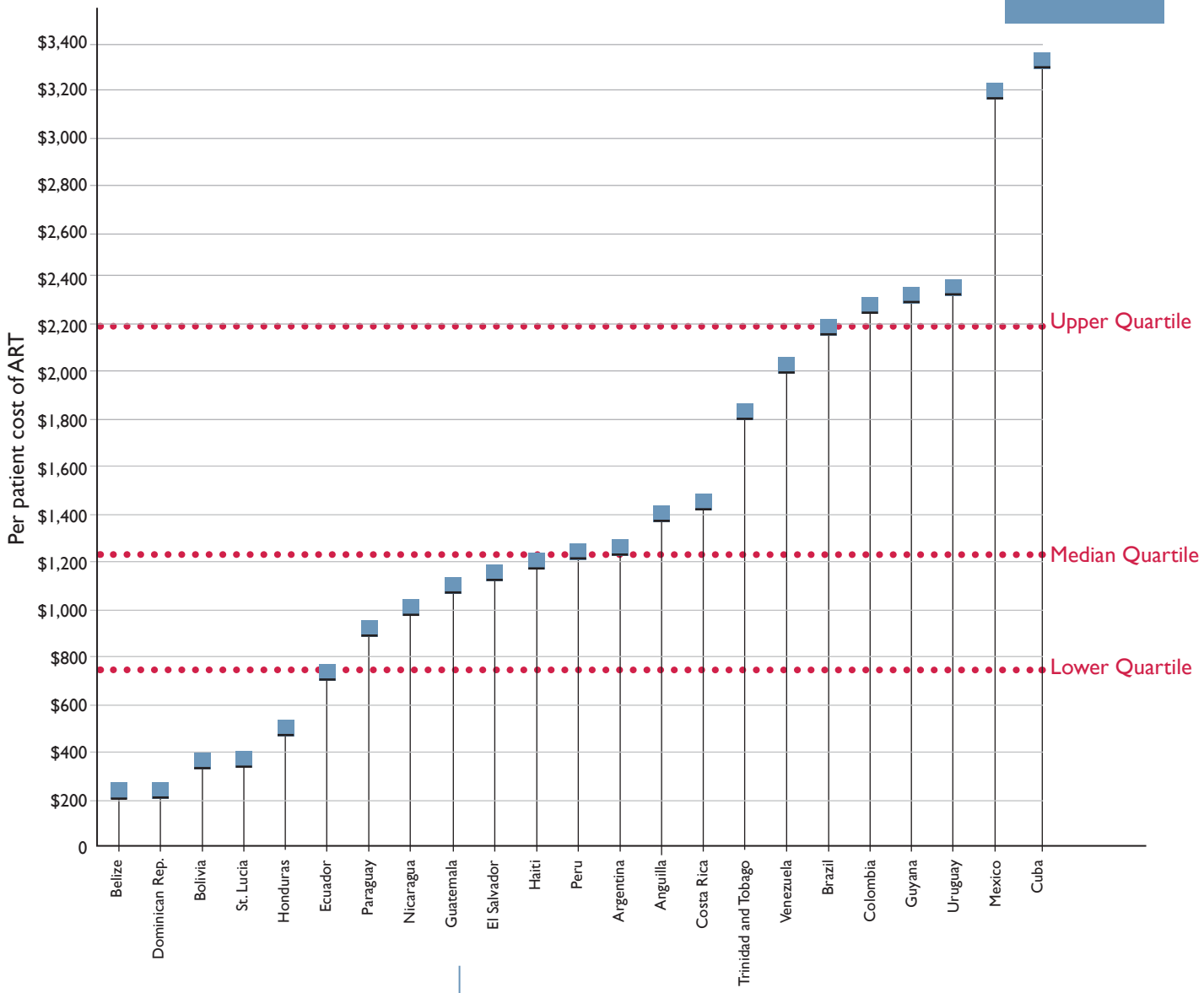
The regional per-patient cost of ART is estimated at US $508 annually, based on the medications reported by the countries and using standard international prices. Real costs are estimated to be even higher, since the purchase price through local mechanisms tends to be higher than the international reference price.[5] A recent study in the Central American region, for example, showed that the purchase price for ARV depended on the procurement mechanisms: local purchases cost more than those made through the PAHO Strategic Fund (SF) or Voluntary Pooled Procurement (VPP) in the four countries studied. Local prices could be triple or as much as ten times higher.[7]

According to the most recent published data, which are for 2008-2009, annual per patient cost ranged from $232 in Belize—the country with the lowest level—to $3,323 in Cuba, followed by Mexico.[8] Cuba and Brazil produce ARV locally, which is another factor that has been found to influence cost.[9]

Some of the variability in cost per patient could be related to the duration of an antiretroviral therapy program. In general, the longer the duration, the more patients in second- and third-line regimens, with the attendant increases in treatment costs. Other factors, however, are associated with the regimens used and the cost of antiretroviral medicines. Variability could be reduced by taking advantage of international purchasing mechanisms, optimizing treatment regimens, and improving patient adherence and monitoring (see Section 5).

Figure 1

Annual per patient cost of ART (2008-2010) in US$




Using the regimens recommended by WHO would substantially reduce per patient cost for the first and second line of treatment

## Cost by ART line of treatment

The annual per patient cost of ART in the region, based on reference prices, is $316 for first-line regimens, $810 for second-line, and $2,321 for third-line. Figure 2 shows the patient distribution and estimated contribution to ARV spending by line of treatment. Using the regimens recommended by WHO would substantially reduce per patient cost for the first and second line treatment (Table1).

Figure 2

**Patient distribution and cost distribution by treatment line in Latin America and the Caribbean, 2010**

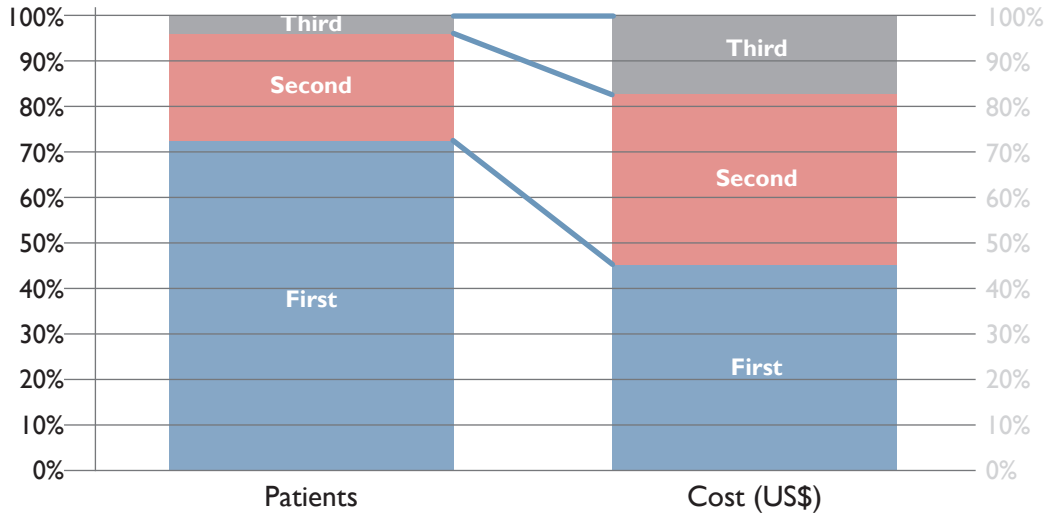



Table 1

**Estimated costs per patient/year in LAC, using international reference prices, 2010**

| Line of treatment | Standard cost per patient/year with regimens in use in 2010 | Standard cost per patient/year using WHO-recommended regimens |
|---|---|---|
| 1st | $316 | $156 |
| 2nd | $810 | $449 |
| 3rd | $2,321 | $2,766 |

**Note:** Based on data from 22 countries, and using international reference prices, which means that actual costs may be higher depending on the purchasing mechanisms used and on the particular trade restrictions in individual countries.
Cost refer only to direct cost of ARV drugs

The higher cost of third-line therapy associated with switching to WHO-recommended regimens of proven efficacy is due to the fact that the countries reported different regimens—including bi-therapy—which cost less, but are of questionable efficacy as a third line treatment.

## 2. Dependency on external financing

Eleven countries, mostly from the Caribbean, were found to be highly dependent on external funding for ART. In all of these cases, nearly 100% of financing for ART comes from international sources (Table 2). These countries account for more than 20% of all patients estimated to be living with HIV in LAC.

### Trends in dependency on external financing for ARV

In the last 5 years, LAC has made progress in ensuring the sustainability of ART financing. It is possible that the shift toward more restrictive criteria for presenting proposals, coupled with reductions in the amount of funding available from the Global Fund (GF), wich mainly target higher risk populations, has had a bearing on this progress. For example, Global Fund allocations for HIV in LAC, which is the main donor for ART in our region, declined between 2003 and 2012. Of the nearly one billion dollars ($949,850,125) that the Global Fund allocated to LAC for HIV projects, the 64% of the total funds approved were for the first three rounds. Based

**Table 2**

**Dependency on external financing for ART by LAC country, 2011/2012**

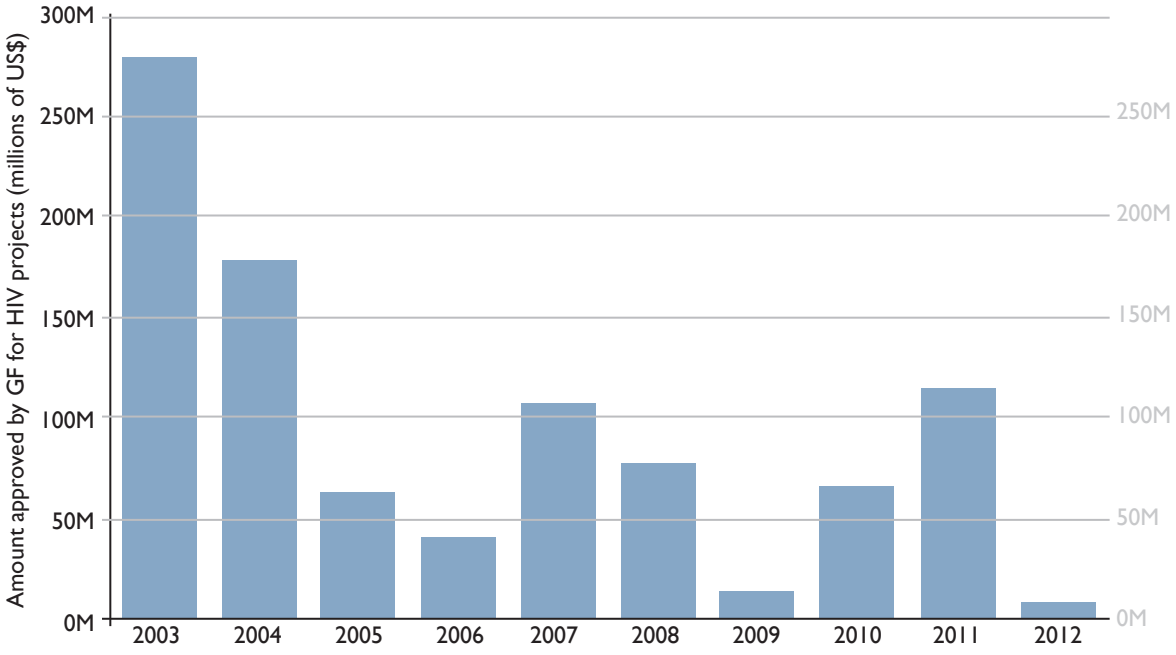
| | High | Moderate | Low | No dependency |
|---|---|---|---|---|
| | 75-100% external financing of ARV | 20-75% external financing of ARV | 5-20% external financing of ARV | 0%-5% external financing of ARV |
| **Latin America** | Bolivia<br>Nicaragua | Guatemala | El Salvador<br>Ecuador<br>Honduras<br>Paraguay | Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Panama, Peru, Uruguay, Venezuela |
| **Caribbean** | Antigua and Barbuda, Dominica, Dominican Republic, Guyana, Grenada, Haiti, Jamaica, St. Kitts and Nevis, St. Vincent and the Grenadines | Anguilla, Barbados, British Virgin Islands, Cuba, Montserrat, St. Lucia | | Bahamas, Belize, Suriname*, Trinidad and Tobago, |

**Note:** *Financing from the Global Fund proposal for Suriname ended December 2011. During 2011, 100% of its ARV purchases came from the Global Fund. The Ministry of Health will finance 100% of public ARV in 2012.
Dependency in all the countries is mainly on the Global Fund, and to a lesser extent, on Brazil and the World Bank. Anguilla, British Virgin Islands, and Montserrat receive donations from Brazil that account for an estimated 40% to 70% of ARV. The figures for the OECS countries are based on estimates. Brazil donates ARV medicines to Anguilla, Bolivia, British Virgin Islands, Montserrat, OECS, and Paraguay.

on the annual breakdown since the project began, more than half of the total funds for the 2003-2012 period were approved in the first three years (Figure 3, Annex 1).

**Figure 3**

**Amounts approved by the Global Fund for HIV projects, by year since project start, 2003-2012 (in US$)**




**Note:** The amounts allocated for "single stream funding" projects are not included.

Over 4 years (2008-2011), the GF has funded over $46.2 million in ARV purchases in 21 countries (15 countries and 2 multi-country projects for PANCAP and OECS). Significantly, not a single project slated to begin in 2012 includes financing for ART.

**Figure 4**

**ARV purchase totals financed by Global Fund grants in LAC, 2008-2011 (in US$)**

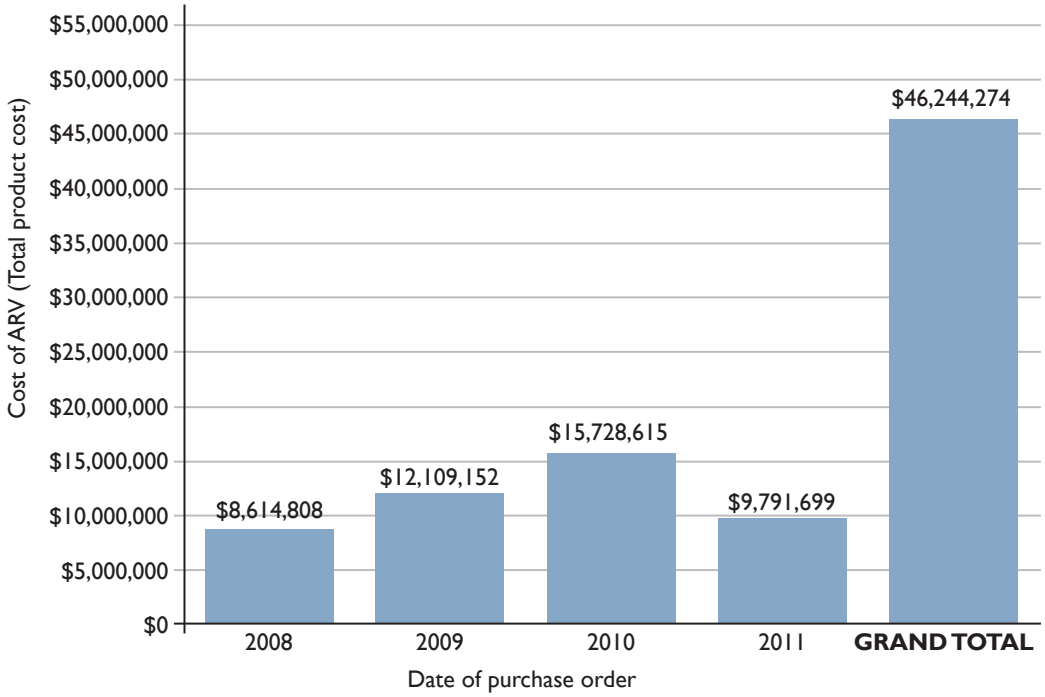
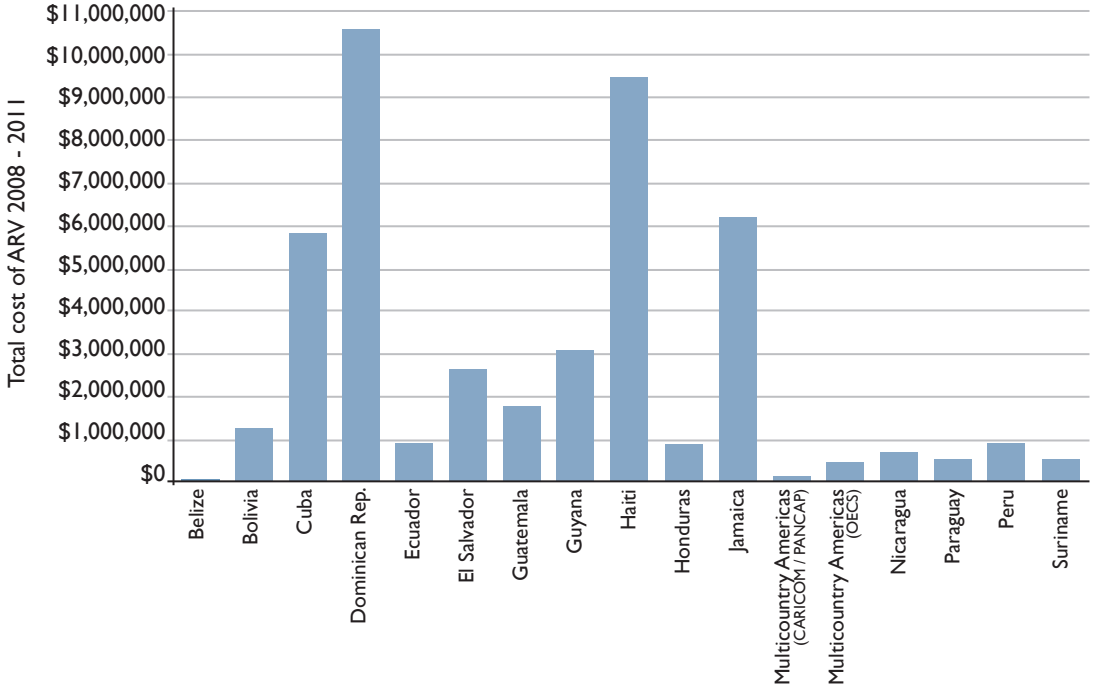



**Figure 5**

**ARV Purchases financed by Global Fund grants by country, 2008-2011 (in US$)**



LAC has therefore made substantial progress toward independence from external funding for ART. At the same time, however, a significant number of countries (11) fall into the high dependency category, with nearly 100% of ARV funded externally (Table 3). A more detailed analysis points to three distinct groups:

a. countries with public financing >95% since the inception of their national ART program;

b. countries that were more dependent on external funding when their ART programs began and have made varying degrees of progress in ensuring public funding for them over the past 3 years; and

c. countries that still present a high level of dependency on external funding for ART, and have shown no signs of progress in recent years.

The greater the dependency for financing ARV in 2007/2008, the less progress was made towards categories of less dependency in the 4-5 year period studied. All of the countries except for two (Suriname and Saint Lucia), with 100% dependency in the 2007/2008 period, remained so in 2011/2012, and 7 of the 12 countries with moderate dependency remained in that category (Table 3).

**Table 3**

**Country distribution by degree of dependency on external funding for ARV, comparison between 2007/2008 and 2012**

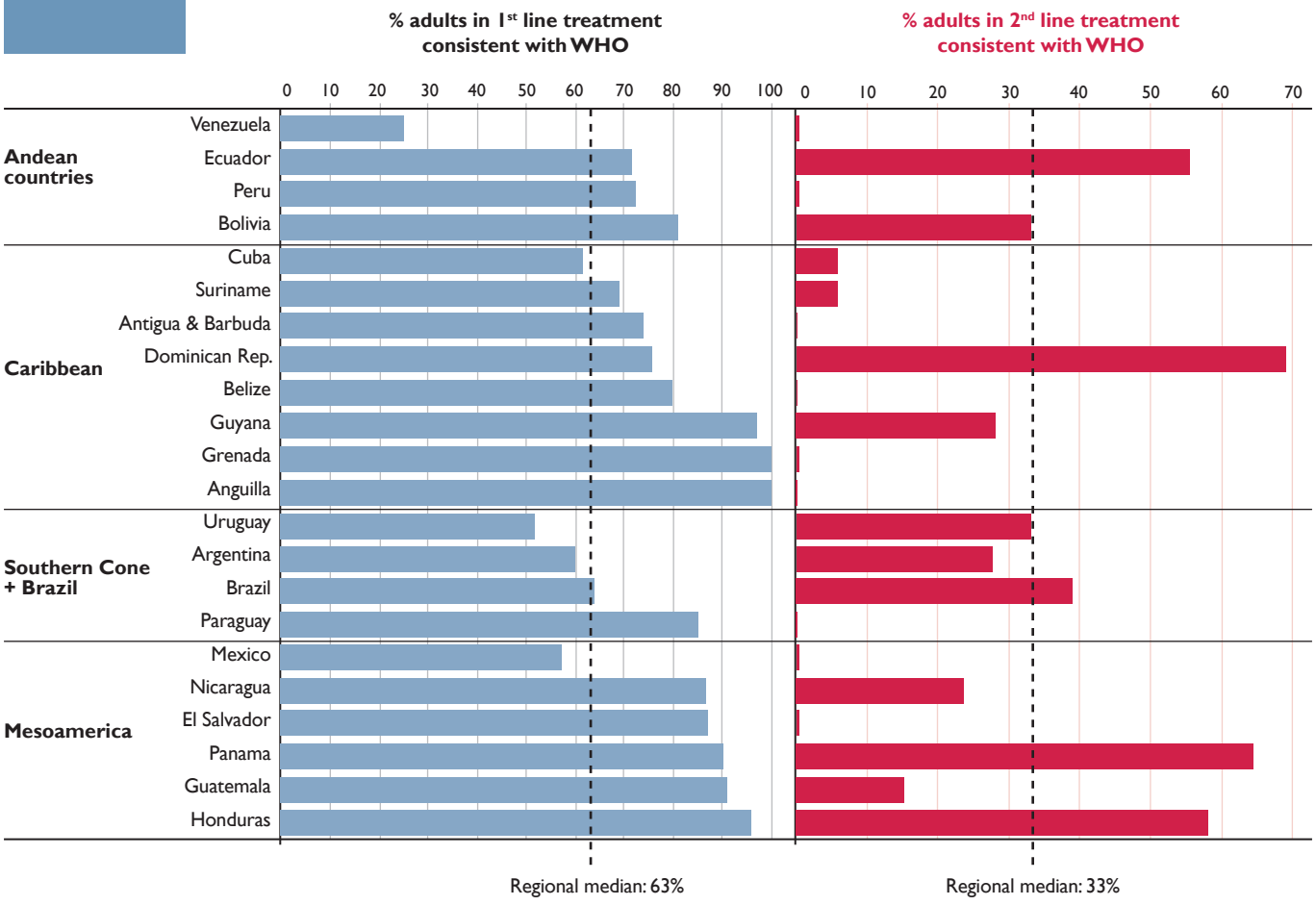
| | High | Moderate | Low | No dependency |
|---|---|---|---|---|
| | 75-100% external financing of ARV | 20-75% external financing of ARV | 5-20% external financing of ARV | 0%-5% external financing of ARV |
| 2007-2008 | • Antigua and Barbuda<br>• Bolivia<br>• Dominica<br>• Dominican Republic<br>• Grenada<br>• Guyana<br>• Haiti<br>• Jamaica<br>• Nicaragua<br>• St. Kitts and Nevis<br>• St. Vincent and the Grenadines<br>• St. Lucia<br>• Suriname | • Anguilla<br>• Barbados<br>• British Virgin Islands<br>• Cuba<br>• Guatemala<br>• Montserrat<br>• Ecuador<br>• El Salvador<br>• Honduras<br>• Paraguay<br>• Belize<br>• Peru | | • Argentina<br>• Bahamas<br>• Brazil<br>• Chile<br>• Colombia<br>• Costa Rica<br>• Mexico<br>• Panama<br>• Trinidad and Tobago<br>• Uruguay<br>• Venezuela |
| 2011-2012 | • Antigua and Barbuda<br>• Bolivia<br>• Dominica<br>• Dominican Republic<br>• Grenada<br>• Guyana<br>• Haiti<br>• Jamaica<br>• Nicaragua<br>• St. Kitts and Nevis<br>• St. Vincent and the Grenadines | • Anguilla<br>• Barbados<br>• British Virgin Islands<br>• Cuba<br>• Guatemala<br>• Montserrat<br>• St. Lucia | • Ecuador<br>• El Salvador<br>• Honduras<br>• Paraguay | • Argentina<br>• Bahamas<br>• Brazil<br>• Chile<br>• Colombia<br>• Costa Rica<br>• Mexico<br>• Panama<br>• Trinidad and Tobago<br>• Uruguay<br>• Venezuela<br>• Belize<br>• Peru<br>• Suriname |

## 3. Margin for optimization

### 3.a Alignment with WHO recommended first-line treatments

Figure 6 illustrates adherence to WHO recommendations in first-line and second-line regimens. Adherence to WHO is higher for first-line regimens, with 63% of adults in ARV regimens recommended by WHO, compared to 33% of adults in second-line regimens. The range between countries is 20% to 100% for first-line and from 0 to 69% for second-line regimens. Many countries have already begun to implement actions for optimization and alignment with WHO recommendations.

**Figure 6** Percentage of patients in WHO recommended regimens by treatment line, 2010

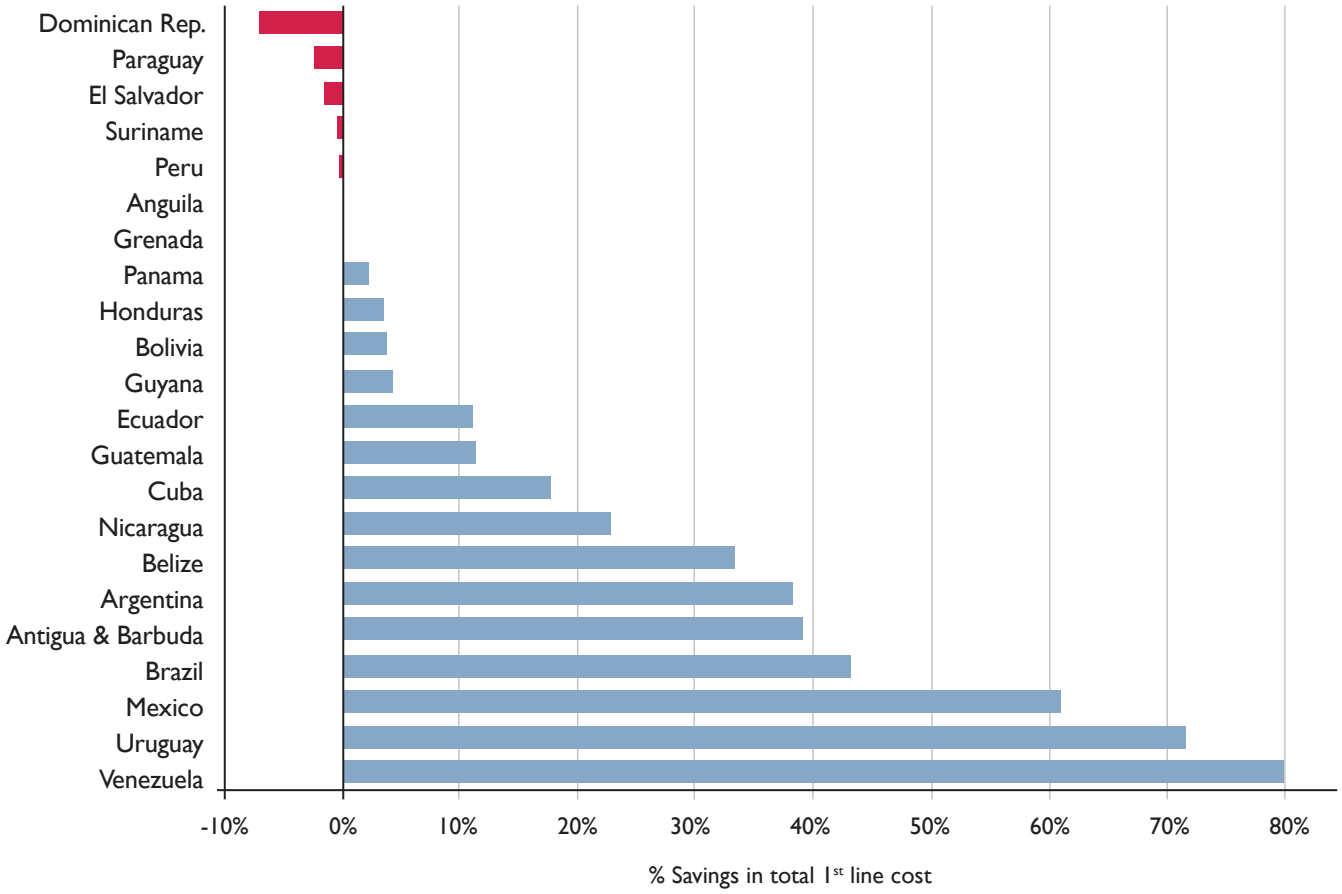



**Note**: Belize does not have patients in 2nd line. Anguilla and Antigua and Barbuda did not provide information about 2nd line regimens in use.

A cost analysis (estimated using international reference prices) for patients in first-line therapy based on the regimens in use in each county reveals the potential for reducing costs through optimization. The theoretical cost-saving capacity if WHO-recommended first-line regimens were used, including products formulated in fixed dose combinations, is considerable for the majority of the countries (Figure 7).

**Percentage of savings in the total cost of ARV by optimizing first-line therapy for patients**

**Figure 7**



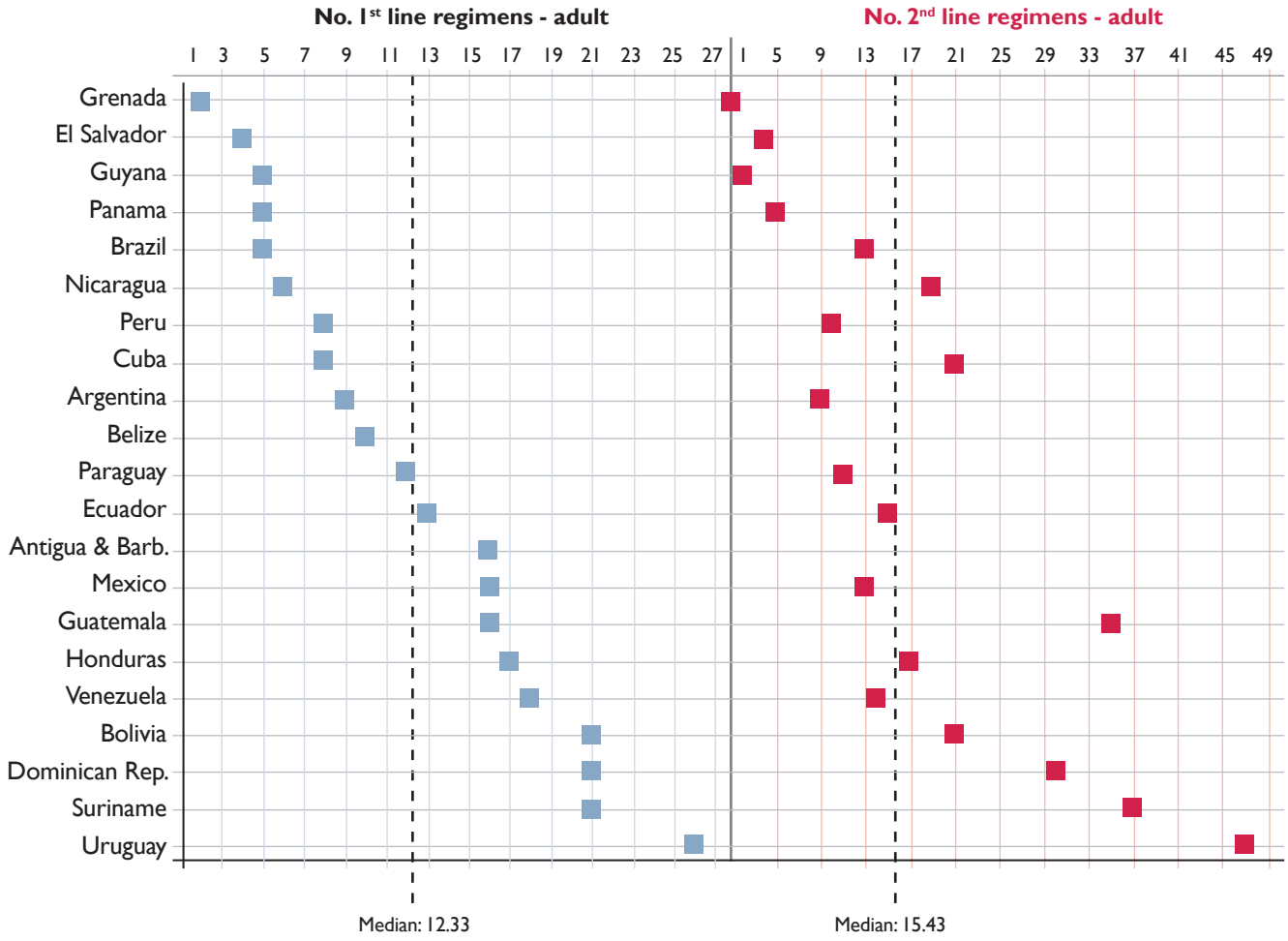

### 3.b Number of first- and second-line regimens

Since most countries have taken an individualized approach to antiretroviral therapy, many different combinations are currently in use in LAC. WHO, however, recommends six regimens for each line of therapy for adults.[a] The median number of combinations for adults in the region is 12 for first-line and 15 for second-line therapy. The countries with the largest number of different first-line regimens are Uruguay, Suriname, Dominican Republic, and Bolivia, and for second-line regimens Guatemala joins this list (Figure 8). It should be noted that a significant number of countries did not provide this information.

a. WHO recommends six regimens each for first- and second-line therapy for adults and the Treatment 2.0 strategy has gone even further by recommending that the countries use a single preferential regimen for each treatment line, with additional regimens for use in exceptional cases.

**Figure 8**

**Number of different regimens for adults by treatment line, 2010**




The regimens recommended by WHO for children (<15 years) vary depending on the child's age and prior exposure (intra- or extra-uterine) to nevirapine. The options for children over the age of 3 years are easier to harmonize with adult regimens since efavirenz may be used, and even more so for children over 12, since adult formulations may be used. The study of pediatric treatment is hampered by the limited availability of formulations. While formulations in fixed dose combinations or in single package blister format are starting to become available for children, due to their limited availability, ART recommendations for children should move in the direction of alignment with those for adults by strengthening tablet or capsule presentations, and fixed dose combinations. There is less variability in the number of regimens available for children relative to adults, in the region, and the median is six regimens for the first and second lines of treatment (Figure 9).

Figure 9

## Number of first- and second-line regimens in children, 2010

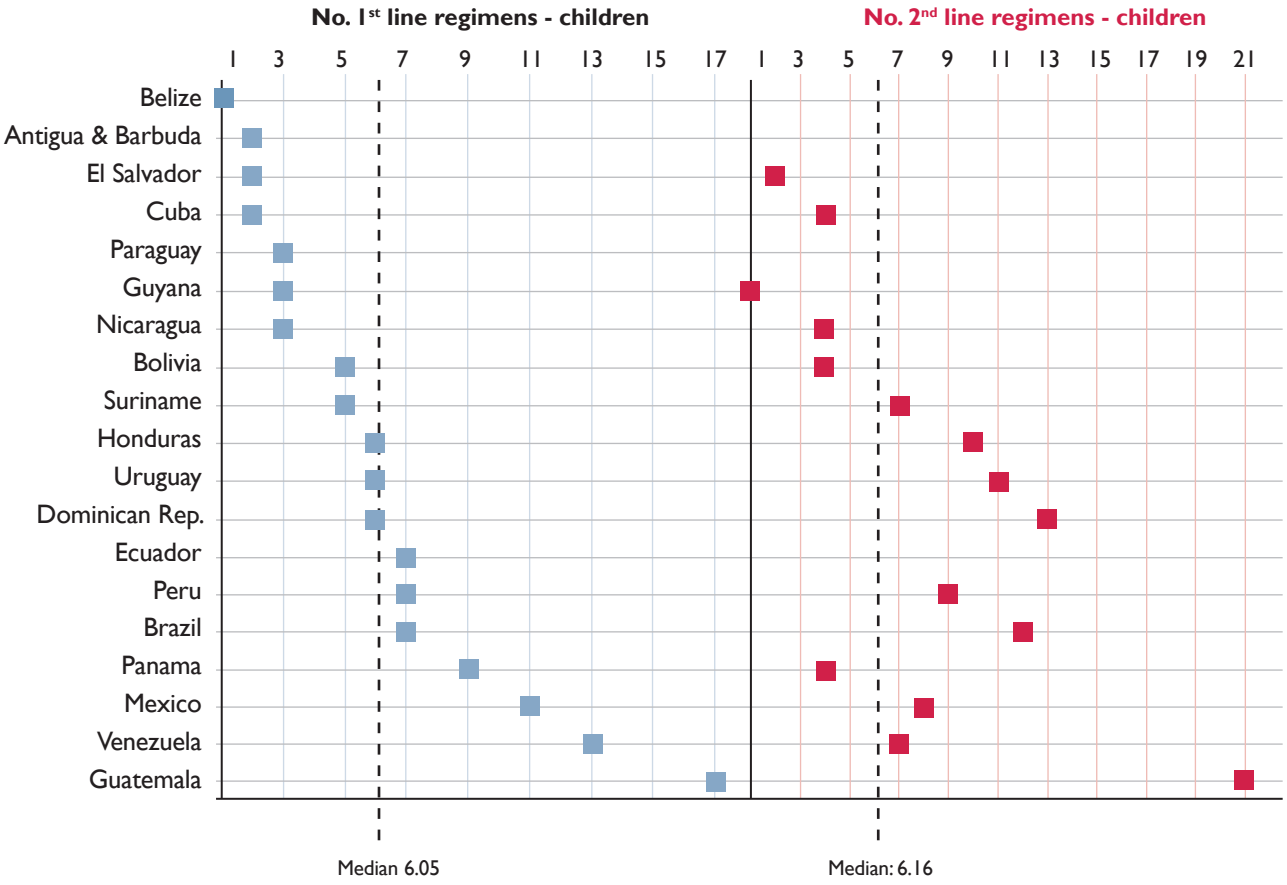



Table 4

## Countries by number of first-line regimens in use for adults, 2010

| Conservative level | Moderate level | Expanded level |
|---|---|---|
| 1-6 regimens | 7-12 regimens | >12 regimens |
| Brazil, El Salvador, Grenada, Guyana, Nicaragua, Panama. | Argentina, Belize, Cuba, Paraguay, Peru. | Antigua & Barbuda, Bolivia, Dominican Republic, Ecuador, Guatemala, Honduras, Mexico, Suriname, Uruguay, Venezuela. |

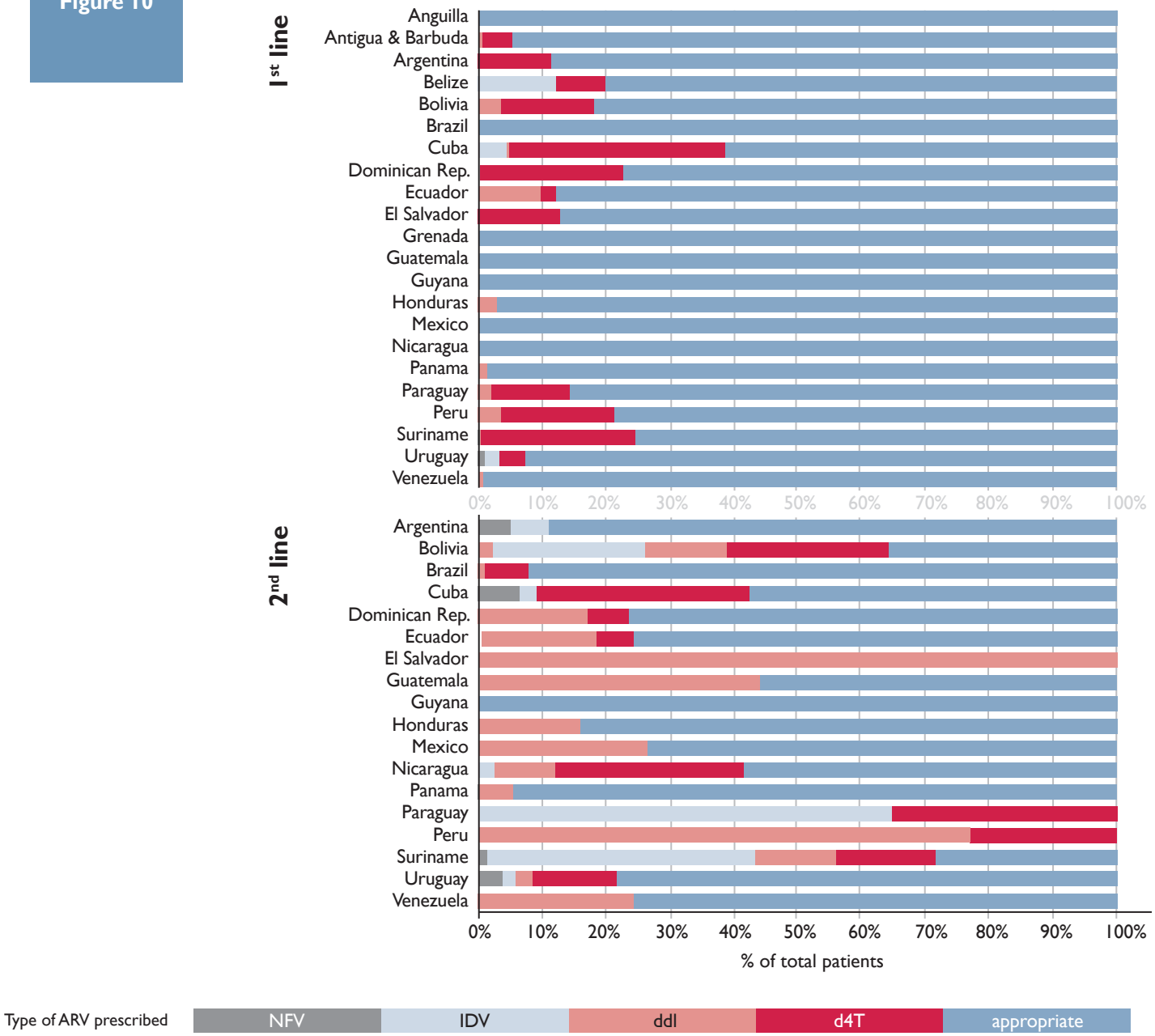
### 3.c Use of inappropriate medicines

WHO recommends making plans for the elimination of Stavudine (d4T) wherever it is still in use as the medicine of choice for ART and moving toward regimens based on AZT or TDF. WHO Guidelines for 2010 also do not recommend the following: Nelfinavir, which was removed from WHO Model List of Essential Medicines due to its lower efficacy; Indinavir, which is not available as a fixed dose combination of one or two pills a day, is associated with high rates of toxicity, and has food and hydration requirements that complicate its use; and, didanosine (ddi), because of its potential toxicity and lower efficacy.[10, 11] These four drugs are classified as "inappropriate" for the purposes of this study.

The majority of patients in ART in LAC are on the most effective and least toxic ARV (93%). Even so, the use of inappropriate ARV persists (5% of patients in first-line and 14% of those in second-line therapy), either because they are produced locally, cost less, or because stocks are still available. The most commonly used inappropriate medicine is d4t, which accounts for 84% of patients in inappropriate first-line regimens and 42% of those in inappropriate second-line regimens. While only three countries were not using these medicines for any patient in 2010, the remaining countries are gradually taking steps toward its complete elimination (Figure 10).

**Figure 10**

**Distribution of patients by country and by type of ARV provided for each line, 2010**




**Note**: Recent information indicates that Paraguay suspended the use of indinavir as of January 2012 and is replacing it with lopinavir/ritonavir. The number of patients that have been moved to a different regime to date is not available.

### 3.d Stock-out episodes

ARV stock-outs cause unplanned interruptions in antiretroviral therapy due to lack of supply. They increase the risk of pharmacoresistance to ARV, treatment failure, and mortality, the consequences of which are also detrimental to the enjoyment of the right to life, personal integrity,[a] and highest attainable level of health,[b] among other human rights. When public ART programs were introduced, an HIV stock management structure external to national systems that had been set up as an emergency mechanism guaranteed the rapid implementation of these programs. This strategy is difficult to sustain, however, from a public health perspective that includes integration and standardization of the processes involved in HIV response.[12]

Information on stock-outs was drawn from two sources. The first, which is available annually from the country reports on progress toward universal access, provides the percentage of ARV outlets that had at least one stock-out episode. The second source is a survey that PAHO conducted in 2011 on ARV stock-outs in 12 countries, which counted the number of stock-out episodes, the medicines involved, and their causes.

In 2011, 14 of the 26 countries with available data reported at least one stock-out episode (54%), which is indicative of the extent of the problem in the region. The 12 countries that completed the stock-out survey reported a total of 92 stock-out episodes with an average duration of 40 days. The most frequent causes were delays in bidding processes (29%) or procurement (13%), distribution problems (10%), or difficulties with ARV production (9%). The emergency measures implemented included emergency purchases (46%), change in suppliers (15%), or change in the regimens used (11%).[7]

**Stock-out episodes: % of facilities that experienced a stock-out and the number of reported episodes by country, 2010-2011** — **Table 5**

| Country | % facilities that dispense ARV with 1 or more episodes of ARV stock-out, 2010 | Number of episodes of ARV stock-out in 2010 -2011* |
|---|---|---|
| Antigua & Barbuda | 100% | --- |
| Argentina | 5% | --- |
| Barbados | 50% | --- |
| Costa Rica | 100% | --- |
| Cuba | 3% | --- |
| Dominica | 100% | --- |
| Ecuador | 0% | --- |
| Grenada | 0% | --- |
| Guyana | 16% | --- |
| Haiti | 0% | --- |
| Jamaica | 87% | --- |
| Mexico | 0% | --- |
| Suriname | 0% | --- |
| Trinidad & Tobago | 67% | --- |
| Belize | 0% | --- |
| Chile | 0% | 0 |
| Paraguay | --- | 0 |
| Peru | 0% | 0 |
| Dominican Rep. | 84% | 0 |
| Brazil | 100% | 1 |
| Bolivia | 0% | 1 |
| Uruguay | 0% | 1 |
| El Salvador | 0% | 2 |
| Honduras | 0% | 2 |
| Nicaragua | 19% | 2 |
| Guatemala | 82% | 6 |
| Panama | 80% | 6 |
| Colombia | --- | 34 |
| Venezuela | --- | 37 |

*The survey was sent to 12 countries in 2011

a. The right to life and personal integrity are protected by the American Convention on Human Rights and by the International Covenant on Civil and Political Rights. Both treaties can be found at: http://www.oas.org/en/iachr/mandate/Basics/convention.asp

b. Facilitating access to medicines to fight HIV is one of the basic obligations undertaken by States Parties to the International Covenant on Economic, Social and Cultural Rights under Article 12. For more information on legal obligations in relation to access to health facilities, goods and services, see: http://www1.umn.edu/humanrts/gencomm/escgencom14.htm

## 4. Programmatic effectiveness

### 4.a. ART coverage and retention at 12 months

Country distribution by levels of coverage calculated using the WHO/UNAIDS standard methodology is presented in Figure 11 and Table 5.

**Figure 11**

**Antiretroviral coverage by country, 2010**

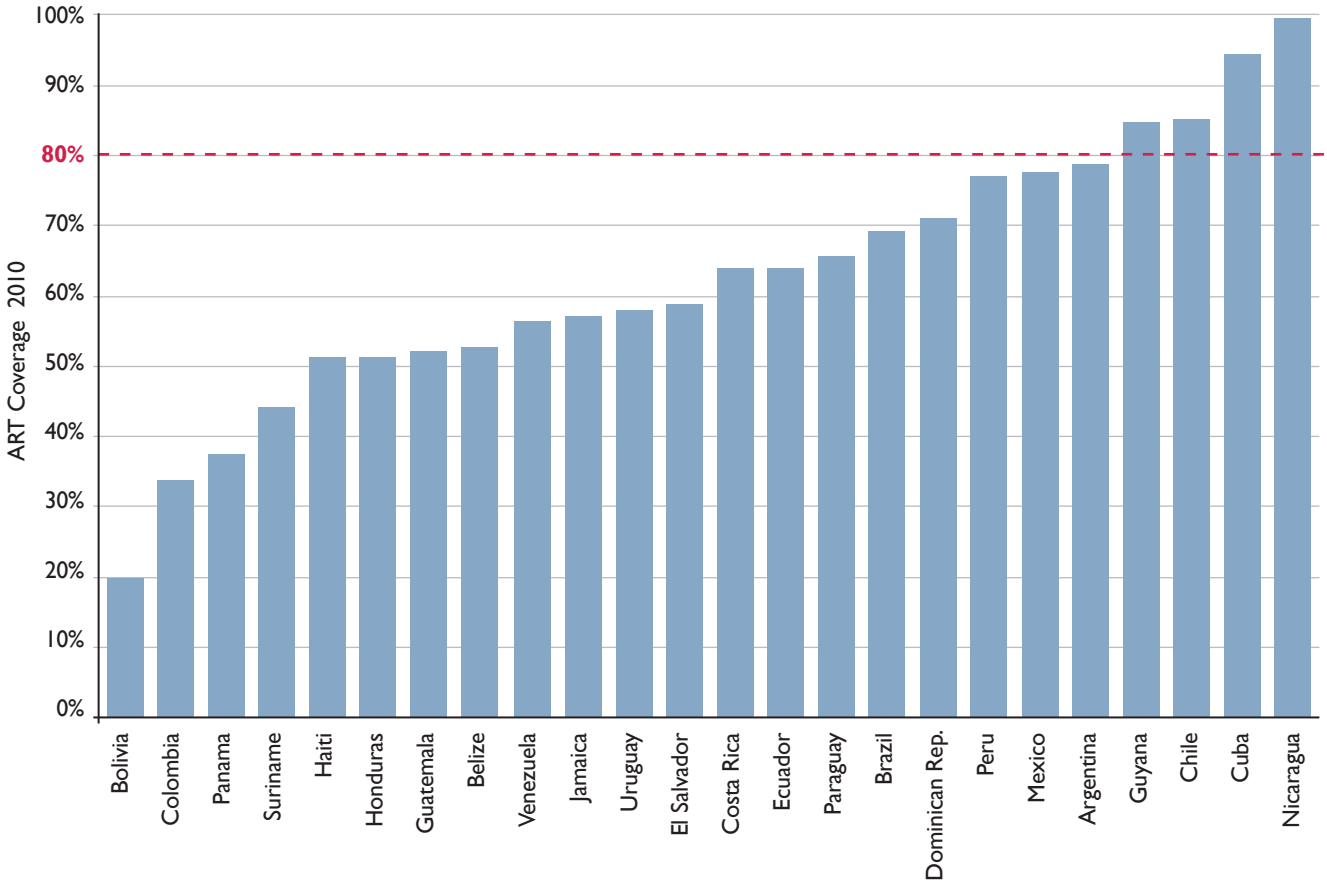



**Table 5**

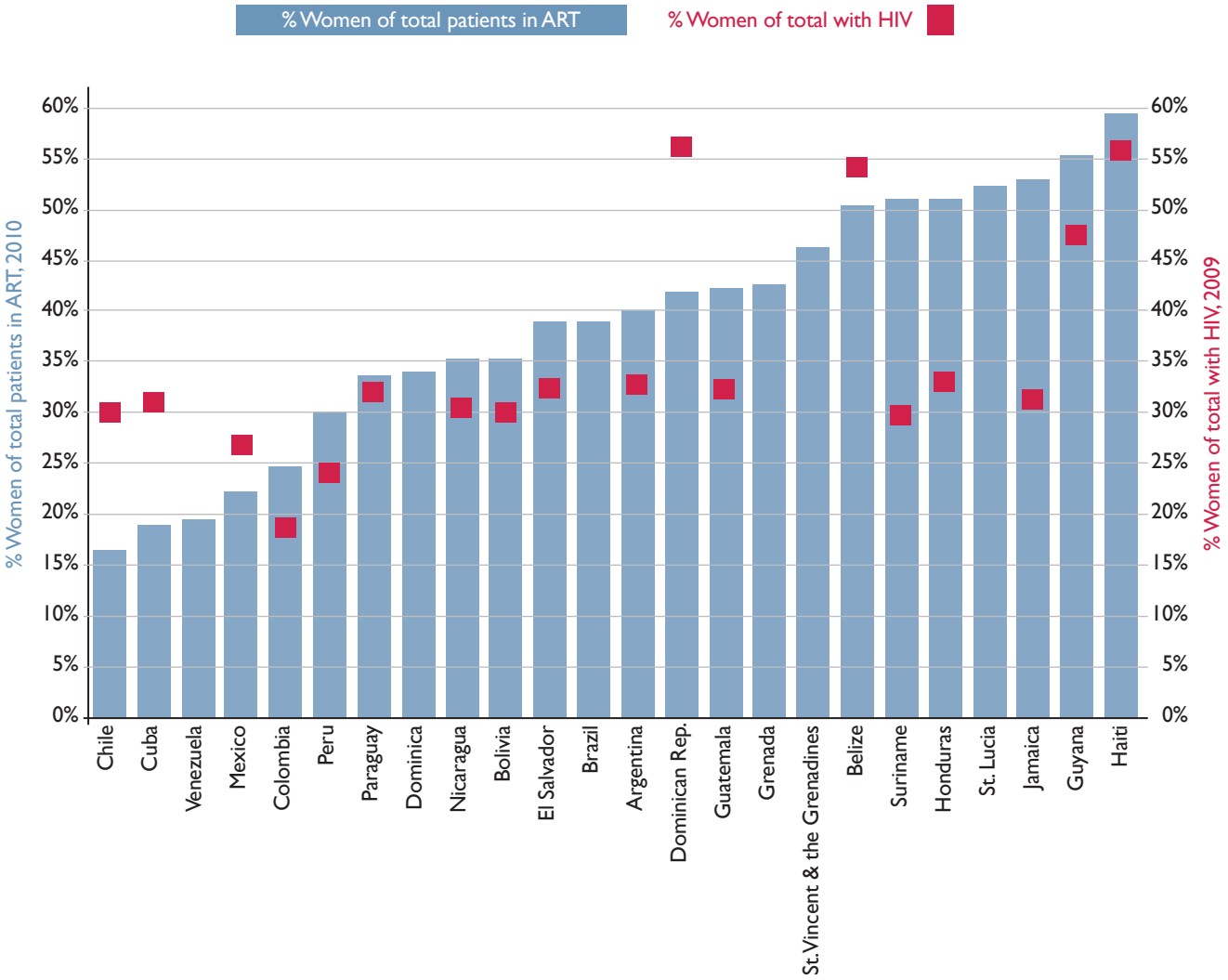
**Country distribution based on antiretroviral therapy coverage, 2010**

| Universal access to treatment as of 2010 (>=80%) | Coverage above the regional average and close to universal access | Coverage below the regional average (63%) |
|---|---|---|
| Chile, Cuba, Guyana, and Nicaragua. | Argentina, Brazil, Dominican Republic, Ecuador, Mexico, Paraguay, and Peru. | Belize, Bolivia, Colombia, Haiti, Jamaica, Suriname, Uruguay, and Venezuela. |

Broken down by sex, coverage is slightly higher among men than women, although the uncertainty intervals, used to determine whether this difference is significant, are unavailable. In Latin America, ART coverage is 64% for men and 62% for women. This discrepancy is more pronounced in the Caribbean, at 64% and 56% respectively. Figure 12 shows the percentage of ART patients who are women. In general the percentage of total ART patients who are women is higher than percentage of all people living with HIV who are women, although the difference is less than 10 percentage points. The exceptions to this are Honduras, Jamaica, and Suriname, where the percentage of patients in ART who are women is higher than the percentage of the total population estimated to be living with HIV who are women. The inverse is true in the Chile, Cuba and Dominican Republic.

**Percentage of total people in ART who are women (2010) and estimated percentage of people living with HIV who are women (2009)**

**Figure 12**



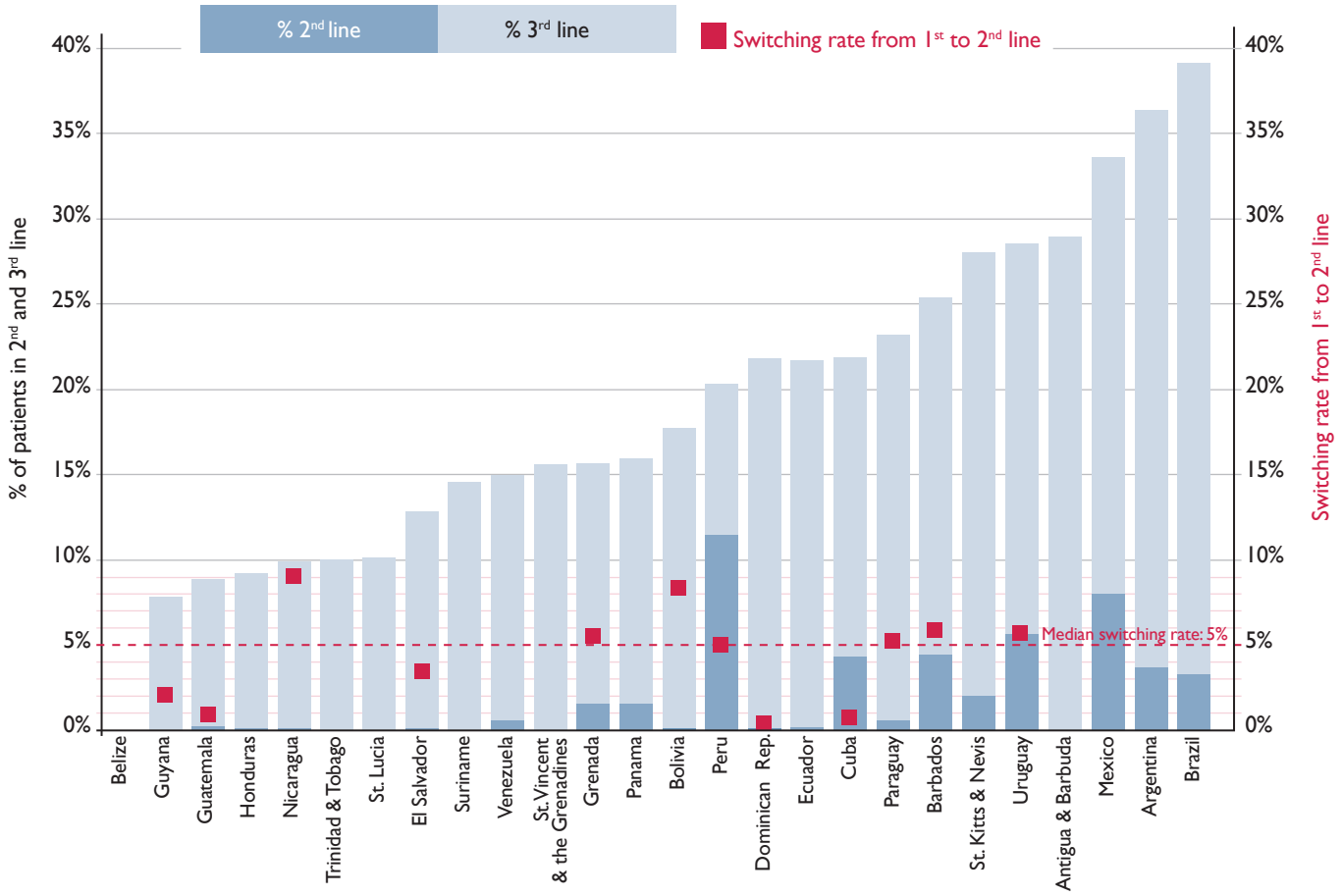
Retention at 12 months after initiation of treatment ranged from 61% to 100% in the region in 2010. The countries with 12-month retention rates above 80% are: Guyana, Dominican Republic, Paraguay, Ecuador, Antigua and Barbuda, Uruguay, Jamaica, Peru, Mexico, Guatemala, Brazil, Barbados, Trinidad and Tobago, Cuba, Chile, Costa Rica, and Grenada. The countries with 12-month ART retention rates under 80% are Haiti, Suriname, Nicaragua, El Salvador, Belize, Honduras, Panama, and Bolivia. There is a direct correlation between coverage and retention. Countries with higher coverage also have better results as far as 12-month ART retention ($p<0.01$). Similarly, retention in ART in the first year has an inverse linear relationship to the percentage of patients with late diagnosis (basal CD4 <200). This means that the lower the percentage of patients with late diagnosis, the higher the retention rate ($p<0.01$).

## 4.b Switching rate, distribution by line of treatment and intensity of virological monitoring

Only 12 countries provided the annual switching rate from first- to second-line therapy in 2010 and the reported values ranged from 0.2% to 9.1%, with a median of 4.4%. The countries reporting values higher than the regional median are Peru, Paraguay, Grenada, Uruguay, Barbados, Bolivia, and Nicaragua. The wide disparity in the change rate could be due to the difficulty of defining first- and second-line treatment (for example the use of protease inhibitors in first line therapy) and also the criteria used for calculating this, since some countries report all patients who changed regimen, even if it was due to toxicity (substitution), while others report patients who switched from the first to the second line due to treatment failure. Very low levels in switching rate could also indicate low access to virological monitoring tests and delays in switching between lines of treatment.

**Figure 13**

**Percentage of patients in 2nd + 3rd line, and switching rate from 1st to 2nd line, 2010**

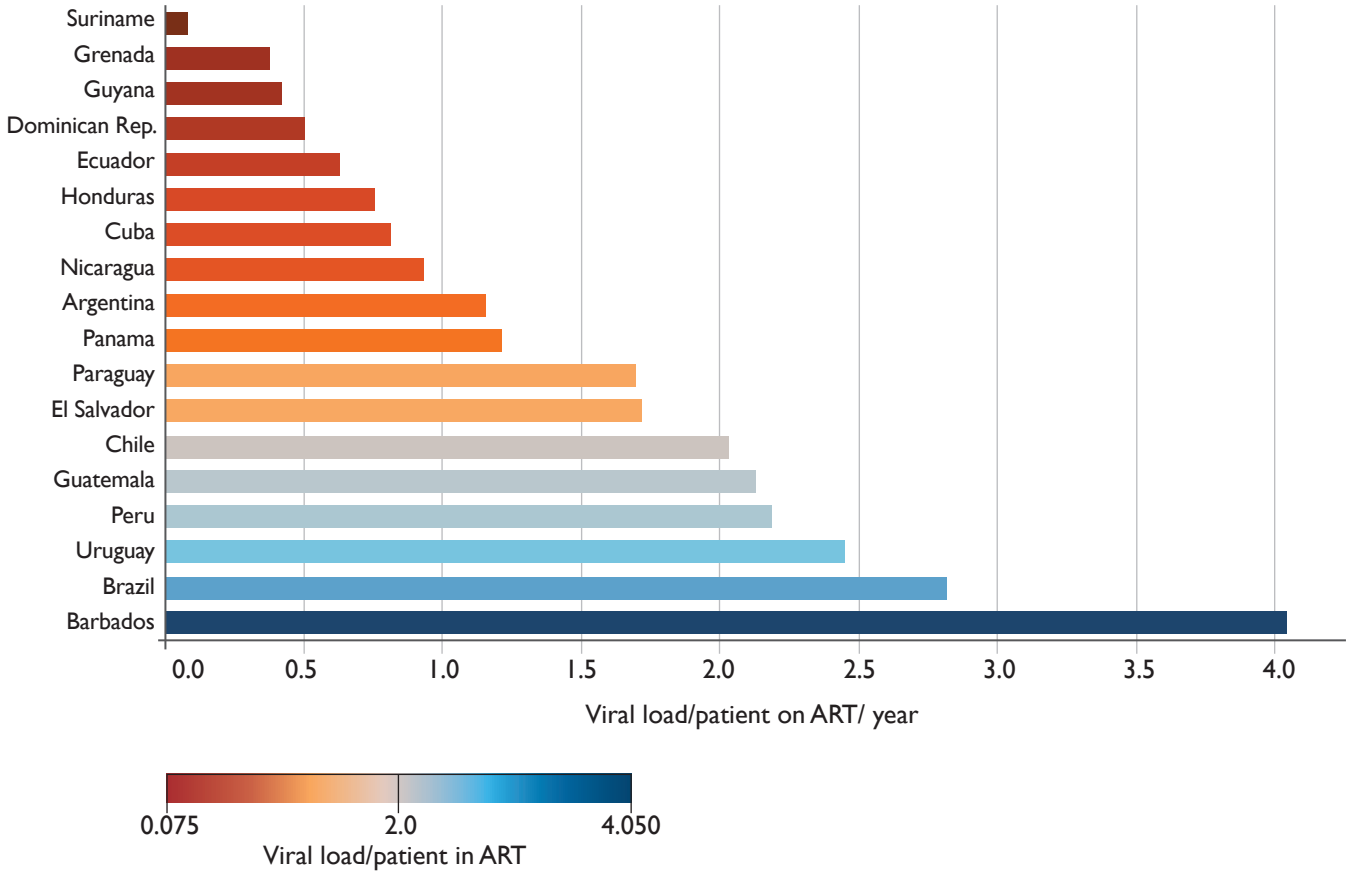


The percentage of patients in a second-line regimen ranges from 0% in Belize and Antigua and Barbuda to 36% in Brazil. The countries with higher percentages of patients in second-line therapy are Antigua and Barbuda, Argentina, Brazil, Mexico, and Uruguay. These countries, except for Mexico and Antigua and Barbuda, have had treatment programs in place since the early 1990s. While Venezuela's public ART program also began in the 1990s, a smaller percentage of patients in that country are in second and third line treatment relative to those mentioned previously. The countries with the largest percentage of patients in third-line regimens are, in order, Peru, Mexico, Uruguay, Barbados, Cuba, Argentina, and Brazil. (Figure 13).

Viral load measurement is regarded as a relatively more sensitive indicator of treatment failure compared to clinical or immunological indicators. Access to viral load testing is recommendable to improve the accuracy of a diagnosis of treatment failure. Early detection of virological failure facilitates interventions to improve adherence and helps preserve treatment efficacy. In countries where viral load testing is available, WHO recommends virological monitoring of the patient every 6 months.[13] The intensity of patient monitoring was measured as the ratio of the total viral load tests performed annually to the total number of patients in treatment. Six of the eighteen countries, that provided data, had values of 2 or more (Figure 14).

**Figure 14**

**Rate of viral load test performed annually per patient on ART by country, 2010**



## 4.c Timely HIV diagnosis and access to care

Timely diagnosis and referral for treatment is an essential strategy to reduce morbidity and mortality, as well as transmission. Nonetheless, an estimated 50% of the people living with HIV in the region are unaware of their serological status.[14-16]

The majority of countries have a law/general decree on HIV/AIDS, which provide for some aspects of HIV testing and counseling, and all of the countries mandate confidentiality in HIV testing to protect the right to privacy.[a] The laws in some countries, however, include exceptions to this. Some of them, for example, consider it the duty and responsibility of an HIV positive individual to inform his or her sexual partner(s) about his or her condition. In Bolivia, a person who has received a positive result must inform his or her health care providers while, in Colombia, the attending physician may reveal the diagnosis to an individual's family members, and/or sexual partner(s) or children for health reasons. The laws also mandate obtaining informed consent. Exceptions to this are compulsory HIV testing before marriage in just a few countries, or as a requirement for sex workers. In general, national regulations do not include the new strategies for HIV testing and counseling in which the health care provider plays an increasingly more proactive role by offering these services through an "opt-out" model in a framework of universal and regional human rights standards and norms.[b, 17]

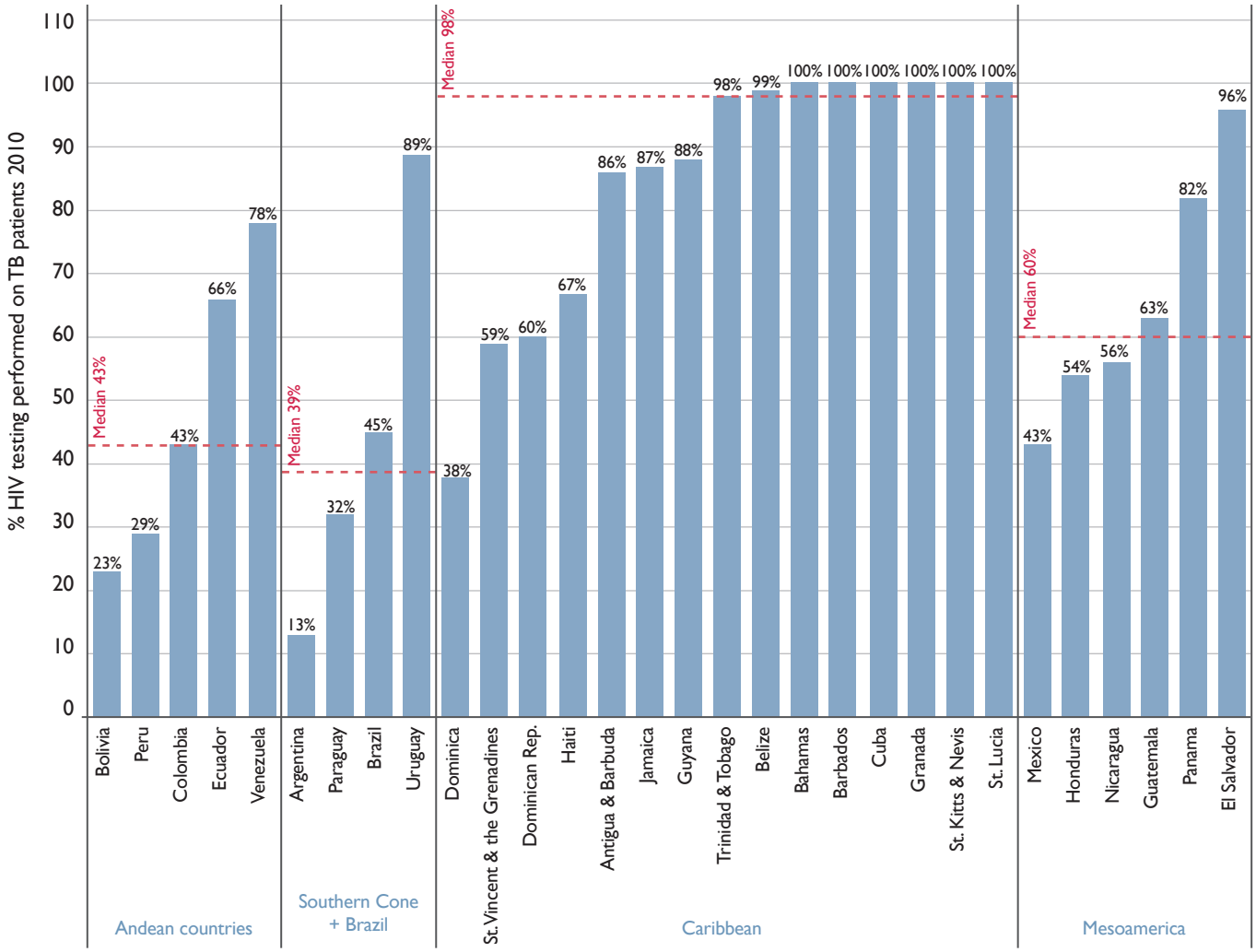
The countries also employed a range of strategies for HIV testing, although they all offer universal access to HIV testing for pregnant women.[18] Other interventions target population groups with a higher prevalence of HIV, such as TB patients, gay men and other men who have sex with men, sex workers, prisoners, patients with STIs, and serodiscordant couples, but these strategies and their impact can vary from country to country. Some authors have pointed out, in fact, that these targeted strategies reach only the most easily identified vulnerable groups—MSM who self-identify as gay, for example, while failing to reach the more hidden population of MSM who are less likely to identify themselves as gay, such as very young or bisexual MSM.[19] Missed opportunities are also evident in the health system when testing is not offered to populations such as pregnant women, or patients with TB or STIs. While there are examples of good coverage of HIV testing in prenatal care, it is less available to vulnerable pregnant women who only seek services at the time of delivery. Moreover, the region is only beginning to offer testing to the partner of a pregnant woman, as proposed in the initiative to eliminate vertical transmission of HIV.[20]Another example is found in TB patients, for whom the regional median of HIV testing coverage is 74%, with significant variations between subregions (Figure 15).

a. The right to honor and dignity is protected by the American Convention on Human Rights and the International Covenant on Civil and Political Rights.

b. The United Nations has adopted international standards on human rights and HIV including the International Guidelines on HIV/AIDS and Human Rights, available at: http://www.ohchr.org/Documents/Publications/HIVAIDSGuidelinesen.pdf

**HIV testing coverage for tuberculosis patients in the reporting countries in Latin America and the Caribbean, 2010**

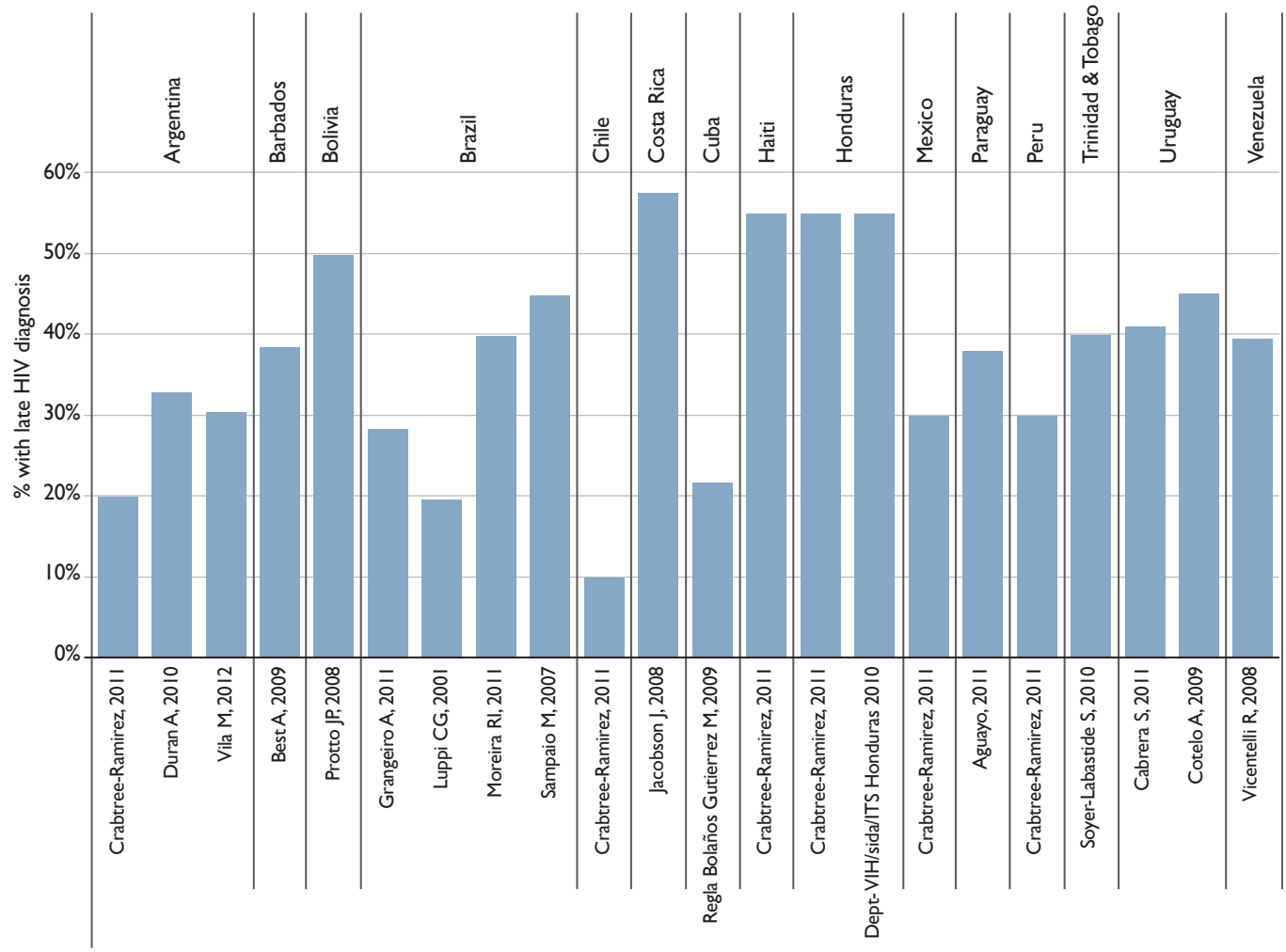
**Figure 15**




Some countries have effective strategies in place to make screening more widely available to the general population. These include primary care providers offering testing, or screening offered to the sexual partners of people who test positive for HIV or who have an STI, among others. These countries have achieved high testing levels, reaching as much as one third of their population with HIV screening in a year. In Cuba, for example, the rate of HIV screening is over 300/1000 inhabitants—compared to the median in LAC of 57 per 1000 inhabitants—and an estimated 80% of people living with HIV are aware of their status.[21] For the most part, however, the region faces the challenge of improving timely HIV diagnosis and referral to health care services. According to data from 14 countries, 37% of patients on average obtained care once they had reached an advanced stage of immunological depletion (CD4<200 cell/mm$^3$).[22-28]

**Figure 16**

**Percentage of patients with late HIV diagnosis in selected countries, by author and year of publication.**




**Note:** Late diagnosis generally refers to patients with basal CD4 <200 cell/mm$^3$. Some reports, including those for Bolivia and Honduras, base this diagnosis on clinical symptoms or on either criteria, CD4 and clinical symptoms.

While little information is available on efficient, timely diagnosis of HIV in LAC, the available studies point in a common direction. They show complex diagnostic algorithms in some countries and problems with adherence to the recommended national algorithms. Gaps in the efficiency of HIV diagnosis include an excessive number of tests performed to arrive at a diagnosis, lack of adhesion to a laboratory quality management program, attrition of patients with a first reactive test, and problems in the availability of supplies, with occasional interruptions in the availability of diagnostic reagents.[29- 31] In the PAHO survey of stock-outs in 12 countries in 2010, for example, five countries reported stock-out episodes of HIV diagnostic reagents with an average duration of over 2 months that affected the supply and screening of pregnant women and other populations.[32]

Available information on timely access to HIV diagnosis in the countries has been examined, including: the rate of HIV testing in >15 years (programmatic data); the percentage of people who had been tested during the preceding year (survey data), the percentage of pregnant women and TB patients screened for HIV, and the percentage of patients that enter care with CD4s <200 cell/mm$^3$. Although each of these indicators is limited in terms of analysis and interpretation, taken together, they can help illustrate where the countries are in relation to strategies for early HIV detection. The countries can be divided into three groups: countries with figures below the regional average for these indicators; another group with figures hovering around the regional average or with disparate values for the different indicators evaluated; and a third group in which the values for the indicators studied are higher than the regional average (*expanded category*) (Table 6).

**Table 6**

**Timely access to HIV diagnosis, 2009-2010**

| Below regional average | Near the regional average – Mean | Higher than the regional average - Expanded |
|---|---|---|
| Bolivia, Colombia, Dominican Rep., Ecuador, Guatemala, Nicaragua | Haiti, Honduras, Mexico, Paraguay, Peru | Antigua and Barbuda, Argentina, Barbados, Belize, Brazil, Chile, Cuba, El Salvador, Grenada, Guyana, Jamaica, Uruguay, Trinidad and Tobago, |

**Note:** Insufficient information on the Bahamas, Costa Rica, Dominica, Panama, St. Kitts &d Nevis, St. Lucia, St. Vincent & the Grenadines, Suriname, and Venezuela to group into any category.

In conclusion, there is room to improve the efficiency and quality of HIV diagnosis in the region by tackling the dual challenge of improving screening coverage and timely access to HIV diagnosis. This will entail: expanding coverage of HIV screening offered and performed, targeting the most vulnerable groups, keeping in mind the variability within those groups; scaling up strategies based on what the epidemiological data and programmatic outcomes have to tell us; evaluating each strategy used with valid data; improving equity in access; simplifying algorithms; ensuring quality control in diagnosis; and revising screening strategies so that they respect human rights, especially those mentioned earlier, with the participation of civil society.

## 5. A public health approach to ARV procurement: the PAHO Strategic Fund

ARV procurement is one of the most costly aspects of HIV therapy and represents a significant expense in the health budgets of low- and middle- income countries in the Americas. This makes ensuring efficient procurement extremely relevant. Created in 1999, the Strategic Fund is a reimbursable procurement mechanism which Member States of the Pan American Health Organization may use to purchase strategic public health supplies, including ARVs. Medicines procurement is linked through a joint contracting process with technical support for planning and programming. Twenty-three countries have signed agreements with the SF and ten are using the mechanism for ARV purchases (Table 7). One of the technical activities, which began in 2008, is joint bidding for ARV by participating countries. Procurement of antiretroviral medicines from 2009 to 2011 by countries that use the SF is shown in Annex 2. All of them, except for two countries (Argentina and Panama) used the SF on an ongoing basis during those three years.

**Table 7**

**Countries that have an agreement with the Strategic Fund (SF) for procurement of strategic health supplies**

| Country | Date of signing of the agreement | Procurements of ARV by the SF |
|---|---|---|
| Argentina | 12/16/2008 | X |
| Barbados | 2/18/2002 | |
| Belize | 12/30/2005 | X |
| Bolivia | 7/13/2001 | |
| Brazil | 9/27/1999 | |
| Chile | 1/28/2011 | |
| Colombia | 1/29/2010 | |
| Dominican Republic | 6/15/2006 | X |
| Ecuador | 7/12/2006 | X |
| El Salvador | 6/15/2001 | X |
| Guatemala | 3/20/2001 | X |
| Haiti | 4/1/2001 | |
| Honduras | 12/23/2002 | X |
| Jamaica | 6/2/2008 | |
| Nicaragua | 8/27/2002 | |
| Panama | 4/24/2002 | |
| Paraguay | 3/8/2001 | X |
| Peru | 2/28/2001 | X |
| Suriname | 9/30/2002 | |
| Trinidad and Tobago | 2/21/2006 | |
| Turks and Caicos Islands | 2/12/2003 | |
| Uruguay | 8/30/2007 | |
| Venezuela | 1/19/2011 | X |

**Table 8**

**Procurement of antiretrovirals through the PAHO Strategic Fund (SF), by country: 2009-2011**

| Country | 2009 | 2010 | 2011 | Total 2009 - 2011 |
|---|---|---|---|---|
| Argentina | $854,389 | | | $854,389 |
| Belize | $147,119 | $111,986 | $5,651 | $264,757 |
| Dominican Republic | $1,963,043 | $4,183,614 | $1,918,893 | $8,065,551 |
| Ecuador | $1,136,690 | $314,337 | $1,883,263 | $3,334,292 |
| El Salvador | $656,101 | $1,462,742 | $945,058 | $3,063,902 |
| Guatemala | $378,966 | $809,324 | $3,488,711 | $4,677,002 |
| Honduras | $69,572 | $916,924 | $8,568 | $995,065 |
| Panama | $169,300 | $184,990 | | $354,290 |
| Paraguay | $54,052 | $637,248 | $275,179 | $966,480 |
| Venezuela | | | $12,379,155 | $12,379,155 |
| Total ARV purchases per year | $5,429,237 | $8,621,168 | $20,904,482 | $34,954,888 |
| Total purchases through SF (ARV and non-ARV) | $16,068,091 | $30,747,962 | $44,723,851 | $91,539,905 |
| % ARV relative to total purchases through the SF | 33.8% | 28.0% | 46.7% | 38.2% |

Total antiretroviral purchases through the SF have virtually quadrupled over the last three years, reaching nearly US $35 million for the 2009-2011 period, and accounting for 38% of these countries' overall procurement (ARV and non ARV) through the SF. The importance of ARV purchases through this mechanism relative to total spending on ARV varies significantly from country to country: in Belize, 74.2% of total ARV purchases in 2009 were made through the SF, while that figure for Ecuador was 48.2%. In contrast, while Paraguay spent nearly US $2 million on antiretroviral medicines in 2009, only 2.8% of those purchases were made through the SF. The medicines and formulations purchased through the SF are shown in Table 3. Although stavudine (d4T) is among the formulas that WHO does not recommend due to its toxicity profile, this drug was still acquired by six of the ten countries through the SF in the period 2009-2011.

In 2010, WHO recommended the following regimens for beginning ART:

1) AZT + 3TC + EFV,
2) AZT + 3TC + NVP
3) TDF + 3TC + EFV
4) TDF+FTC+EFV
5) TDF + 3TC + NVP
6) TDF+ FTC+ NVP

For second-line therapy, WHO's recommended guidelines are based on AZT+3TC or TDF+FTC (or 3TC), depending on the combination administered in the first line, accompanied by Lopinavir/r or Atazanavir + ritonavir.

The SF facilitates access to all combinations of nucleosides in fixed-dose combinations (FDC) (AZT+3TC, TDF+3TC, TDF+FTC), to combinations of three medicines in one or two tablets daily (AZT+3TC+NVP, TDF+3TC+EFV or TDF), and to protease inhibitors recommended for the second-line regimens. All of these products include WHO prequalified generic medications. It should be noted, however, that marketing restrictions may be in place in some countries.

All of the 10 countries except for Honduras have acquired fixed-dose combinations (FDC), with the Dominican Republic having acquired the broadest range of FDC. Only two countries, the Dominican Republic and Ecuador, have used the SF to purchase fixed-dose combinations of 2 tablets daily as recommended by WHO (AZT+3TC+NVP). It is recommended that countries add fixed-dose combinations, including FDC of one or two tablets daily, in their basic chart and that they facilitate the procurement of these and other simplified combinations for use in national HIV treatment programs through price negotiations that make it possible to obtain lower prices.[10]

Recent studies show significant variations in the prices of antiretrovirals among the countries of Latin America and the Caribbean, which indicates that there are opportunities for cutting costs in the procurement of these essential drugs.[33] For this reason, an integrated approach is recommended for the purchase and delivery of ARV medicines. PAHO can facilitate this through greater use of the SF and careful planning tied to the other measures presented in this study.

## 6. Community participation to ensure the success of antiretroviral therapy programs

Identified as a pillar of Treatment 2.0, the full participation of people living with HIV, their family members, and the community is critical to the success of any antiretroviral therapy program. Among other things, community participation helps bolster the demand for financial resources and HIV screening services, as well as ART support and related health services. The role of community services must be expanded, spotlighting their role in access to diagnostic tests, treatment monitoring and adherence, and retention, in order to ensure that health systems have the capacity to meet the therapeutic and care needs of HIV- positive people, and especially neglected population groups.

The community of people living with HIV is a key partner in communicating the strategies that will be implemented. Adequate communication using informative materials in accessible language that demonstrate the impact various decisions or systems will have on people's everyday lives is a critical part of making sure that the public understands the issue.

## Country case study: Public oversight to support the performance of treatment programs (GIVAR) in Peru

**Box 2**

There is no question that a driving factor in the success of treatment programs is the timely and continuous administration of medicines. Over the past two years, stock-outs of antiretroviral medicines of various durations have become a bottleneck in the successful performance of treatment programs. Stock-out episodes frequently are due to structural weaknesses in supply chain management.

In Peru, a coalition of civil society organizations—the Grupo Impulsor de Vigilancia del Abastecimiento de Medicamentos Antiretrovirales (GIVAR)—has formed to tackle this issue. GIVAR's main goal is to solve the stock-out problem through timely detection of episodes and advocacy efforts focused on the responsible entities: Ministry of Health, public safety, police forces. Users report stock-out cases on the website www.desabastecimientovih.com, and they are confirmed by the responsible entities. GIVAR's work has contributed to a proactive response to the problem and to the creation of a joint government-civil society committee to monitor the supply of antiretrovirals and TB medicines.

In the LAC region, civil society has played a prominent role since the inception of public antiretroviral treatment programs,[34] driving an unprecedented mobilization of political support for the response to HIV in the region. People living with HIV organized to call attention to neglected populations, fight stigma and discrimination, and support comprehensive health care services. Other organizations have gotten involved by forming support groups, making home visits, and conducting research in operational areas, epidemiological and clinical studies, etc. In one successful example, Brazilian civil society promoted an unprecedented civic mobilization demanding that compulsory licenses be issued for lopinavir/ritonavir.[35]

In conclusion, all antiretroviral programs should understand and ensure the strengthening of civil society, people living with HIV, and their networks as a means of promoting the sustainability of their efforts.

# Conclusions, recommendations, and next steps

*This report presents a baseline for advancing toward a proposed transition in ART services conducive to achieving the goals of universal access in consonance with human right principles.*

This study sheds light on opportunities to scale up the application of public health principles in order to improve sustainability, effectiveness, efficiency, equity, and protection of human rights and fundamental freedoms in the context of antiretroviral therapy. It shows how Treatment 2.0 can be an appropriate framework for creating synergies between different components and processes that contribute to more effective and efficient health services delivery.

The high variability in per patient cost, as pointed out by Aran-Matero et al, is a reflection of the interaction between several factors: patient distribution by treatment line, the regimens in use, access to generics in the country, purchasing mechanisms, intellectual property laws, etc.[1] The actions presented below would increase efficiency in spending and reduce the variability in per patient cost in the region.

**1st recommendation.** Spending on ARV is an important component of overall spending on care, accounting for a median of 47% of the budget for care and treatment (based on data from 23 countries).[1, 36] The region has made significant progress in ensuring public financing of antiretrovirals, although some countries still need to engage the political debate to expedite the availability of national resources. Further study is recommended in order to better understand the measures some countries have taken to reduce their financial dependency with regard to ARV treatment and share the lessons learned with other countries with persistently high levels of dependency.

**2nd recommendation.** The large number of regimens in use is an indication that their simplification could play an important role in the region. The preferential use of a single, WHO-recommended regimen for each treatment line, with exceptions (which, by definition would involve only a small percentage of total patients) would have clear benefits for patients and facilitate better sequencing to the second and third lines. The simplification process should step up the use of products in fixed-dose, single tablet combinations that will reduce toxicity and improve patient adherence by prolonging treatment. This can be accomplished through a national optimization plan involving myriad stakeholders, including civil society. This plan will include migration of patients toward preferential regimens when they meet the conditions of good adherence with undetectable viral load. This requires proper patient monitoring and access to viral load tests, as well as an operational network of high quality laboratories. Suboptimal levels of access to this test and delays in the timely testing of patients in treatment continue to be observed in the region. Migration of patients to preferential regimens also entails eliminating obsolete treatments, including highly toxic medications such as stavudine, didanosine, indinavir, and nelfinavir.

**3rd recommendation.** Regimen optimization will significantly reduce the frequency of stock-outs. The region has made progress toward a common definition of a stock-out episode and a regional platform to compile and disseminate information on the availability and use of HIV-related drugs and supplies, designed especially to promote transparency and provide early warning of potential medicine shortages. PAHO is currently developing a Regional Platform on Access and Innovation for Health Technologies, a series of Internet tools to promote the access, rational use, and good governance of medicines and essential health technologies. National program managers, civil society representatives, and other experts proposed this tool as the regional platform to support inventory control and evaluation and to enhance transparency at the regional level with respect to available stocks of HIV medicines and strategic public health supplies. The Global Fund will support this project with a pilot phase in the Dominican Republic, Ecuador, and Honduras in 2012.

**4th recommendation.** As several authors have shown, prices can be reduced significantly by taking advantage of international procurement mechanisms. Countries are urged to explore these purchasing mechanisms in the context of national efforts to optimize ART. Patient expenditure on ART can be reduced through the use of mechanisms such as PAHO's Strategic Fund. PAHO is strengthening this mechanism and moving toward making products with optimal formulations for ART consistent with WHO recommendations available to the countries.

**5th recommendation.** Increasing coverage of patients in treatment can only be achieved through effective strategies for the diagnosis of HIV infection and referral to health care services. In this sense, the challenge before us is threefold: first, to expand the diagnosis of HIV infection; second, to consolidate

the timing of this in the early stages of infection; and third, to ensure referral and maintenance of health care services and treatment. Screening strategies, in turn, must target areas where the infection is present and ensure equity in access. Taking advantage of opportunities of patient contact with the health system is an efficient strategy when used in combination with other community outreach efforts to offer and perform screening. There are persistent gaps in screening of vulnerable populations such as patients with TB or STI, pregnant women and their partners, incarcerated populations, partners of HIV-positive people, and so forth, and tests are still being performed with little regard for human rights.[17] The national effort to offer testing should be accompanied by simple and efficient diagnostic algorithms. Studies in the region show attrition among patients with a positive test and incomplete algorithms, an excessive number of tests to complete a diagnosis, lack of quality control of satellite laboratories, reagent stock interruption, suboptimal use of the rapid test methodology, compulsory testing for employment or other reasons, etc.[29-32, 37] Shortcomings such as these affect the system as a whole and shake the community's trust in it. In light of this, the recommendations are clear: HIV screening strategies should be scaled up based on what we glean from each country's epidemiological surveillance data and programmatic monitoring of access to testing and diagnosis (who, how and where people are being diagnosed), with an emphasis on bridging gaps in timeliness and equity. At the same time, we must optimize the diagnostic system through the use of simple tests tailored to each context, with a user-centered focus.

**6th recommendation.** The availability and quality of information is essential for institutional and national management. This report identifies key indicators that should be available to inform decision-making at many levels. For example, it is key to ascertain patient distribution by treatment line, the switching rate due to treatment failure, monitoring frequency of patients with a viral load, the immunological state upon diagnosis and at start of treatment, among others. Where information is available, this process should be reinforced by a combined analysis of several related variables that demonstrate the coherence of the data. Obviously, an analysis by sex and other sociodemographic variables such as ethnicity will make it possible to promote activities to bridge gaps in equity. While this study does not include information on the use of fixed-dose combinations, this type of information is valuable for monitoring progress in optimizing ART. It is hoped that this aspect will be included in the analytical framework of future studies.

**In conclusion**, this study provides information to guide the application of the principles of Treatment 2.0 in Latin America and the Caribbean. It shows how the application of public health principles to simplify regimens, the implementation of WHO treatment recommendations, scaled up access to timely diagnosis, and increased retention in treatment are effective measures to achieve and maintain universal access to treatment and strengthen prevention of HIV transmission. This is the first in a series in which PAHO will monitor regional progress toward the new phase of antiretroviral Treatment 2.0 and achievement of the goals of universal access and Millennium Development Goal number 6.

# Annexes

## Annex 1

## Global Fund grants for HIV in LAC

| Country | Round I | Amount approved (US$) | Principal recipient (PR) | Type of PR 5 | Program start | Program end | Amount of the proposal | | | | | Is donation active? | ART component? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Phase 1/ Currently approved funds (6) | Phase 2 | RCC 1 | RCC 2 | Total | Yes/no | Yes/no |
| **Argentina** | 1 | 24,972,198 | United Nations Development Programme | MO: UNDP | 01-Jul-03 | 30-Sep-05 | 8,865,770 | | | | 8,865,770 | No | No |
| | | | UBATEC S.A. | CS/PS: PS | 01-Jan-06 | 31-Dec-08 | 2,783,081 | 13,323,347 | | | 16,106,428 | No | No |
| | 10 | 4,363,234 | UBATEC S.A. | CS/PS: PS | 01-Jan-12 | 31-Dec-13 | 4,363,234 | | | | 4,363,234 | Yes | No |
| **Total** | | 29,335,432 | | | | | 16,012,085 | 13,323,347 | | | 29,335,432 | | |
| **Belize** | 3 | 2,403,677 | Belize Enterprise for Sustainable Technology | CS/PS: NGO | 01-Nov-04 | 31-Oct-09 | 1,298,884 | 1,104,793 | | | 2,403,677 | No | Yes |
| | 9 | 2,170,299 | United Nations Development Programme | MO: UNDP | 01-Jan-11 | 31-Dec-12 | 2,860,848 | | | | 2,860,848 | Yes | No |
| **Total** | | 4,573,976 | | | | | 4,159,732 | 1,104,793 | | | 5,264,525 | | |
| **Bolivia** | 3 | 15,334,713 | Center for Investigation, Education and Service (CIES) | CS/PS: NGO | 26-Jul-04 | 25-Jul-06 | 2,641,751 | | | | 2,641,751 | No | Yes |
| | | | United Nations Development Programme | MO: UNDP | 01-May-06 | 31-Jan-07 | 1,950,412 | | | | 1,950,412 | No | Yes |
| | | | Ibis – Hivos Association | CS/PS: NGO | 01-Feb-07 | 31-Jan-10 | 691,703 | 10,050,847 | | | 10,742,550 | No | Yes |
| | 9 | 9,501,866 | Ibis – Hivos Association | CS/PS: NGO | 01-Sep-10 | 31-Aug-12 | 8,543,075 | | | | 8,543,075 | Yes | Yes |
| **Total** | | 24,836,579 | | | | | 13,826,941 | 10,050,847 | | | 23,877,788 | | |
| **Chile** | 1 | 28,835,307 | Council of the Americas | CS/PS: PS | 01-Aug-03 | 31-Jul-08 | 13,574,098 | 15,261,209 | | | 28,835,307 | No | No |
| **Total** | | 28,835,307 | | | | | 13,574,098 | 15,261,209 | | | 28,835,307 | | |

Annex I. Continued

| Country | Round I | Amount approved (US$) | Principal recipient (PR) | Type of PR 5 | Program start | Program end | Amount of the proposal | | | | | Is donation active? | ART component? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Phase 1/ Currently approved funds (6) | Phase 2 | RCC 1 | RCC 2 | Total | Yes/no | Yes/no |
| Colombia | 2 | 8,510,069 | (IOM | MO: Oth | 01-Jul-04 | 30-Jun-08 | 3,482,636 | 5,027,433 | | | 8,510,069 | No | Yes |
| | 9 | 21,566,636 | Cooperative Housing Foundation | CS/PS: NGO | 01-Apr-11 | 31-Mar-13 | 17,841,943 | | | | 17,841,943 | Yes | Yes |
| Total | | 30,076,705 | | | | | 21,324,579 | 5,027,433 | | | 26,352,012 | | |
| Costa Rica | 2 | 3,566,949 | Technical Commission for Medical and Social Care (CTAMS), Government of Costa Rica | Gov: Oth | 01-Oct-03 | 30-Sep-05 | 1,767,359 | | | | 1,767,359 | No | No |
| | | | HIVOS | CS/PS: NGO | 01-Jan-06 | 30-Sep-08 | 495,220 | 1,304,370 | | | 1,799,590 | No | No |
| Total | | 3,566,949 | | | | | 2,262,579 | 1,304,370 | | | 3,566,949 | | |
| Cuba | 2 | 37,300,629 | United Nations Development Programme | MO: UNDP | 01-Jul-03 | 31-Dec-14 | 11,465,129 | 15,252,732 | 9,507,101 | 1,075,667 | 37,300,629 | Yes | Yes |
| | 6 | 32,980,666 | United Nations Development Programme | MO: UNDP | 01-Oct-07 | 31-Dec-12 | 14,369,743 | 18,291,396 | | | 32,661,139 | Yes | Yes |
| Total | | 70,281,295 | | | | | 25,834,872 | 33,544,128 | 9,507,101 | 1,075,667 | 69,961,768 | | |
| Dominican Republic | 2 | 87,498,690 | Presidential AIDS Council (COPRESIDA) of the Government of the Dominican Republic | Gov: Oth | 01-Jun-04 | 31-May-12 | 14,698,774 | 33,785,708 | 31,305,014 | | 79,789,496 | Yes | Yes |
| | | | Dermatological Institute and Skin Surgery | CS/PS: NGO | 01-Jun-09 | 31-May-12 | | | 7,709,194 | | 7,709,194 | Yes | Yes |
| Total | | 87,498,690 | | | | | 14,698,774 | 33,785,708 | 39,014,208 | | 87,498,690 | | |
| Ecuador | 2 | 13,729,643 | The Ministry of Public Health of the Republic of Ecuador | Gov: MOH | 01-Mar-05 | 28-Feb-11 | 5,557,665 | 3,816,033 | | | 9,373,698 | No | Yes |
| | | | CARE International | CS/PS: NGO | 01-Jun-06 | 28-Feb-10 | 1,891,560 | 2,464,385 | | | 4,355,945 | No | Yes |
| | 9 | 9,720,446 | The Ministry of Public Health of the Republic of Ecuador | Gov: MOH | 01-Jan-11 | 31-Dec-12 | 5,829,901 | | | | 5,829,901 | Yes | Yes |
| | | | Coporacion Kimirina | CS/PS: NGO | 01-Jan-11 | 31-Dec-12 | 2,918,192 | | | | 2,918,192 | Yes | No |
| Total | | 23,450,089 | | | | | 16,197,318 | 6,280,418 | | | 22,477,736 | | |

Annex I. Continued

| Country | Round I | Amount approved (US$) | Principal recipient (PR) | Type of PR 5 | Program start | Program end | Amount of the proposal | | | | | Is donation active? | ART component? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Phase 1/ Currently approved funds (6) | Phase 2 | RCC 1 | RCC 2 | Total | Yes/no | Yes/no |
| El Salvador | 2 | 29,292,005 | United Nations Development Programme | MO: UNDP | 01-Aug-03 | 30-Sep-11 | 12,856,729 | 5,176,615 | 6,878,887 | | 24,912,231 | No | Yes |
| | | | Ministry of Health El Salvador | Gov: MOH | 01-Nov-06 | 30-Sep-11 | | 2,180,116 | 2,199,658 | | 4,379,774 | No | Yes |
| | 7 | 21,732,041 | Ministry of Health El Salvador | Gov: MOH | 01-Oct-08 | 30-Sep-11 | 5,629,906 | | | | 5,629,906 | Yes | Yes |
| | | | United Nations Development Programme | MO: UNDP | 01-Oct-08 | 30-Sep-11 | 8,013,606 | | | | 8,013,606 | Yes | Yes |
| | S | 5,140,487 | Ministry of Health El Salvador | Gov: MOH | 01-Oct-11 | 31-Dec-13 | 4,937,327 | | | | 4,937,327 | Yes | Yes |
| | S | 8,774,643 | United Nations Development Programme | MO: UNDP | 01-Oct-11 | 31-Dec-13 | 8,774,643 | | | | 8,774,643 | Yes | Yes |
| **Total** | | 64,939,176 | | | | | 40,212,211 | 7,356,731 | 9,078,545 | | 56,647,487 | | |
| Guatemala | 3 | 83,583,938 | World Vision International | CS/PS: NGO | 01-Dec-04 | 30-Sep-10 | 8,423,807 | 32,671,218 | | | 41,095,025 | Yes | Yes |
| | | | Humanist Institute for Cooperation with Development Countries (HIVOS) | CS/PS: NGO | 01-Oct-10 | 30-Sep-13 | | | 14,230,064 | | 14,230,064 | Yes | Yes |
| | | | Ministry of Health and Social Assitance of the Government of the Republic of Guatemala | Gov: MOH | 01-Oct-10 | 30-Sep-13 | | | 10,002,913 | | 10,002,913 | Yes | Yes |
| **Total** | | 83,583,938 | | | | | 8,423,807 | 32,671,218 | 24,232,977 | | 65,328,002 | | |
| Guyana | 3 | 34,109,447 | The Ministry of Health of Guyana | Gov: MOH | 01-Jan-05 | 31-Mar-13 | 8,881,686 | 11,269,186 | 13,958,575 | | 34,109,447 | Yes | Yes |
| | 8 | 3,917,696 | The Ministry of Health of Guyana | Gov: MOH | 01-Jan-10 | 31-Dec-11 | 3,917,696 | | | | 3,917,696 | Yes | Yes |
| **Total** | | 38,027,143 | | | | | 12,799,382 | 11,269,186 | 13,958,575 | | 38,027,143 | | |
| Haiti | 1 | 159,733,983 | Fondation SOGEBANK | CS/PS: PS | 01-Jan-03 | 31-Dec-10 | 25,601,804 | 83,192,711 | 14,802,527 | | 123,597,042 | No | Yes |
| | | | United Nations Development Programme | MO: UNDP | 01-Jan-03 | 31-Oct-05 | 6,140,386 | | | | 6,140,386 | No | Yes |
| | | | United Nations Development Programme | MO: UNDP | 01-Jan-11 | 30-Jun-12 | | | 29,996,555 | | 29,996,555 | No | Yes |
| | 5 | 18,821,754 | Fondation SOGEBANK | CS/PS: PS | 01-Jan-07 | 31-Dec-08 | 18,821,754 | | | | 18,821,754 | No | Yes |
| | 7 | 6,199,554 | Fondation SOGEBANK | CS/PS: PS | 01-Nov-08 | 31-Oct-10 | 6,199,554 | | | | 6,199,554 | Yes | Yes |
| **Total** | | 184,755,291 | | | | | 56,763,498 | 83,192,711 | 44,799,082 | | 184,755,291 | | |

Annex I. Continued

| Country | Round I | Amount approved (US$) | Principal recipient (PR) | Type of PR 5 | Program start | Program end | Amount of the proposal | | | | | Is donation active? | ART component? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Phase 1/ Currently approved funds (6) | Phase 2 | RCC 1 | RCC 2 | Total | Yes/no | Yes/no |
| Honduras | 1 | 68,679,840 | United Nations Development Programme | MO: UNDP | 01-May-03 | 30-Apr-08 | 13,044,967 | 13,482,925 | | | 26,527,892 | No | Yes |
| | | | Cooperative Housing Foundation, (d/b/a CHF International) | CS/PS: Oth | 01-May-08 | 30-Apr-11 | | | 23,642,366 | | 23,642,366 | No | Yes |
| | S | 30,214,530 | Cooperative Housing Foundation, (d/b/a CHF International) | CS/PS: Oth | 01-May-11 | 31-Dec-13 | 19,106,754 | | | | 19,106,754 | Yes | Yes |
| Total | | 98,894,369 | | | | | 32,151,721 | 13,482,925 | 23,642,366 | | 69,277,013 | | |
| Jamaica | 3 | 22,855,059 | The Ministry of Health of the Government of Jamaica | Gov: MOH | 01-Jun-04 | 31-May-09 | 7,560,365 | 15,294,694 | | | 22,855,059 | No | Yes |
| | 7 | 40,580,451 | The Ministry of Health of the Government of Jamaica | Gov: MOH | 01-Aug-08 | 31-Jul-13 | 15,809,330 | 15,633,530 | | | 31,442,860 | Yes | Yes |
| Total | | 63,435,510 | | | | | 23,369,695 | 30,928,224 | | | 54,297,919 | | |
| Mexico | 9 | 27,265,520 | Mexican Foundation for Health A.C. (FUNSALUD) | CS/PS: NGO | 01-Jan-11 | 31-Dec-12 | 23,726,807 | | | | 23,726,807 | Yes | No |
| Total | | 27,265,520 | | | | | 23,726,807 | | | | 23,726,807 | | |
| Multi-country Americas (CARICOM/ PANCAP) | 3 | 10,316,733 | The Caribbean Community Secretariat | Gov: Oth | 01-Nov-04 | 31-Oct-09 | 6,100,900 | 4,215,833 | | | 10,316,733 | No | Yes |
| | 9 | 14,458,896 | The Caribbean Community Secretariat | Gov: Oth | 01-Jan-11 | 31-Dec-12 | 11,190,617 | | | | 11,190,617 | Yes | Yes |
| Total | | 24,775,629 | | | | | 17,291,517 | 4,215,833 | | | 21,507,350 | | |
| Multi-country Americas (COPRECOS) | 9 | 17,599,674 | Cicatelli Associates Inc. | CS/PS: NGO | 01-Mar-11 | 28-Feb-13 | 12,507,802 | | | | 12,507,802 | Yes | No |
| Total | | 17,599,674 | | | | | 12,507,802 | | | | 12,507,802 | | |
| Multi-country Americas (CRN+) | 4 | 2,560,825 | Caribbean Regional Network of people living with HIV/AIDS (CRN+) | CS/PS: NGO | 01-Aug-05 | 31-Jan-09 | 1,947,094 | 613,731 | | | 2,560,825 | No | No |
| Total | | 2,560,825 | | | | | 1,947,094 | 613,731 | | | 2,560,825 | | |
| Multi-country Americas (Middle) | 4 | 3,980,675 | National Public Health Institute Mexico | Gov: MOH | 01-Oct-05 | 30-Sep-10 | 2,181,050 | 1,799,625 | | | 3,980,675 | No | No |
| Total | | 3,980,675 | | | | | 2,181,050 | 1,799,625 | | | 3,980,675 | | |
| Multi-country Americas (OECS) | 3 | 8,008,679 | The Organization of Eastern Caribbean States | MO: Oth | 01-Mar-05 | 31-Aug-10 | 2,553,861 | 5,454,818 | | | 8,008,679 | 3 | Yes |
| Total | | 8,008,679 | | | | | 2,553,861 | 5,454,818 | | | 8,008,679 | | |

Annex I. Continued

| Country | Round I | Amount approved (US$) | Principal recipient (PR) | Type of PR 5 | Program start | Program end | Amount of the proposal | | | | | Is donation active? | ART component? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Phase 1/ Currently approved funds (6) | Phase 2 | RCC 1 | RCC 2 | Total | Yes/no | Yes/no |
| Multi-country Americas (REDCA+) | 7 | 5,361,350 | Central American Integration System (SICA) and Secretariat of Central American Social Integration | CS/PS: NGO | 01-Oct-08 | 30-Sep-13 | 1,722,700 | 1,165,508 | | | 2,888,208 | Yes | No |
| | S | 6,528,349 | Central American Integration System (SICA) and Secretariat of the Central American Social Integration | CS/PS: NGO | 01-Jan-12 | 31-Dec-14 | 4,023,239 | | | | 4,023,239 | Yes | No |
| **Total** | | 11,889,699 | | | | | 5,745,939 | 1,165,508 | | | 6,911,447 | | |
| Multi-country Americas (REDTRASEX) | 10 | 3,865,798 | | | 20-Dec-11 | 19-Dec-22 | 3,865,798 | | | | 3,865,798 | Yes | No |
| **Total** | | 3,865,798 | | | | | 3,865,798 | | | | 3,865,798 | | |
| Nicaragua | 2 | 9,825,283 | NICASALUD Network Federation | CS/PS: NGO | 01-Mar-04 | 28-Feb-10 | 4,025,689 | 5,799,594 | | | 9,825,283 | No | Yes |
| | 8 | 23,359,081 | Nicaraguan Social Security Institute (INSS) | CS/PS: NGO | 01-Jan-10 | 31-Mar-12 | 23,359,081 | | | | 23,359,081 | Yes | Yes |
| **Total** | | 33,184,364 | | | | | 27,384,770 | 5,799,594 | | | 33,184,364 | | |
| Panama | S | 3,380,957 | Cicatelli Associates Inc. | CS/PS: NGO | 01-Jan-12 | 31-Dec-14 | 3,380,957 | | | | 3,380,957 | Yes | No |
| **Total** | | 3,380,957 | | | | | 3,380,957 | | | | 3,380,957 | | |
| Paraguay | 6 | 8,832,117 | Community Foundation Center for Development Information and Resources | CS/PS: NGO | 01-Jun-07 | 31-May-12 | 3,471,892 | 5,360,225 | | | 8,832,117 | Yes | Yes |
| | 8 | 6,519,817 | Community Foundation Center for Development Information and Resources | CS/PS: NGO | 01-Sep-09 | 31-Aug-14 | 4,735,224 | 1,784,594 | | | 6,519,817 | Yes | Yes |
| | 9 | 6,463,831 | Community Foundation Center for Development Information and Resources | CS/PS: NGO | 01-Aug-10 | 31-Jul-12 | 5,443,849 | | | | 5,443,849 | yes | Yes |
| **Total** | | 21,815,766 | | | | | 13,650,965 | 7,144,819 | | | 20,795,784 | | |

Annex I. Continued

| Country | Round 1 | Amount approved (US$) | Principal recipient (PR) | Type of PR 5 | Program start | Program end | Amount of the proposal | | | | | Is donation active? | ART component? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Phase 1/ Currently approved funds (6) | Phase 2 | RCC 1 | RCC 2 | Total | Yes/no | Yes/no |
| Peru | 2 | 21,347,134 | CARE International | CS/PS: NGO | 04-Nov-03 | 31-Dec-08 | 15,718,354 | 5,628,780 | | | 21,347,134 | No | Yes |
| | 5 | 12,867,465 | CARE International | CS/PS: NGO | 01-Sep-06 | 30-Sep-11 | 8,061,442 | 4,806,023 | | | 12,867,465 | Yes | Yes |
| | 6 | 32,669,809 | CARE International | CS/PS: NGO | 01-Oct-07 | 30-Sep-12 | 24,153,662 | 8,516,147 | | | 32,669,809 | Yes | Yes |
| | 10 | 4,344,113 | Peruvian Institute for Responsible Parenthood | CS/PS: NGO | 01-Jan-12 | 31-Dec-13 | 4,344,113 | | | | 4,344,113 | Yes | No |
| **Total** | | 71,228,521 | | | | | 52,277,571 | 18,950,950 | | | 71,228,521 | | |
| Suriname | 3 | 5,271,393 | Ministry of Health | Gov: MOH | 01-Feb-05 | 31-Jan-12 | 2,188,432 | 3,082,961 | | | 5,271,393 | Yes | Yes |
| | 5 | 3,838,706 | Ministry of Health | Gov: MOH | 01-Feb-07 | 31-Jan-12 | 2,395,000 | 1,443,706 | | | 3,838,706 | Yes | Yes |
| **Total** | | 9,110,099 | | | | | 4,583,432 | 4,526,667 | | | 9,110,099 | | |
| Uruguay | 10 | 3,800,876 | National Research and Innovation Agency | CS/PS: NGO | 08-Dec-11 | 07-Dec-22 | 1,542,703 | | | | 1,542,703 | Yes | No |
| | | | Ministry of Public Health | Gov: MOH | 15-Dec-11 | 14-Dec-22 | 2,258,173 | | | | 2,258,173 | Yes | No |
| **Total** | | 3,800,876 | | | | | 3,800,876 | | | | 3,800,876 | | |

Notes:
1. S: Single Stream Funding.
5. Type of PR:
- Civil Society/ Private Sector:
CS/PS: FBO (Faith-based Organization)
CS/PS: NGO (Nongovernmental Organization)
CS/PS: Oth (Other)
CS/PS: PS (Private Sector)
- Government:
Gov: MOH (Ministry of Health)
Gov: MOF (Ministry of Finance/Economy)
Gov: Oth (Other)
- Multilateral Organization:
MO: UNDP (United Nations Development Programme)
MO: Oth (Other)
-"Multicountry Americas (CARICOM/ PANCAP)" includes: Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname and Trinidad and Tobago
- "Multicountry Americas (COPRECOS)" includes: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela
-"Multicountry Americas (CRN+)" includes: Antigua and Barbuda, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago
-"Multicountry Americas (Middle)" includes: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama
-"Multicountry Americas (OECS)" includes: Antigua and Barbuda, Dominica, Grenada, Saint Kitts and Nevis, Saint Lucia, and Saint Vincent and the Grenadines
-"Multicountry Americas (REDCA+)" includes: El Salvador, Honduras, Nicaragua, and Panama

## PAHO Strategic Fund. Antiretroviral procurement by country, 2009-2011

| | Argentina* | Belize | | | Dominican Rep. | | | Ecuador | | | El Salvador | | | Guatemala | | | Honduras | | | Panama* | | Paraguay | | | Venezuela* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Antiretrovirals** | 2009 | 2009 | 2010 | 2011 | 2009 | 2010 | 2011 | 2009 | 2010 | 2011 | 2009 | 2010 | 2011 | 2009 | 2010 | 2011 | 2009 | 2010 | 2011 | 2009 | 2010 | 2009 | 2010 | 2011 | 2011 |
| 3TC(150mg) | | ■ | ■ | | | ■ | ■ | | | | | ■ | ■ | ■ | ■ | | | ■ | | | | | ■ | | |
| 3TC(10mg/ml) | | | | ■ | | ■ | | | | | | | ■ | | ■ | ■ | | ■ | | | | | | | |
| 3TC(30mg)+AZT(60mg) | | | | | | ■ | | | | | | | | | | | | | | | | | | | |
| 3TC(150mg)+AZT(300mg) | | ■ | ■ | | | ■ | ■ | | | ■ | | | ■ | ■ | | ■ | | | | ■ | | | ■ | ■ | ■ |
| 3TC(150mg)+d4T(30mg) | | | | | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | |
| 3TC(330mg)+TDF(300mg) | | | | | ■ | ■ | | | | | | | | | | | | | | | | | | | |
| 3TC(150mg)+d4T(30mg)+NVP(200mg) | | | | | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | | | | |
| 3TC(150mg)+d4T(30mg)+NVP(200mg) | | | | | ■ | | ■ | | | ■ | | | | | | | | | | | | | | | |
| ABC (20mg/ml) | | ■ | | ■ | | ■ | ■ | | | ■ | | | | ■ | ■ | ■ | | | | | | | | | ■ |
| ABC(300mg) | ■ | | | | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | | ■ | | | ■ | | ■ | ■ | | ■ | | ■ |
| ABC(600mg)+3TC(300mg) | | | | | | | | | | ■ | | | | | | | | | | | | | | | ■ |
| ATV (300mg) | | | | | ■ | ■ | ■ | | | | ■ | ■ | ■ | | | | | | | | | | ■ | ■ | ■ |
| AZT(100mg) | | | | | | | | | | | ■ | | ■ | | | ■ | | | | | | | | | |
| AZT(300mg) | | | | | | ■ | ■ | | | | | | ■ | ■ | ■ | | | | | | | | | | |
| AZT(50mg/5ml) | | | | | | | | | | | | | | | | | | | | | | ■ | | | |
| AZT(200mg/5ml) | | | | | | | | | | | | | | | | | | ■ | | | | | ■ | | |
| AZT(10mg/ml) | | | | | | | | ■ | ■ | ■ | | ■ | | | ■ | ■ | | | | | | | ■ | | |
| AZT(200mg/20ml) | | | | | | | | | | | ■ | ■ | | | | | | | | | | | | | |
| d4T(15mg) | | | | | | | | | | | | | | | | ■ | | | | | | | | | |
| d4T(30mg) | | | ■ | | | ■ | | | | | ■ | ■ | | | ■ | | | | | | | | ■ | | |
| d4T(10mg) | | | | | | | | | | | | | | | | | | | | ■ | ■ | | | | |
| ddl(125mg) | | | ■ | | | ■ | | | | | | ■ | | | | ■ | | | ■ | | | | | | |
| ddl(200mg) | | | | | | | | | | ■ | ■ | | | | | | | ■ | | | | | | | |
| ddl(250mg) | | | | | ■ | ■ | | | | | | | | | ■ | | | | | | | | | | |
| ddl(400mg) | | | | | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | | | | | | | | | ■ | | |
| DRV(300mg) | | | | | | | | | | ■ | | | | | | | | | | | | | | | |
| EFV(50mg) | | | | | | | | | | | | | | | ■ | ■ | | ■ | ■ | | | | | | |
| EFV(200mg) | | | | | | | | | | ■ | | ■ | ■ | ■ | | ■ | ■ | | | | ■ | | ■ | | ■ |
| EFV(600mg) | ■ | ■ | ■ | | ■ | ■ | | ■ | | ■ | ■ | ■ | ■ | | ■ | ■ | | ■ | | | ■ | ■ | ■ | | ■ |
| FPV(700mg) | | ■ | ■ | | | | | | | | | | | | | | | | | | | | | | |
| LPV(200mg/r50mg) | | | | | ■ | ■ | ■ | ■ | | | ■ | ■ | ■ | | ■ | ■ | | ■ | | | | ■ | ■ | ■ | ■ |
| LPV(80mg/r20mg) | | ■ | ■ | | | | ■ | | | | ■ | ■ | | ■ | ■ | ■ | | ■ | | | | | ■ | ■ | |
| IDV(400mg) | | ■ | ■ | | | | | | | | | | | | | | | | | | | | | | |
| NVP(200mg) | ■ | | | | ■ | | | | | | ■ | | | | | | | | | | | | | | |
| NVP(10mg/ml) | | | | ■ | | ■ | | | | | | ■ | | | | | | | | | | | | | |
| RAL(400mg) | | | | | | | | | ■ | ■ | | | | | | | | | | | | | ■ | | |
| RTV(100mg) | | | | | | ■ | | ■ | ■ | | | | | | | | | | | | | | | | ■ |
| SQV(500mg) | ■ | | | | | | | ■ | | ■ | | | | ■ | ■ | ■ | | | | | | | | | |
| TDF(300mg) | | | | | | | | | | | | | | ■ | | | | ■ | ■ | | | | | | ■ |
| TDF(300mg)+FTC(200mg) | | ■ | | | | | | | ■ | ■ | | | | | | ■ | | | | | | | ■ | ■ | |

* Countries that have carried out ARV procurements for only 1 or 2 years

# Acronyms

| | |
|---|---|
| ART | Antiretroviral treatment |
| ARV | Antiretroviral |
| AZT | Zidovudine |
| d4T | Stavudine |
| FDC | Fixed-dose combination |
| IDV | Indinavir |
| LAC | Latin America and the Caribbean |
| NFV | Nelfinavir |
| SF | Strategic Fund |
| STI | Sexually transmitted infections |
| TB | Tuberculosis |
| TDF | Tenofovir |

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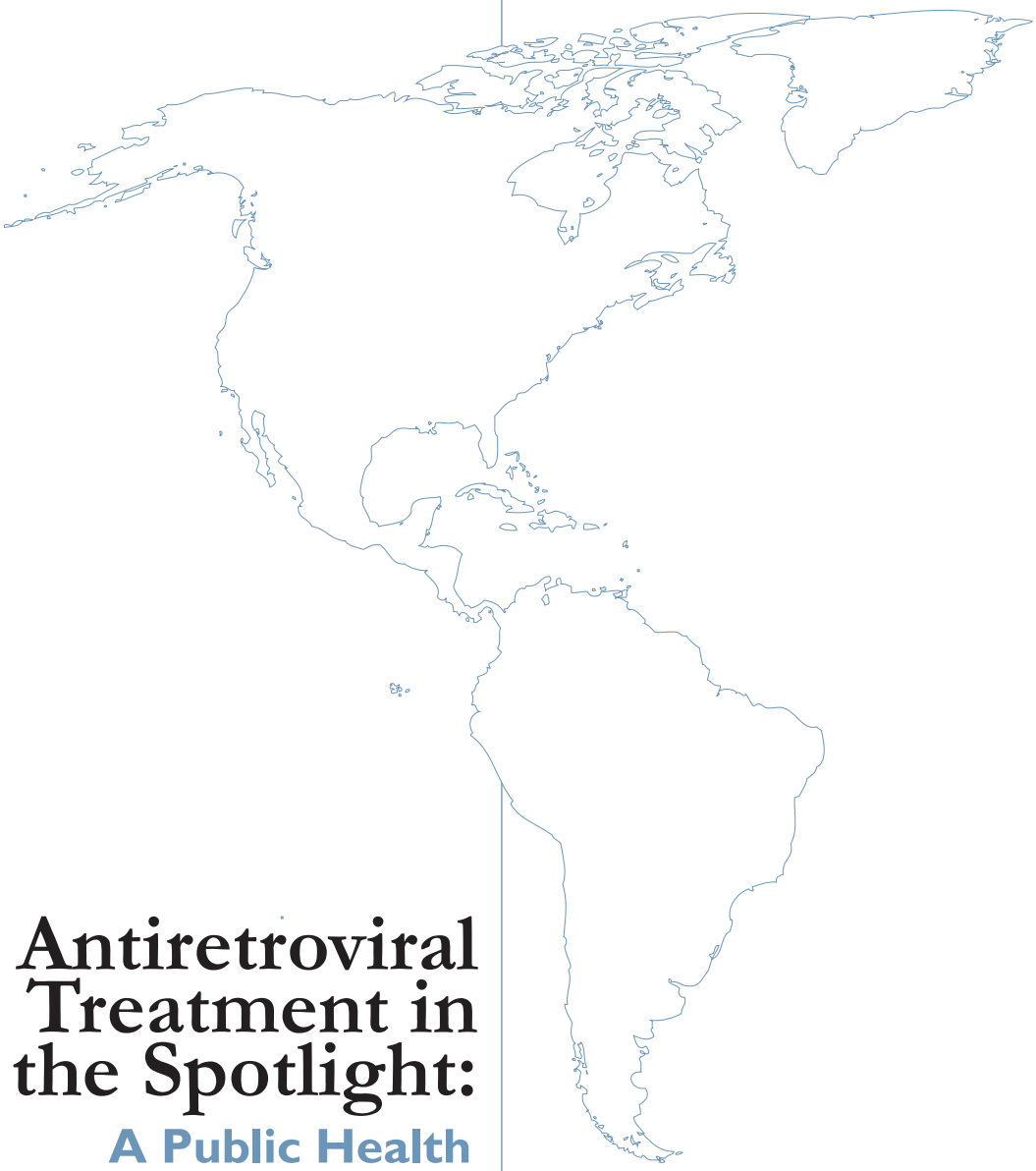

# Antiretroviral Treatment in the Spotlight:

## A Public Health Analysis in Latin America and the Caribbean

2012

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