

Challenges Posed by the HIV Epidemic in Latin America and the Caribbean 2009



October 2009

PAHO Library Cataloguing-in-Publication Data:

Challenges Posed by the HIV Epidemic in Latin America and the Caribbean 2009.

Priority interventions: HIV/AIDS, Universal access, Latin America

1. Acquired immunodeficiency syndrome – prevention, care and treatment. 2. HIV response. 3. Challenges. 4. Universal access. 5. Most vulnerable populations. 6. PAHO, UNICEF, UNAIDS

ISBN 978-92-75-13052-0

(NLM classification: WC 503.4)

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Printed in Lima, Peru.

TABLE OF CONTENTS

Contributions	9
Preface	11
Introduction	
Universal Access: Progress and Challenges Ahead in the Response to HIV in Latin America and the Caribbean	13
Chapter 1	
by Carlos F. Cáceres	
Men who have Sex with Men and the HIV Epidemic in Latin America and the Caribbean	19
Chapter 2	
by Diana Rossi	
HIV among People Who Use Drugs in Latin America and the Caribbean.....	29
Chapter 3	
by Francisco I. Bastos, Alexandra Angulo-Arreola, and Mônica Malta	
Sex Work and HIV in Latin America and the Caribbean: Challenges and Responses	41
Chapter 4	
by Arachu Castro	
Prevention of Mother-to-Child Transmission of HIV and Syphilis in Latin America and the Caribbean	55
Chapter 5	
by Jesús M. García-Calleja, Marco Vitoria, and James Fitzgerald	
Antiretroviral Therapy in the Latin America and Caribbean Region: An Overview and Challenges for the Future	75
Chapter 6	
by Giovanni Ravasi and Noreen Jack	
HIV Drug Resistance in Latin America and the Caribbean	87
Annexes	
List of Tables	95
List of Figures	95
List of Boxes	96
List of Acronyms	96

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PREFACE

This report comes more than three years after Latin America and Caribbean countries committed to the target of universal access to HIV prevention, treatment, care, and support, as set forth by the United Nations General Assembly High Level Meeting on HIV/AIDS in 2006. PAHO, UNICEF, and UNAIDS present to you *Challenges Posed by the HIV Epidemic in Latin America and the Caribbean 2009* to contribute to making progress towards this target. The report focuses on the epidemiological characteristics of HIV in the region and provides the reader with a discussion of major challenges still faced by countries as they move towards scaling up their national AIDS programs and services. The report also suggests areas in which a critical mass of knowledge, greater emphasis, and focused action are still required to overcome these challenges and help support countries to reach their national universal access targets.

By presenting evidence, discussing challenges, and providing recommendations for policy and programming, the report prioritizes several overarching issues that have been selected based on epidemiological and programmatic significance to guide public health action for HIV control in the region. While this publication does not substitute regional epidemiological reports and does not provide an exhaustive overview of all challenges and priorities that may exist, the report discusses ways to make use of universal access as the compass that guides efforts to reduce the number of new infections, to break the cycle of the epidemic, and to provide comprehensive treatment and care to people with HIV. By providing input on current gaps and pointing to the efforts more likely to succeed, the report contextualizes the priority areas laid out in the recently released *Outcome Framework: Joint action for Results*—which represents UNAIDS’ strategic vision across the UNAIDS Secretariat and its ten United Nations Cosponsors—to guide its work over the next two years, to reenergize the global, regional, and national commitment to universal access, and to act as a midway point to the Millennium Development Goals.

PAHO/WHO, UNICEF, and UNAIDS regional offices publish this report at a time when extraordinary strategic thinking and decisions are urgently needed to further strengthen and sustain the HIV response in Latin America and the Caribbean as we face multiple global challenges of political and economic nature. We reaffirm our commitment to work side by side with stakeholders from all sectors to scale up the response to AIDS in the region. We are confident that this document will contribute to informing and guiding future efforts. Our Agencies take this opportunity to renew their commitment to provide political and technical support for countries in Latin America and the Caribbean in achieving our common highest aspiration: a world free of HIV.

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Introduction

Universal Access: Progress and Challenges Ahead in the Response to HIV in Latin America and the Caribbean

Overview of the HIV Epidemic and Response in Latin America and the Caribbean

For over 25 years, the HIV epidemic in Latin America and the Caribbean (LAC) has been shaped by individual and collective social factors and continues to disproportionately afflict the most vulnerable and at greatest risk of infection: men who have sex with men (MSM) and their male and female partners, transgender people, sex workers (SWs), the incarcerated, injecting drug users (IDUs) and their partners, youth in difficult circumstances (adolescent girls, street youth, and out of school youth), and the offspring of these populations—via mother-to-child-transmission (MTCT). Vulnerability to HIV is often amplified by ethnicity, skin color, and disability, and thrives in contexts of poverty, social inequality, violence, and political instability. While there exists great variability among vulnerable populations in terms of geographical location and rates of transmission, most experience institutional, social, and financial neglect.

The increasing trend in HIV prevalence in the region is a combination of longer life expectancy due to increased access to highly active antiretroviral treatment (ART) and the continued occurrence of new infections, although current epidemiological data show that the HIV epidemic has stabilized in some LAC countries [1]. New 2008 regional HIV estimates are expected to be published in the UNAIDS 2009 Epidemiological Update in December 2009 around World AIDS Day and several countries are currently working on their 2008 national specific estimates.

Across the LAC region, unprotected sex constitutes the main mode of HIV transmission, with disproportionate impact on the most vulnerable populations. Different transmission patterns are observed throughout the region. In Latin America, there are high HIV transmission rates among MSM and those with whom they have sex or share needles, and to a lesser extent among injecting drug users. In the Caribbean, unprotected heterosexual intercourse is the main driver of HIV transmission, while unprotected sex between men is also a significant factor in several epidemics. Unprotected anal sex is still frequent among MSM, and a significant number of new infections are expected as a result. Despite the high HIV transmission among MSM, oftentimes HIV responses unduly shift attention away from MSM groups.

HIV transmission as a result of injecting drug use is prevalent in several South American countries, in the border area between Mexico and the United States, in Bermuda, and in Puerto Rico. Overall in the region, this mode of transmission is accounting for a smaller number of new infections than in previous years. In other countries, the use of crack cocaine and other non-injection drugs constitutes a prominent vulnerability factor for HIV.

Women, and specifically young women and those living in poor socioeconomic conditions, are a critical vulnerable group in Latin America and the Caribbean. The proportion of women among people with HIV in the region increased rapidly during the 1990s and in the last decade has stabilized at around 34 percent of the total population with HIV in Latin America and 48 percent in the Caribbean [1]. Overall, women most often become infected through sexual intercourse with their steady male partners—which reflects upon the role of socioeconomic and gender inequality and the biological vulnerability of women as major driving forces of the epidemic. This vulnerability in turn increases infant risk of acquiring HIV *in utero*, at birth, or during breastfeeding. Despite relatively high prenatal care coverage in most LAC countries, coverage with prevention of mother-to-child transmission (PMTCT) of HIV remains low: the estimated percentage of pregnant women with HIV who received antiretroviral (ARV) prophylaxis or therapy in 2008 was 54 percent in Latin America and 52 percent in the Caribbean [2]. As a result, MTCT still remains a threat for thousands of children in the region [3]. The global 2010 target is a 50 percent reduction in the proportion of infants newly infected with HIV compared with 2001 estimates, and proposed targets include 80 percent coverage for services that integrate PMTCT, HIV testing, treatment, and counseling into prenatal care, as well as comprehensive longitudinal care and treatment for women after giving birth [4].

Several countries in Latin America and the Caribbean are currently providing universal access to ART—defined as coverage of 80 percent or more. Strong improvements in access to ART in Argentina, Chile, Costa Rica, and Brazil [1] have followed determined political leadership and mobilization around treatment access. Nevertheless, of the third of LAC countries that have reported target data set by UNGASS, almost half documented less than 50 percent coverage for treatment services in 2007-2008. Several Caribbean countries are notably behind in reaching their treatment targets.

Barriers to achieve behavioral changes, particularly among the most at risk groups, continue to hinder prevention efforts. Just over half of countries are either reporting or setting prevention targets and few have set goals for increasing condom use, promoting harm reduction, or improving testing and prevention coverage. Additionally, given the high levels of sexual transmission, low levels of condom use and inadequate distribution of condoms are causes for concern.

Overarching Challenges to Achieve Universal Access in Latin America and the Caribbean

In recognition of the alarming global epidemiological trends and the deficient global response towards HIV, countries worldwide committed in 2006 to a comprehensive effort to scale up existing HIV programs with the dual aim of reaching universal access to prevention, care, and treatment by 2010 (see Box 1) and meeting the targets outlined by the Millennium Development Goals (MDGs). Specifically, they address the objectives of halting and reversing the HIV epidemic, improving maternal health, and reducing child mortality. Driven by the urgency to achieve the MDGs, innovation, sustained commitment, and resources are needed to overcome implementation bottlenecks and to ensure the impact and sustainability of national strategies.

Box 1: Declaration of Commitment on HIV/AIDS 2001

At the first-ever Special Session on HIV/AIDS of the United Nations General Assembly (UNGASS) in 2001, UN Member States strengthened the response to Millennium Development Goal 6 by unanimously endorsing the Declaration of Commitment on HIV/AIDS. This Declaration included time bound pledges to generate measurable action and concrete progress in the AIDS response. At the five-year review of implementation of the Declaration of Commitment in 2006, UN Member States reaffirmed the pledges made at the 2001 Special Session. Also, in the Political Declaration on HIV/AIDS, they committed to taking extraordinary action to move towards universal access to HIV prevention, treatment, care, and support by 2010.

Although Latin American and Caribbean countries have committed to reaching universal access by 2010, progress is varied. This publication, *Challenges Posed by the HIV Epidemic in Latin America and the Caribbean 2009*, seeks to explain the cross-national differences in progress and to contextualize the country-specific obstacles that impede the achievement of targets for universal access. Throughout the report, five overarching challenges that need to be addressed are identified.

Challenge 1: Financial commitment to continuously respond to HIV

The first challenge relates to ensuring financial sustainability from national and international sources in order to continue to support gains and to address upcoming needs of national AIDS responses. Scarce financing, weak health systems, high cost of ARVs (specifically of second- and third-line drugs), shortages of medications and equipment, and insufficient human resources capacity are constraints that affect low- and middle-income countries in Latin America and the Caribbean. LAC countries need to secure a significant share of resources from their own national budgets and from funding available through global financing mechanisms, specifically from the Global Fund to Fight AIDS, Tuberculosis, and Malaria (GFATM). In addition, the region must generate evidence to demonstrate the long-term benefits, the cost-effectiveness, and the future savings that could be made by making immediate investments.

Challenge 2: Stigma, discrimination, and human rights violations

The second challenge relates to the limited advances in the promotion and defense of HIV-related human rights and gender equity, and the widespread stigma and discrimination in Latin America and the Caribbean. Human rights violations, stigma, and discrimination are issues that have consistently precluded progress in addressing HIV in the region and have impaired the effectiveness of the response to HIV. A culture of fear and silence created around this response has undermined efforts for HIV prevention, care, and treatment. This sort of environment promotes intolerance, fosters ignorance, creates doubts about prevention and self-protection, and prevents the dissemination of basic facts about HIV transmission and prevention.

Two major efforts need to be undertaken. First, LAC governments need to make legal systems more respondent by removing punitive laws, policies, and practices that block effective responses to HIV—including in the areas of sex work, travel restrictions, homophobia, and criminalization of HIV transmission—, by conferring protection from violence—including gender-based violence—, by accepting diversity, by enforcing the right to employment for people with HIV, and by creating policies on illicit drug use that are consistent with HIV prevention strategies and that involve harm reduction interventions. Second, LAC countries need to generate data related to HIV and human rights violations and systematically record and notify how stigma and discrimination affect the lives of people with HIV and their families and partners. Better knowledge, reporting, and dissemination of evidence will lead to improved programs, advocacy, and awareness.

A greater leadership and decision-making role for organized civil society in the response to HIV should be ensured to support human rights and address stigma and discrimination. Having much to offer, many networks of people with HIV that exist in LAC will be indispensable in addressing stigma and discrimination and in reaching the universal access targets in collaboration with governments—and should be better represented in national decision-making processes and coordination mechanisms (including Global Fund Country Coordinating Mechanisms). Bringing together national representatives of people with HIV, youth, women, and organizations representing sexual minorities—such as lesbians, gays, bisexuals, and transgender—to discuss HIV issues within national and local agendas is another necessary step. National consultations on universal access have given countries an opportunity and a platform to start such a dialogue, and have led to a regional conference of sex workers on how to scale up universal access and ensure the protection of their human rights.

Challenge 3: Scale up HIV prevention

To reduce the number of new infections, there exists an urgent need to address prevention needs and to focus the response on the most at risk and vulnerable groups in Latin America and the Caribbean—a priority recognized by most countries in the region. Strengthening prevention where transmission is most likely to occur is critical to reversing the HIV epidemic, reducing its impact on the population, and cutting the cost of HIV care and treatment. In the LAC region, the challenge of reducing new infections requires countries to increase commitment and resources to scale up these prevention interventions, better focus prevention efforts, and expand pre- and post-counseling and testing services. It also involves strengthening access to prevention, care, and treatment—regardless of sex, age, sexual orientation, socioeconomic status, geographical location, or beliefs—to create an environment capable of reaching the most unreachable population groups.

Challenge 4: Health sector response and access to HIV care and treatment

Ensuring equity in the distribution of health care for all in Latin America and the Caribbean poses a significant challenge to the region. Because primary health care (PHC) has been recognized as one of the key components of an effective and equitable health system [5] and delivery of AIDS comprehensive care has a broad impact on health care in general, decentralizing and integrating HIV services into the health system will ensure broader and more sustainable returns. PHC strengthening is the most effective strategy for including the most vulnerable groups and hard to reach populations.

Good examples include the integration of PMTCT with the prevention of congenital syphilis—which also leads to improved overall maternal and neonatal health care. The integration of PMTCT into sexual and reproductive health programs leads to improved access to health care for women, including maternal and neonatal health. The harmonization of services for tuberculosis (TB) and HIV is another good example. Because one in four tuberculosis deaths worldwide is HIV-related [6], it is essential to scale up the integration of HIV and TB health care services—instead of operating the two services as separate programs—so as to reduce the burden of TB among people with HIV. Efforts should include increased funding, better trained staff, research aimed at improving TB screening and prevention among people with HIV, greater advocacy and public awareness initiatives on TB and HIV co-infection, and collaboration between government and civil society to ensure that government actions are supported by communities. Although there has been an increase in HIV testing among people with TB, the WHO *Global Tuberculosis Control 2009* report states that only 2 percent of people who know they have HIV have been screened for TB [6]. Given that only 20 percent of the estimated 33 million of people with HIV know their status [1], this number is alarmingly small.

A challenge to HIV care and treatment is the increasing demand and high cost of first-, second-, and third-line ARVs, of HIV diagnosis, and of medications for the prevention and treatment of opportunistic infections associated with HIV. Furthermore, countries will have to be ready to provide early initiation of ART as new research points toward the need to initiate treatment earlier. Treatment guidelines for resource-limited settings are under revision and updated recommendations are expected during 2009.

Challenge 5: Use strategic information and research on HIV

The fifth overarching challenge is the need to use strategic information and research to optimize outcomes and impact. The lack of information and underutilization of available data renders prevention and treatment strategies ineffective, and is a topic recurrent to all the chapters in the report. There are four specific aspects of great importance to overcome this challenge. First, countries need to improve second generation HIV surveillance and strengthen information systems with the clear purpose of systematically collecting reliable data and conducting outcome-driven analysis, interpretation, and dissemination of data. The second priority is to translate this information into public health policies and programmatic action, with a special emphasis on behavioral surveillance of trends in key populations to prioritize efforts where HIV transmission occurs. Third, countries need to strengthen their monitoring and evaluation systems to collect strategic data and report on successful prevention, care, and treatment strategies. In general, there is a lack of data on prevention, and this is particularly true for the most at risk populations. And fourth, Latin American and Caribbean countries and regions should undertake and promote operational research, including research of innovative and appropriate strategies to reach those most at risk for HIV and who have less access to health care and to economic opportunity.

Introduction to Chapters

Challenges Posed by the HIV Epidemic in Latin America and the Caribbean 2009 reflects the ongoing collaboration between PAHO, UNICEF, and UNAIDS to respond to HIV in the region. To provide the social and epidemiological contexts of HIV in Latin America and the Caribbean, we commissioned some of the chapters to leading experts who work in Latin America and the Caribbean in the areas of men who have sex with men, drug use, sex work, and mother-to-child transmission.

Chapter 1 provides an overview of the epidemic among men who have sex with men and discusses the magnitude of the epidemic among MSM and transgender people, as well as the social and individual factors that increase their vulnerability to HIV. This chapter also discusses the emergent concern of transmission among transgender populations, a group within which HIV is becoming more prevalent on a daily basis and where, among other issues, all factors that usually increase vulnerability among MSM—such as stigma, discrimination, and disapproval—are amplified.

Chapter 2 focuses on the relationship between HIV and injecting drug use and on practices that increase the individual and collective risk of infection, and brings attention to the growing role of non-injecting drug use on the epidemic. This chapter also addresses HIV co-infection with hepatitis and the associations of drug use with sex work.

Chapter 3 discusses female and male sex work in relation to HIV and the link between sex work, substance abuse, and other social conditions that contribute to vulnerability—such as poverty, marginalization, and violence.

Chapter 4 discusses how high prenatal care coverage in the region provides a critical opportunity for scaling up interventions for preventing mother-to-child transmission of HIV and congenital syphilis. This chapter also shows why integrating both HIV and syphilis prevention, diagnosis, and treatment into routine maternal and child health care is an urgent public health priority.

Chapter 5 describes the progress made towards universal access of antiretroviral treatment achieved in LAC and the variation in coverage among countries, and discusses key challenges such as the increasing demand and cost of ART and of medications for preventing and treating opportunistic infections, and the need to both improve medication efficacy and strengthen laboratory infrastructure.

Chapter 6 addresses the emergence and transmission of HIV drug resistance in Latin America and the Caribbean and the threat it poses to ART efficacy and to prevention.

The overarching challenges presented in the six chapters need to be addressed urgently by governments and communities with proper policies, planning, financing, and targeted interventions to achieve universal access, which offers a tremendous opportunity to alter the course of the HIV epidemic and to reach the MDGs. Reaching universal access, guided by the UNAIDS Outcome Framework [7], demands unwavering support for the prevention, care, and treatment targets and requires surmounting obstacles to the attainment of human rights, equality, and knowledge. Ensuring the sustainability of

national AIDS programs well beyond this date, as well as addressing future needs for the coordination of national responses, requires continuous financial prioritization from national and international sources to cover current and future needs based on evidence and results. Creating an enabling environment provides an opportunity for all people to be protected from HIV and to access the services and programs they need. In addition, it is critical that research capacity be strengthened in Latin America and the Caribbean and that the research of innovative and appropriate strategies to reach those most at risk be prioritized. The success of these initiatives requires stronger political support and proper allocation of funds—even in the face of the current global financial crisis—and demands a sustainable and lasting response to the HIV epidemic for future generations.

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Chapter 1

Men who have Sex with Men and the HIV Epidemic in Latin America and the Caribbean

Introduction

In the last few years, a reemergence of international interest in the role of men who have sex with men (MSM) in the global HIV epidemic has become apparent. At least three recently published reviews and editorials have underscored the importance of refocusing prevention work on these populations in more sensitive ways [1-3]. This most likely results from a combination of reasons including: (a) alarming data from high-income countries where a new wave of infections among MSM is occurring, particularly among those of younger age [2]; (b) increasing numbers of studies from low- and middle-income countries, where the high burden of HIV among MSM is a common finding [1]; and (c) a higher recognition of the role of social exclusion and discrimination in determining difficult access to adequate HIV prevention and care and, more generally, in increasing vulnerability to HIV among men who regularly or occasionally have sex with other men [4], regardless of their self and social identification. Such increased attention has resulted in the emergence of new settings for discussion and policy making: new publications, global and regional fora and networks, the possibility of addressing this issue more broadly within the United Nations (UN) system, and also new initiatives among funders.

By contrast to most low- and middle-income countries around the world, MSM in Latin America and the Caribbean (LAC) were recognized as a highly vulnerable population since early on in the epidemic—a result of the high concentration of HIV among MSM in most of the region [5]. Studies suggest a prevalence of over 5 percent in the majority of the largest cities: 7 percent in Buenos Aires, 13 percent in Asunción and in other cities in Paraguay, 17 percent in Montevideo, 20 percent in Bogotá, 21 percent in La Paz and Santa Cruz, and 22 percent in Lima [6].

Around 50 percent of all infections in LAC result from unprotected sex between men [7]. According to available data, this proportion is higher in Chile, Ecuador, Mexico, and Peru, and lower in Central America and the Caribbean. However, a more careful analysis of information from Central America and the Caribbean suggests that the MSM epidemic may be underestimated [7], particularly since a high proportion of MSM are also sexually active with women and/or are united to women—an important fact that is often overlooked [8-11]. Although HIV gradually expands from MSM who also have sex with women to their female partners or from MSM who use injection drugs to those with whom they share needles, public policy in the LAC region should not detract attention from the MSM demographic [12].

Methodological Limitations and Data Availability

Research and surveillance on HIV and male same-sex relations face many methodological and social challenges. While the use of the category MSM underscores the common aspects of biological males having sex with other biological males—regardless of sexual and gender identities—it also overshadows their diversity and hampers adequate planning for prevention and care [13]. Moreover, the term 'MSM' has at least two additional, more specific, yet opposite uses which contribute to misinterpretation: (a) some planners use MSM as a technical descriptor of gay or homosexually identified men; (b) others use MSM to refer only to non-gay identified men.

In much of the world, most MSM also have sex with women, and the low prevalence of condom use among MSM during sex with both their male and female partners may lead to an underestimation of transmission from men to their female partners [14]. Another difficulty stems from the fact that HIV prevalence data are usually estimated from samples of MSM selected from high-risk sexual networks, and therefore may not represent the larger MSM population [15]. Similarly, the existence of male-to-female transgender persons implies the use of a more complex framework to describe male-to-male sex, with consequences for the ways in which questions on sex may be asked and interpreted in surveys; and this is all the more important given the much higher HIV prevalence observed among transgendered persons [15]. Moreover, legal

frameworks that criminalize same sex behavior or foster homophobia, discrimination, and human rights violations not only pose particular challenges for the scaling up of interventions and services towards universal access, but for the validity of surveillance and research as well [16].

While Latin America has produced a sizable amount of data about MSM populations over the past two decades [15], the generation of quality data has declined in the past few years except for a few countries [17]. Conversely, data on MSM from the Caribbean—except for the Dominican Republic and Cuba—remain as scarce as before. Existing information is limited and reflects a poor understanding of these populations, and much of collected data remain underutilized due to a lack of systematic analysis—particularly with regard to behavioral variables.

Men Who Have Sex with Men, Who are They and How Many are There?

The social organization of male same-sex sexuality in Latin America and the Caribbean

A broad literature has described the social organization of sexual practices among biological males in Latin America (including the Spanish-speaking Caribbean), regardless of sexual and gender identities [18-21]. Generally speaking, male-male sexuality covers a broad range of social arrangements which may coexist in any particular location. In arrangements usually associated with higher educational levels and greater assimilation of cultural views coming from the Global North, sociomedical categories of sexual orientation—such as homo or bisexual—and alternative sexual cultures—gay and queer—are predominantly seen among MSM who simultaneously show sexual role versatility—who assume both insertive and receptive roles in penetrative sex. A significant proportion of men in these settings, however, are behaviorally bisexual men who identify themselves heterosexually or bisexually, and choose to pass as heterosexual and to conceal their encounters with other men. Some of the latter may be men who decide to conform to the heterosexual norm due to strong family or peer pressure, while others may be men who choose to explore sex with other males without questioning their heterosexual family arrangements [15]. These men are not a regular component of gay networks and are not willing to be targeted by health services that are oriented towards MSM.

In other contexts, male-male relationships reflect a gender-based pattern where a masculine partner plays the insertive role with a receptive partner. The insertive partner usually identifies as heterosexual, often has a female partner and does not see his sexual activity with feminine gay men and travesties as posing a risk to his masculinity, especially if pecuniary compensation is obtained [22, 23]. The receptive partner, conversely, often identifies as a feminine gay man, a *travesti*, or a transgender [24, 25]. Once a stereotype of homosexuality, *travesti* lifestyles are at present considered an expression of gender identity. Given the emergence of a new political identity of this group—as transgender, or simply *trans*—they are, and demand to be, regarded as a separate group outside the label of MSM.

Studies about sexual diversity in the English-speaking Caribbean are, conversely, almost non-existent—reflecting the still prevailing assumption that this group is very small in that region. A similar assumption in Sub-Saharan Africa, largely derived from the stigma of homosexuality as a “Western” practice or a vice, prevented the study of MSM populations and their HIV epidemics for a long time until their importance became apparent [26].

While these sexual cultures are evolving quickly, particularly after the advent of the internet, traditional and modern patterns co-exist in the region, and their importance should not be underestimated. Now, the fact that only a minority of MSM self-identify—or are socially identified by others—as part of a non-heterosexual constituency is a key obstacle for HIV prevention strategies oriented for MSM that are channeled only through gay community networks. The large number of MSM who may, occasionally and secretly, have sex with other men while regularly living a heterosexual life, may be completely overlooked by prevention efforts. This should be carefully considered by prevention programs since reaching non-gay identified MSM is both challenging and necessary to offer a comprehensive response in epidemics concentrated among MSM [27].

Estimating the numbers of men who have sex with men

While estimating the population size of adult males who have sex with other males is an important epidemiologic and demographic question, population-based studies such as demographic and health surveys have overlooked this enquiry. Table 1.1 shows a few recent studies conducted in 2003-2007 that address this concern. Responses to this question are

likely to differ according to the period of reference—lifetime vs. last *n* months—or sexual practice—oral vs. anal vs. any sexual practice. In Latin America, reported lifetime prevalence among adult males of any sexual practice with other males cover broad ranges, between 3 and 20 percent, while previous-year figures for this indicator vary between 1 and 14 percent. According to a review which covered a longer period [15], lifetime prevalence ranged from 6 to 20 percent, while prevalence for the previous year was roughly half of that figure (6 to 7 percent). In either case, such figures suggest that lifetime same-sex sexual activity among men is not a rare occurrence. However, these studies did not inquire about sexual identity.

Table 1.1: Proportion of males who report having sex with other males in Latin America and the Caribbean, 2003-2007

	Number of studies and range of prevalence of sex with men, ever	Number of studies and range of prevalence of sex with men, previous year	References
Latin America (pooled data)	4 (3-15%)	2 (1-14%)	[8-11]
Argentina	1 (4%)	NA	[10]
Peru	2 (15%)	NA	[8,11]
Brazil	1 (10.6%)	NA	[9]
Caribbean	NA	NA	

NA: Not available

Men who have sex with men and their relationships and sexual practices with women

Studies exploring heterosexual practices among men who have sex with men show how misleading the presumption that MSM have exclusively homosexual practices may be. Consistently, according to country data, between one and two thirds of MSM reported ever having sex with women, with lower figures for the past two months. As shown in Table 1.2, a sizable proportion of MSM reported being married to women. Again, these estimations provide a basis for considering male same-sex sexual activity not as the definition of a distinct population, but as a characteristic of many men who are socially recognized as part of the population at large.

Table 1.2: Heterosexual sex and relationships among MSM in Latin America and the Caribbean, 2003-2007

	Prevalence of heterosexual sex among MSM, ever	Prevalence of heterosexual sex among MSM, last year	Prevalence of marriage among MSM	References
El Salvador	34%	31.4%	1.7%	[28-32]
Nicaragua	32%	20.5%	10.1%	[28-32]
Peru	34%	29%*	NA	[33]
Dominican Republic	78%	NA	41%	[34]

*Last 3 months.

NA: Not available

Table 1.3 summarizes HIV prevalence estimates for MSM and transgendered persons by country. Because there is wide variation both in prevalence figures and in the number of studies across countries, country-specific estimates are provided. Overall, the prevalence of HIV among transgender people is higher than among MSM, which indicates the increased risk and marginalization of this group. Only one study, conducted in Peru in 2002, reports HIV incidence among MSM who engage in high-risk practices at 5.1 cases (95 percent, CI: 3.1 to 8.3) per 100 person-years observed [35].

Table 1.3: Prevalence of HIV among MSM and transgender people in Latin America and the Caribbean, 2003-2007

	Number of studies and range of prevalence of HIV among MSM	Number of studies and range of prevalence of HIV among transgender	References
Argentina	5 (9 - 51%)	NA	[36-40]
Bolivia	1 (21%)	NA	[38]
Colombia	1 (19.7%)	NA	[38]
Mexico	1 (15%)	NA	[41]
Paraguay	1 (13%)	NA	[38]
Peru	3 (9.6 - 22.3%)	1 (32%)	[33, 42, 43]
Uruguay	1 (22%)	NA	[38]
Central America	1 (8-15%)	1 (24%)	[32]
Dominican Republic	1 (11%)	NA	[34]

NA: Not available

Table 1.4 shows prevalence estimates of condom use reported by MSM, such as condom use at last anal sex with a man, consistent condom use for anal sex with a man during the last year, and never having used a condom with a man. Roughly, between 40 and 60 percent of MSM report consistently using condoms for anal sex with male partners, of which—when the distinction is made—higher- and lower-end estimates refer to casual and steady partners, respectively. These figures suggest that prevention efforts among MSM based on condom promotion have been partially successful, but that there is still room for improvement and likely also for focusing on the sustainability of preventive practices—given global trends towards lower condom use among MSM. The figures also show that MSM, as other men, make the distinction between regular and casual partners—which reflects that emotional ties and trust often justify the taking of risks among many MSM. Prevention efforts should consider these facts by not only condemning the lack of condom use with certain partners, but also recognizing the agency of gay cultures in the development of complementary prevention strategies. Examples of such negotiated safety practices have been described mainly in Australia [44, 45]. Moreover, the trend towards lower condom use observed among MSM in high-income countries [46] should also support the surveillance of sexual practices among MSM in the LAC region to assess whether this trend will take place and why, and to develop creative responses to it.

Table 1.4: Prevalence of condom use in Latin America and the Caribbean, 2003-2007

	Condom use last anal sex with a man (%)	Consistent condom use for anal sex with men, last year (%)	Never used condoms during sex (%)	References*
Argentina	91	NA	NA	[47]
Central America	47 (steady partner) 61 (casual partner) 47-83	NA	NA	[32, 47]
Chile	29	NA	NA	[47]
Colombia	80	NA	NA	[47]
Ecuador	63	NA	NA	[47]
Mexico	79	64	24	[41, 47]
Panama	86	NA	NA	[47]
Peru	54 (steady partner) 56 (casual partner) 47	NA	NA	[33, 42, 43, 47]
Cuba	55	NA	NA	[47]
Dominican Republic	77-79	54	NA	[34, 47]
Trinidad and Tobago	47	NA	NA	[47]

*Estimates from reference [1] in this table are based on UNGASS Indicator 19, year 2008 (Annex 2, page 319).

NA: Not available

Table 1.5 shows data for other sexually transmitted infections (STIs). In Latin America, syphilis prevalence among MSM was reported in seven studies and ranged from 5 to 29 percent, with the highest figures in Argentina (17 percent) and Peru (29 percent) [28-31, 42, 48, 49]. Syphilis reinfection has also shown to be frequent [50]. These high figures warrant more detailed studies of the epidemiology of syphilis among MSM in Latin America, tagging along existing efforts to eliminate maternal and congenital syphilis.

In LAC, only few published studies include estimates of chlamydia and gonorrhea prevalence among MSM. In Honduras, one study reports 12 percent of chlamydia and 9 percent of gonorrhea [29] and another provides figures for Tegucigalpa, San Pedro, and La Ceiba (see Table 1.5) [51]. A study from Peru reports 2.4 percent of chlamydia and 0.0 percent of gonorrhea [42]. Herpes type-2 infection was reported in eight studies (Guatemala, Honduras, El Salvador, Nicaragua, Panama, and Peru), with prevalence ranging between 21 and 72 percent [32, 42, 43]. Hepatitis B infection was assessed in two studies in Argentina (with figures between 22 and 38 percent) [36, 49].

Table 1.5: Prevalence of other sexually transmitted infections in Latin America and the Caribbean, 2003-2007

	Prevalence of Syphilis among MSM Number of studies %(Range)	Prevalence of Chlamydia among MSM Number of studies %(Range)	Prevalence of gonorrhea among MSM Number of studies %(Range)	References
Latin America	7 (5-29)	2 (2-12)	2 (0-9)	[28-32, 42, 43, 48, 49]
Argentina	17	NA	NA	[49]
Honduras	5 4.4 (Tegucigalpa), 11.3 (S. Pedro Sula), 0.3 (Ceiba)	12 6 (Tegucigalpa), 28 (S. Pedro Sula), 1.7 (Ceiba)	9 1.1 (Tegucigalpa), 2.0 (S. Pedro Sula), 0.3 (Ceiba)	[29, 32, 51]
Peru	2 (12-29)	2	0	[43,50]

NA: Not available

Social Drivers of Vulnerability to HIV

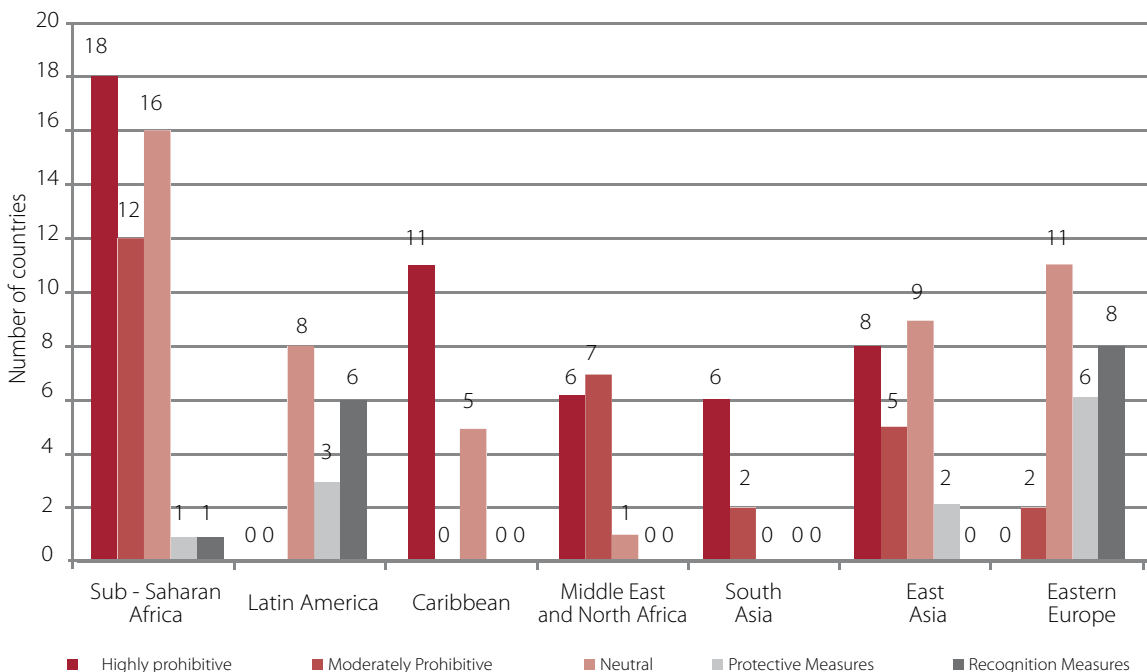
The extent to which MSM and transgender persons are affected by the HIV epidemic reflects their high vulnerability, which is considered to depend on three sets of factors [4]: (a) membership in sexual networks—groups or subcultures—with higher HIV prevalence and a higher frequency of practices associated with high probability of transmission, such as anal sex; (b) higher-level social and environmental factors—such as laws, policies, cultural norms—which configure a hostile environment; and (c) lower quality and coverage—in total numbers and in terms of population groups covered—of services and programs.

Legal aspects, human rights, stigma, and discrimination

Beyond the individual level, the most encompassing dimension of social drivers of the HIV epidemic relates to the legal and human rights environment—with three interrelated but distinct elements: legal frameworks, state practices regarding human rights, and social practices that may or may not lead to discrimination. While, in some countries, protective and affirmative legal measures regarding sexual diversity are being adopted, in many others legal systems are neutral—despite the fact that rampant homophobia prevails—and discrimination hampers access to prevention and care [4].

A study conducted with UNAIDS in 2008 [52] assessed the legal standing of sexual diversity in low- and middle-income countries. Frameworks were classified in five categories: highly prohibitive, moderately prohibitive, neutral, with protective measures in place, and with recognition measures in place. Figure 1.1 shows the number of countries in each region of the world with legal frameworks in each of those five categories. The red column indicates highly prohibitive legal frameworks, usually meaning death or long-term imprisonment—which are the most severe version of sodomy laws.

Figure 1.1: Legal frameworks regarding sexual diversity in low-and middle-income countries



Source: [52].

Five countries in the Caribbean out of 16 have legal frameworks that are neutral towards sexual diversity. However, 11 Caribbean countries, together with 18 in Sub-Saharan Africa, six in the Middle East and North Africa region, six in South Asia, and eight in East Asia have highly prohibitive legal frameworks in place. Not surprisingly, in some countries there are disturbing reports about the impossibility of starting HIV prevention work among MSM, in correlation with strong discrimination against sexual diversity—leading to the legal invisibility of persons with a sexual minority status. The question is, then, what kind of HIV prevention among MSM can be offered if it is illegal to be MSM in the first place?

By contrast, homosexuality is legal in all Latin American countries [5]. Out of 17, 8 have legal systems that are neutral to sexual diversity—they do not mention it—, 3 have some protective measures, and 6 have already adopted recognition measures such as equality of rights of same-gender couples. As the same report points out, however, these positive frameworks usually cannot avoid the persistence of discrimination and human rights abuses. In most countries, the need to direct actions towards MSM communities to include them within a legal framework is recognized, but achievements are uneven. In Latin America, despite a lack of sodomy laws and even with some protective measures in place, heteronormativity prevails—linked to fear of being the target of homophobic practices, including violence and direct discrimination. Moreover, the non-existence of options for legally and socially recognized steady partnerships between men in most of the region is likely to be an additional driver of more frequent casual sex. The clandestine nature of many sexual practices also generates obstacles for prevention. In fact, the HIV epidemic has played a role in the recognition of rights, but it is only a starting point for work that should link with other perspectives, including human rights.

A clear response to improve the legal and human rights environment affecting sexual diversity is needed in Latin America and especially in the Caribbean—not only on grounds of progress of the human rights international agenda but also to bring about change based on a public health and development perspective. Multisectoral efforts should be made to show the social harm of homophobic laws and practices and to generate initiatives leading to positive changes. For example, given the association between prohibitive legal frameworks and common law in the Caribbean and other parts of the world, efforts within the Commonwealth of Nations to foster changes in legal frameworks that mirror the strategies developed in the United Kingdom, Canada, and South Africa would be particularly useful.

Access to HIV prevention and care

Accurate indicators of access to HIV prevention and care among MSM and other key populations remain a glaring need. Only a few LAC countries provide estimates for MSM-related indicators in the UNGASS reports [52]. Because these countries tend to be the most responsive to MSM epidemics, the UNGASS figures are not very useful.

In general, resources allocated by countries to offer HIV prevention and care services to MSM do not match the level of need, particularly as compared to other population groups [53]. Examples of health projects targeting men who have sex with men have been documented in some countries in Latin America, but very few such programs have been monitored and evaluated. In Peru, the HIV prevention strategy of the Ministry of Health involves peer health promoters to encourage men who have sex with men to seek periodic screening for HIV and other STIs. Preliminary results from a 2007 study in MSM attending STI clinics in 5 cities revealed that 55 percent of those who regularly received medical check-ups had been referred to a clinic by peer health promoters [53]. However, data on the effectiveness of such programs are non-existent, and complaints remain about the fact that the only health priorities addressed by the health system for the MSM population are HIV and other STIs, and that the response is still heavily medicalized [54]. Efforts should be made to respond to the diverse health needs of the equally diverse MSM population, which go beyond HIV and STI concerns [12, 55, 56]. Service provision should not be limited to public health services and should utilize the capacities of community health organizations, in an effort to strengthen communities and reduce vulnerability [12].

Some Hope on the Horizon

A perspective of hope will help understand that progress is possible. Prohibitive legal frameworks have already been eliminated in Latin American countries. Increasingly, human rights organizations, as well as national Ombudperson offices, are considering including the protection of the human rights of sexual minorities as part of their mission, and lesbian, gay, bisexual, and transgender (LGBT) communities are becoming increasingly visible and vocal. In the context of the responses to HIV, the Horizontal Technical Cooperation Group (HTCG)—a cooperation mechanism of Latin American and Caribbean national AIDS programs and community networks—has assumed an open anti-homophobic stance and, together with PAHO and UNAIDS, has developed the *Guidelines for Strategic Action Against Discrimination based on Sexual Orientation and Gender Identity* [57], a strategic plan against homophobia, and guidelines for MSM-oriented services [58]. Networks of organizations of MSM and transgenders are part of the Steering Committee of the HTCG, and government-sponsored anti-homophobic campaigns have taken place in four countries—Argentina, Brazil, Colombia, and Mexico [59]. In Brazil, the 1st National LGBT Conference, convened by the Brazilian President, took place in 2008 [60]. In addition, during the Mexico City International AIDS Conference in 2008, a regional Ministerial Declaration to enforce diversity-sensitive sex education was signed, and the first march against homophobia in an International AIDS Society conference took place [61]. There is great potential for progress in the LAC region, and in a greater magnitude than for most of low- and middle-income countries—but there still remains a long way to go.

Challenges and Recommendations

Although several studies point to the high prevalence of lifetime sexual activity with other men among adult men in Latin America, there is an urgent need to improve surveillance and research data concerning MSM. Information currently available reflect a number of problems, including: insufficient studies, lack of a replicable sampling scheme, insufficient work on definitions—for example, asking about “sex with men” regardless of the interpretation that study participants may have of their sexual activity, asking about any sexual activity vs. high-risk activities, or asking about ever vs. recently sexually active with other men.

Far from showing MSM as participants of an isolated sexual network, data demonstrate that MSM often have sex with women or are united to women. Therefore, HIV prevention efforts among MSM is not only important because of their high burden of HIV, but because MSM are often indistinguishable from the population at large, and should not assume that a homogenous population exists, but rather understand its diversity and address needs that are likely to be as diverse. This is not only important when considering the situation of bisexual men who identify themselves as non-gay, but also when emphasizing the very specific needs of transgender persons—who should no longer be considered part of the MSM collective.

Because of high levels of unprotected penetrative sex among MSM, HIV prevention programs should remain vigilant of changes in sexual cultures, including those derived from the increased survival to HIV disease among people who receive antiretroviral therapy, and work with the community to find new preventive messages and responses that counteract potential trends towards increased unprotected sex. The role of new patterns of recreational drug use and new technologies—particularly the internet—must be better understood. Inadequate data about effectiveness of preventive programs for MSM is another difficulty to be overcome with an established practice of evidence-based programming and program evaluation.

As a recent global consultation on the role of the health sector regarding MSM pointed out, access to sensitive, comprehensive health care among sexually diverse populations is a glaring need that is beyond the limited, medicalized model of HIV testing and STI control. A strengthened response should not only consider other health needs of the MSM population, but include their strengthened community organizations in the needs assessment and in health care delivery, as appropriate.

Finally, an honest response to the HIV epidemic among sexually diverse populations can no longer ignore that the legal and human rights environment is crucial for adequate prevention and care. Concerted action is needed—locally, regionally and globally—to end prohibitive legal frameworks and human rights abuses, and to promote social inclusion through developing a culture of respect for difference. This is all the more important as it is both a public health and a human rights cause, and progress in this arena is likely to have important effects not only on HIV—but on the quality of life and dignity of a significant number of human beings.

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Chapter 2

HIV among People who Use Drugs in Latin America and the Caribbean

Introduction

Shared use of injection material for drug use has been described as a risk practice for the transmission of HIV and other infectious diseases. One out of 10 new cases of HIV infection worldwide is the result of transmission between injecting drug users (IDUs) [1]. Harm reduction measures for IDUs include public health strategies such as syringe distribution and exchange programs, substitution treatments, HIV testing and counseling, hepatitis testing, and prevention and treatment of sexually transmitted infections (STIs) and tuberculosis, along with access to primary health care and antiretroviral therapy (ART).

These strategies have proven efficacy in reducing HIV transmission among drug users [2-6] and have repeatedly been recommended by scholars, government officials, activists, and a number of United Nations agencies [7-9]. However, syringe distribution and exchange programs reach less than 10 percent of the estimated injecting drug users in Eastern Europe and Central Asia [2-5, 10]. There is evidence that coverage in Latin America and the Caribbean (LAC) is also very low for this vulnerable population [9], for which health care is hard to reach [2-5]. The vulnerability of IDUs is not confined to the risks related to the shared use of injection materials; for most IDUs, it is associated with prevailing risk practices in their sexual and drug use networks, which are shaped by broader economic and social phenomena [11, 12].

Among these processes, inequalities linked with gender, age, neighborhood, or city in which IDUs live contribute to their vulnerability [13-19]. Less power among women and homophobia play a role in the fact that female IDUs who have sex with women have higher infection rates than other populations of IDUs [20]; the same holds true for male IDUs who have sex with men. Being a young IDU, sharing injection materials with an IDU partner, being poor, or living in poor neighborhoods all increase the unlikelihood of adopting safe practices and preventing HIV transmission [13, 14, 18]. Moreover, political and economic crises increase the vulnerability of the entire population by raising unemployment levels (thereby causing people to migrate), destroying or scaling back social organizations that provide and advocate for services and rights, and fostering violence in the most affected populations [21].

Successive economic and political crises, together with poverty and the tremendous social inequality existing in Latin America and the Caribbean [22, 23], have resulted in lack of access to health, educational, and social services—especially for drug users living in poverty. The stigma and discrimination experienced by drug users due to their practices are compounded by the intervention of the penal system, whose involvement is mandated by legislation criminalizing drug users under the region's predominant “war on drugs” [24-27].

Regional Situation and Trends

It is estimated that the highest number of injecting drug users in Latin America are found in Argentina, Brazil, and Mexico, while, in the Caribbean, Puerto Rico is the territory with the highest number of IDUs [28, 29]. There is evidence of injecting drug use in Colombia, Paraguay, and Uruguay, as well as other countries in South America, Central America, and the Spanish-speaking Caribbean [30, 31].

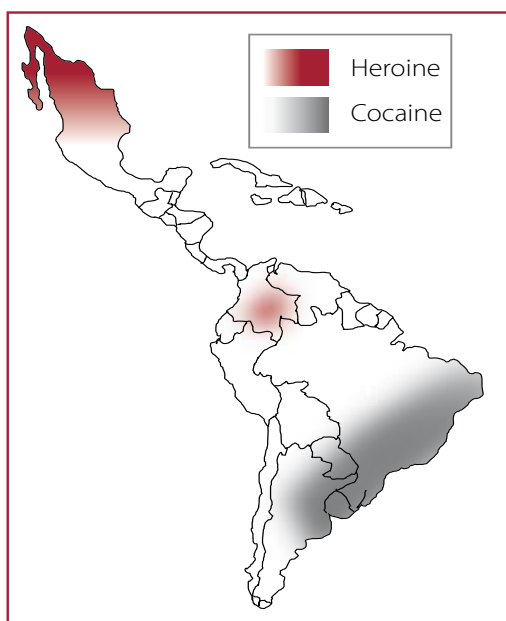
In 1992, 26.4 percent of reported AIDS cases in Latin America and the Caribbean were attributable to injecting drug use. Since then, there has been a downward trend, and in IDUs represented 4.2 percent of reported AIDS cases in 2007. The decline in the percentage of cases attributable to injecting drug use out of the total number of reported AIDS cases has been observed continuously in all the countries with the highest levels of injecting drug use. For example, in the South Cone

countries (Argentina, Chile, Paraguay, and Uruguay) the figure fell from 37.6 percent of the total cases reported in 1992 to 7.8 percent in 2007. The only country that has not experienced such a marked decline is Uruguay, where the figure for reported AIDS cases attributable to injecting drug use has held steady at around 25 percent, with figures ranging from 19.1 to 32.1 percent between 1990 and 2006 [32]. As for new HIV cases in LAC, the percentage of cases whose mode of transmission was categorized as injecting drug use was 1.6 percent in 2006 and 1.2 percent in 2007. Argentina and Uruguay had the highest percentages attributed to injecting drug use in 2006, with 5.4 percent and 10.6 percent, respectively [32].

Estimates of the number of injecting drug users in LAC vary widely depending on the methodology used and the year in which the estimates were made [33-36]. The Reference Group to the United Nations on HIV and Injecting Drug Use published an estimate of 580,500 people in Latin America and 24,000 in the Caribbean who inject drugs and are HIV-positive. The number of IDUs was estimated to be 65,829 in Argentina in 1999, 29,130 in Puerto Rico in 2002, and 800,000 in Brazil in 2003 [33-36].

The use of injectable cocaine is common in several Brazilian cities, particularly in the Southern part of the country [37, 38], as well as in the major cities of Argentina, Paraguay, and Uruguay [39-41]. In contrast, the use of injectable heroin is more common on the US-Mexico border and in Colombia and Puerto Rico [42-45]. This regionalized pattern of use (heroin in the North and cocaine in the South) reflects the relationship between drug use and the drug market—which includes three phases: cultivation, production, and marketing (see Figure 2.1).

Figure 2.1: Regions with injectable use of heroin and cocaine in Latin America and the Caribbean.



Fuente: D. Rossi, 2008

The high levels of mobility and migration in all Latin American and Caribbean countries have been identified as factors that can increase vulnerability to HIV [46, 47]. Numerous studies present evidence of high HIV prevalence among IDUs who have migrated between Mexico, Puerto Rico, and the United States [48-50]. Extended borders, such as Brazil's and the triple border between Argentina, Brazil, and Paraguay, facilitate the interaction between drug trafficking and the risk practices of IDU networks with the transmission of HIV, tuberculosis, and malaria [51].

Another aspect of the HIV epidemic that is still somewhat invisible is the role of non-injectable drug use (DU) in transmitting infectious diseases, a phenomenon that has been described in various cities in the Americas [2, 52-54]. Alcohol, the most consumed legal substance in the region, is known to release inhibition, which can lead to unprotected sex [55, 56]. Although changes in the route of drug administration have been more studied among heroin users than among cocaine users [2], several studies have been conducted in Brazil that point to a trend toward the replacement of injected cocaine with smoked

crack [57, 58]. HIV seroprevalence and seroincidence among cocaine smokers or inhalers in the Latin American and Caribbean region are high [30, 59, 60]. Crack use, which is popular in several Brazilian cities [61-63], accounts for HIV transmission when it is related to unprotected sex, as documented in several Caribbean countries [64-66]. Coca paste, known as *bazuco* in Colombia or *paco* in Argentina, is also used in Bolivia, Chile, Ecuador, and Peru, and its use has increased since the mid-1990s in the major urban centers of Argentina and Uruguay [33-36]. HIV and hepatitis B prevalence among crack smokers in various cities in Brazil suggests that non-injecting drug use plays a significant role in the sexual transmission of HIV [38, 67, 68].

Research on injectable drug use in Latin America and the Caribbean began in the 1990s and has concentrated on risk practices and preventing the transmission of HIV and other infectious diseases [69, 70]. Many of the studies have focused on IDUs in the cities of Buenos Aires and Rosario in Argentina; São Paulo, Porto Alegre, Salvador, and Rio de Janeiro in Brazil; Bogotá in Colombia; Tijuana and Ciudad Juárez in Mexico; Asunción in Paraguay; San Juan in Puerto Rico; and Montevideo in Uruguay. Some of the research processes have encouraged the development of harm reduction programs, while others have relied on existing services to reach IDUs in the contexts in which they use drugs. Most of the research, however, has not involved systematic, follow up studies that provide information on how changes in the drug market and use patterns can give rise to new risk practices for transmission of infectious diseases (Table 2.1).

While there is abundant international evidence that injecting drug users are a bridge population for transmission to the rest of the population [71], very few studies in the region have collected data from sexual partners and children of IDUs who participate in studies. In Uruguay, there is evidence that many women acquire HIV from their injection drug-using partners, which can account for the rise in HIV cases among women [72]. Among injecting and non-injecting drug users it has been documented that trading sex for money, drugs, or other commodities heightens sexual transmission of HIV, especially among women, men who have sex with men, and drug users who live in poverty [2, 5, 21].

Collaborative research among academic institutions, government agencies, and nongovernmental organizations aimed at increasing the understanding of the association between HIV infection and drug use in different social groups is still in its infancy, especially for vulnerable people such as sex workers, men who have sex with men, and transgender people. Greater understanding of the variety of safe and risk practices in social and sexual networks could also increase prevention of heterosexual transmission of HIV.

Table 2.1: Selected studies conducted among IDUs and non-injecting DUs populations in South America, 1998-2007

	Population	Period	Cities	Sample size	HIV Seroprevalence (%)	HIV Seroincidence *	Hepatitis B Prevalence (%)	Hepatitis C Prevalence (%)	Funding agency
Brazil	• IDU • ex-IDU	1998	Porto Alegre (Rio Grande do Sul), Itajaí (Santa Catarina), São José do Rio Preto, São Paulo, Apta and Sorocaba (São Paulo)	284	52.5	-	-	52.4	Brazil Ministry of Health
	• IDU • ex-IDU • No IDU	1999-2001	Rio de Janeiro	659	7.9	-	4.3 ⁱ	16.6	WHO
	• IDU • ex-IDU	2000	Salvador (Bahia), São José do Rio Preto (São Paulo), Florianópolis and Itajaí (Santa Catarina), Porto Alegre and Gravataí (Rio Grande do Sul)	853	36.5	-	2.3 ⁱ	56.4	Brazil Ministry of Health
Argentina	• IDU • ex-IDU	2000-2001	Buenos Aires and Great Buenos Aires	174	44.3	0.0	42.5	54.6	UNAIDS
	• DU non injected cocaine	2002-2003	Buenos Aires and Great Buenos Aires	504	6.3	3.1	9	7.5	PAHO/Spanish Agency for International Cooperation for Development (AECID)
	• DU cocaine base paste	2006-2007	Buenos Aires and Great Buenos Aires	170	2.9	-	3.5 ⁱⁱ	2.4	PAHO
	• IDU • DU cocaine, heroine, anfetamines	2006-2007	Buenos Aires and Great Buenos Aires	358	6.7	3.02	-	-	Global Fund to fight AIDS, TB and Malaria
Uruguay	• UD non injected cocaine	2002-2003	Montevideo	367	9.5	4.4	19.5	21.5	PAHO /Spanish Agency for International Cooperation for Development (AECID)
	• IDU • ex-IDU	2003	Montevideo	200	18.5	10.3	11.7	10.1	UNAIDS/ UNODC
Paraguay	• IDU • ex-IDU	2006	Asunción and suburban cities	164	3.7	-	10.9	9.8	PAHO

ⁱ HbsAg antigen; ⁱⁱ HC antibody

IDU: injecting drug user; DU: drug user

* To estimate annualized incidence, cases with HIV-positive serology were analyzed with the serological testing algorithm for recent HIV seroconversion (STARHS).

Public Policies and Programs for Drug Users and the HIV Epidemic

Governments in Latin America and the Caribbean have not always made use of scientific evidence and best practices when designing policies that target drug users [73]. Certain public policies on drugs or sexual and reproductive health may be contributing to the spread of HIV or to the failure of antiretroviral therapy [74]. In the case of illegal drugs, policies that criminalize drug possession have further distanced drug users from the health system [75]. In many cases, IDUs themselves have been the ones who have adopted prevention strategies long before public health initiatives became available [11].

In Latin America, with support from United Nations agencies, regional cooperation has taken place in the implementation of harm reduction interventions, including research and advocacy for the rights of drug users. The Regional Project for the Prevention of HIV in Injecting Drug Users of the Southern Cone was launched in 2000 with funding from UNAIDS; the Project had two additional phases that received assistance from the United Nations Office on Drugs and Crime (UNODC) (Tables 2.2 and 2.3).

Table 2.2: Budgets for drug abuse and HIV prevention in South Cone countries, 2002-2003. (US\$)

UNODC	94,393
Argentina	267,015
Chile	125,160
Paraguay	57,435
Uruguay	70,245
TOTAL BUDGET	614,270

Table 2.3: Budgets for strengthening municipal programs for drug abuse and of HIV prevention in South Cone countries, 2004-2006 (US\$)

UNODC Brazil	159,900
Argentina	153,000
Chile	47,300
Paraguay	50,500
Uruguay	69,300
TOTAL BUDGET	480,000

Nongovernmental organizations have played a key role in this process; in the majority of the countries in the region, these organizations have persistently called for adding this issue in the public agenda. *Intercambios Asociación Civil* in Argentina, *Caleta Sur* in Chile, *Compañeros* in Mexico, *Prever* in Paraguay, and IDES in Uruguay are some of the nongovernmental organizations that began developing harm reduction programs and collaborating with public officials and the academic community in the late 1990s [11]. Nongovernmental organizations have launched syringe distribution and exchange programs in the majority of countries in the region, with the exception of Brazil, whose Ministry of Health has backed this type of programs since the late 1990s [11].

The Pan American Health Organization (PAHO) has also contributed to the development of instruments for comparative studies between different countries in the region [76]. One example of an instrument designed by PAHO is a behavioral survey for high-risk drug users designed to be used with injecting and non-injecting drug users in a variety of contexts, including the street or other “natural settings,” addiction treatment programs, harm reduction programs, and prisons.

In the Caribbean, Puerto Rico was the territory that first began to use harm reduction interventions, although such programs were as controversial as they were on the U.S. mainland [51, 77]. The Caribbean Harm Reduction Coalition (CHRC), created in 2000 [78], has used the harm reduction approach with non-injecting DUs, especially crack, in the Bahamas, Dominican Republic, Jamaica, St. Lucia, and Trinidad [30]. Since 2001, the Caribbean Drug Abuse Research Institute (CDARI), located in Saint Lucia, has been devoted to the study of drug use and its medical consequences in the Caribbean and has tasked itself with bringing HIV transmission among crack smokers to public awareness [79]. Its approach focuses on a series of measures designed to reduce the harmful consequences of drug use, starting with the safer use of drugs and moving on to controlled use and, ultimately, abstinence. The harm reduction strategy seeks to reach drug users where they use the drugs to address both the conditions of use and the drug use itself [78]. The Caribbean Regional Strategic Framework for HIV/

AIDS gave priority in 2005 to the study of the relationship between non-injectable crack use and HIV transmission, which was included as a strategic area for the period 2008-2012.

The difficulties created by the segregation and criminalization of drug users require the involvement of civil society. An informal coalition known as the Network of Networks, whose objective is to increase the international impact of the coordinated actions of civil society through its various networks, is comprised of several international and regional organizations devoted to harm reduction, such as *Intercambios Asociación Civil* in Latin America, CHRC, the International Harm Reduction Association, and the International Network of Drug Users (INPUD). Harm reduction networks have considered the existing misalignment between the cost-effectiveness of harm reduction activities and the lack of support for their large-scale international implementation. A recent initiative of this coalition was the submission of a paper with recommendations to the Donor Conference on Harm Reduction in Amsterdam in January 2009.

Access, Care, and Treatment for Injecting Drug Users

In Latin America and the Caribbean, most treatment programs for drug users that are included in public policies are geared towards halting drug use. Methadone or buprenorphine substitution is almost exclusively used in Puerto Rico and Mexico [80] (Table 2.4). Only on very rare occasions have the governments of the region developed evaluation systems for determining drug-use treatment outcomes, and there is virtually no information on how the human rights of drug users are protected while they are undergoing treatment in public or private institutions in the region [81].

Table 2.4: Countries that support harm reduction measures in Latin America and the Caribbean

	Explicit support for harm reduction in public policy documents	Syringe distribution and exchange programs in place	Opiate substitution treatment in development	Venues for controlled drug use	Syringe exchange programs in prisons	Opiate substitution treatment in prisons
LATIN AMERICA						
Argentina	X	X				
Brazil	X	X				
Mexico	X	X	X			
Paraguay		X				
Uruguay	X	X				
CARIBBEAN						
Puerto Rico		X	X			

Source: [30]

Repressive police practices, which in some cities have led to the creation of “shooting galleries” (as in Ciudad Juárez and Tijuana, both on the US-Mexico border), are a major barrier to expanding HIV prevention and bringing treatment closer to injecting drugs users [82]. Shooting galleries tend to be uncommon in countries where stimulants are the main injectables used.

Many drug users and small traffickers have been incarcerated as a result of the “war on drugs” [83] and the growth in prison populations that sparked throughout Latin America and the Caribbean in the 1990s. The high HIV prevalence and the presence of IDUs in prisons constitute a key public health issue [84, 85]. Violations of basic human rights, which occur in prisons across the region, are exacerbated by overcrowded facilities and a lack of prevention services, such as the distribution of condoms or the provision of antiretroviral therapy [82]. Even in Brazil, which has more harm reduction programs than any other country in the region, very few prevention services are found within prisons [86, 87].

Since the late 1990s, preventive interventions that target injecting and non-injecting drug users in LAC have been under way, but many of the programs have been unsystematic, have had limited coverage, and have been scaled up insufficiently [24]. Government agencies, nongovernmental organizations, and grassroots organizations have launched syringe exchange programs and other community initiatives, with Brazil and Argentina leading the way in Latin America [57, 88, 89] (Table 2.4).

Despite the existence of antiretroviral therapy in Latin America and the Caribbean, late initiation of treatment is common, particularly among injecting drug users [90, 91]. One of the main barriers is the negative attitude from health workers towards drug users, who are often considered to be “irresponsible about their health care” [92]. Despite the fact that antiretroviral therapy is available across the region, adherence to treatment can only be attained if treatment programs include access to psycho-social support and treatment for drug use [93].

Challenges and Recommendations

A major challenge for the Latin America and Caribbean region is securing greater access for injecting and non-injecting drug users to prevention and health care, which includes the diagnosis and treatment of hepatitis, tuberculosis, and HIV.

Another challenge is the need for systematic development of strategic information that would make it possible to make comparisons and identify trends to document harm reduction interventions that target drug users and their impact on preventing bloodborne and sexual transmission of infectious diseases. Systematizing and disseminating the knowledge gained from HIV epidemics among IDUs in the most affected urban areas in the region can be very useful in preventing similar epidemics in other Latin American and Caribbean countries.

A major challenge for civil society is to ensure that government agendas address the negative public health impact of legislation that supports the “war on drugs” and link public health policies with judicial and security policies. Policies that are promoted by multilateral agencies to control drug supply and demand require even greater harmonization with public health and human rights principles.

To bring drug users closer to the Millennium Development Goals, harm reduction must receive greater attention from donors who fund HIV responses—only 1 percent of their budgets are allocated for harm reduction strategies. This is a necessary condition for increasing the impact and expanding the scope of grassroots community organizations as well as governmental and nongovernmental organizations that currently offer programs that target only a very small portion of drug users.

To meet the goals of international agreements in their response to the HIV epidemic in Latin America and the Caribbean, these recommendations must be given priority:

1. Identify and describe the impact of economic and social changes on behavioral changes associated with the transmission of infectious diseases and, more importantly, analyze the most appropriate prevention interventions aimed at containing transmission in the region. To this end, the cooperation between research groups, government staff, and activists should be encouraged so that they design multicenter studies that periodically monitor drug-related risk practices among vulnerable groups.
2. Expand and promote collaboration among teams responsible for harm reduction programs throughout the region.
3. Promote training and advocacy within governments in the areas of health, security, and human rights to promote the adoption of the harm reduction approach in public policies. For this purpose, training and interaction processes are needed among different areas of government responsible for drug-related problems, with special attention to the adverse impact of the criminalization of drug users.
4. Encourage debate on policies to control drug supply and demand in order to develop more integrated, coherent policies that will guarantee access to health services for drug users.
5. Increase efforts to improve access to HIV and hepatitis prevention and care and to the social resources needed to support treatment adherence by drug users (including those who are incarcerated), their partners, and their children. Governmental and nongovernmental actors must devote greater efforts to developing harm reduction measures associated with drug use in prisons and other confinement institutions in the region.

Acknowledgements

My special thanks to Graciela Touzé, Pablo Cymerman, Marcelo Vila, Gonzalo Ralón, and Francisco I. Bastos for their suggestions for this chapter, and to the organizers and editors of this publication for their comments.

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Chapter 3

Sex Work and HIV in Latin America and the Caribbean: Challenges and Responses

Introduction

Sex workers (SWs) constitute a vulnerable population to HIV infection due to their high-risk practices, which include unprotected sex, substance use, and sharing used needles for injection drug use [1]. HIV risk among female sex workers (FSWs) varies considerably by type of sex work, whose different categories—summarized in Table 3.1—are mostly defined by the women’s primary place of solicitation [2-4]. In addition, transvestites represent a high-risk, deeply marginalized population in many Latin American countries, particularly in Uruguay [5] and Brazil [6].

Table 3.1: Typologies of sex work

Brothel-based workers	These usually constitute the lowest class of FSWs (in addition to drug dependent homeless FSWs [180]), and live under the control of pimps and madams. The sex worker receives clients at a brothel and does not solicit outside of the brothel.
Street workers	They do not have a fixed place of operation and pick up clients on the street or other public places.
Housewives and casual sex workers	They do not identify themselves as FSWs and do sex work on a part time basis, usually secretly. The sex worker receives clients at her home and does not go out to solicit.
Call girls and boys	These are high-income sex workers contracted through escort services; they may contact their clients over the phone through agents.
Sex in exchange for favors	Exists in all social groups, from poor to rich.
Hotel or lodge based FSWs	They live and solicit clients in a hotel or a lodge, where clients go by themselves or are brought by pimps.
Highways-based FSWs	They solicit clients on the highways, usually among long-distance truck drivers.
Young FSWs	Adolescent girls trafficked from villages and small towns from all over the world and forced to work as sex workers. Many times their families need an extra income to survive and, although they may chastise such profession, they will gratefully accept the money earned.

Worldwide, the sex industry generates an estimated US\$20 billion or more annually [8], of which \$5 billion are attributed to child prostitution [9]. This industry is mainly sustained by its associated poverty and profitability [10]. Lack of socio-economic and political support, disempowerment, violence, drug trafficking, migration, prejudice against racial or ethnic minorities, poverty, low educational level, and other factors such as religion and culture [11] push individuals to participate in sex work, drug use, and other practices that place them at high risk of acquiring HIV [12].

This review of sex work, its typologies, risk practices and vulnerabilities, prevalence, and prevention interventions combines the search of international (Pubmed/Medline, Scopus, ISI-Web of Science) and regional databases (SciELO, The Scientific Electronic Library Online, and Lilacs, Latin American and Caribbean Health Sciences), as well as information from gray literature (regional and national reports). Information was gathered by a thorough review of bibliographic databanks, abstracts from conferences, and websites of institutions and networks working on commercial sex, substance misuse, and HIV/AIDS. The difficulty in obtaining

information suggests that governments need to devote more resources to improve surveillance and conduct research to accurately determine the number of people affected as well as the proximal and distal factors triggering local epidemics.

The Role of Commercial Sex Work in Injecting Drug Use

There is a complex and bidirectional relationship between commercial sex and the misuse of alcohol and illicit substances. Certain situations that bring profit lead to transactional sex—when sexual intercourse is exchanged for any form of material gain or when drugs are given in exchange for sex [13]. Most individuals who engage in commercial sex work do so under difficult conditions and deal with the anxiety and/or depression associated with hard living and working conditions by using alcohol and/or illicit drugs. Owners of brothels and pimps frequently make money selling alcohol and/or drugs on their premises and sometimes provide them to their employees, both to make their workers dependent on substances and to manage conflicts between clients, owners of nearby venues, and corrupt policemen. Such an approach towards fixing a problem actually aggravates it by exacerbating rather than minimizing conflicts and by attracting drug dealers and other criminals to their venues.

Last but not least, some drug and alcohol dependent individuals sell sex to get extra money to pay for their substance practices. In the case of SWs who are also drug users, unprotected intercourse with successive sexual partners performed by individuals who are craving a fix and sharing injection paraphernalia greatly increases their risk of acquiring or transmitting HIV [14, 15]. Female and male sex workers who charge less amounts of money or who are alcohol and drug dependent are at greater risk of acquiring HIV because condom use among them is low, and not only with their customers but also with their steady partners [12, 16, 17].

Child Prostitution and Sexual Tourism

Child prostitution involves offering the sexual services of a child or inducing a child to perform sexual acts for any form of compensation, and includes anyone younger than 18 years of age—or a correspondent legal age, as defined by local and national legislations. Homeless, runaway, or abandoned children are frequently pushed into prostitution and actively recruited by pimps and traffickers. Some low- and middle-income countries are known as international sex tourism destinations, to which travel is solely for the purpose of having sex, which are a significant cause of child prostitution. In rare instances, families give or sell their children into prostitution to make an income [10]. In Mexico, reports by social services departments show that there are more than 16,000 child sex workers, and most are concentrated in tourist destinations [18].

Sexual tourism is a billion dollar industry that supports a large workforce internationally. Excluding escorts working for elite agencies, most sex workers suffer from marginalization, violence, and disease [14, 19]. Sexual tourism has established itself in areas where laws are less restrictive and government surveillance is poor or absent [20]. Social and economic inequality and government initiatives to stimulate tourism can create conditions for a surge in sexual tourism. Brazil is considered to be the region's hot spot for sexual tourism, but Central American countries, such as Guatemala, El Salvador, Costa Rica, Honduras, and Nicaragua, have had recent growth in their tourism market, which has led to job creation that has encouraged migration from rural areas to major cities [14, 19, 20]. In studies conducted in southern Brazil and northern Mexico, researchers have found that sex work with clients who can pay more money for their services is frequent among women who conduct sex work to gain extra income [1, 21]. With the rise of sexual tourism, many women from the LAC region have migrated to Europe to become involved in prostitution. A study of the HIV prevalence of 118 Colombian and Dominican immigrant SWs living in Catania, located in southern Italy, found low HIV seroprevalence, which is likely due to consistent condom use with their Italian customers [22].

Trafficking of Migrant Sex Workers

Based on United States sources, the World Health Organization estimates that every year between 600,000 and 800,000 people are trafficked across international borders, not including people who are trafficked inside their own country [23]. A lack of job opportunities in Latin America and the Caribbean has promoted a wave of migration to urban centers, tourist destinations, and the United States in search of better living conditions. Because impoverished male and female migrants who do not have a formal education have fewer job opportunities that pay well, many of them resort to sex work as a way to make an income and send money to their hometowns to support their families.

Migration to the United States due to economic pressure involves citizens from Mexico and Central and South America who undertake the arduous trip north to Mexico in order to attempt to cross the border into the United States through remote, unguarded areas of the border. Along their trip north, migrants frequently use the services of sex workers, and those who do not have sufficient financial resources will sell sex in exchange for money or goods. The *coyotes*, as they are known in Mexico, are people who make a business out of transporting or trafficking migrants across borders. These transporters sometimes work for sex trade mafias that deceive migrants by guaranteeing them a secure job and shelter once they get to their destination. Upon arrival, many of these migrants—especially women—find that their documents have been withheld from them and that they are obligated to perform sex work to pay their way out. It is within this context of poverty and stressful conditions that HIV transmission occurs. Prevention policies have long neglected the situation of these migrants, most of whom belong to ethnic minorities, and the harsh living conditions they face along their journey [24].

Mexico

Impoverished communities involved in pendular migration between Central America and the United States make an impact on Mexico's economy and politics as well as within its social and health sectors [25]. In cities such as Tijuana, along the northern border, migration is a strong driver for the city's development and poses a challenge for politicians, society, and health officials. Because of Tijuana's strategic location, many drugs, such as cocaine, heroin, methamphetamines, and marijuana, are readily available, and a dose can be bought for US\$5. The bidirectional mobility together with the increased HIV prevalence at the border among FSWs, FSW-IDUs, and IDUs are some of the challenges faced by the Mexican health authorities [26].

Most of the drug users are migrants shunned by society. Many of these drug users are deported from the United States, find themselves in the streets of a foreign land, and are pressured into commercial sex work and/or drugs to make a living. Many women who work in the *Zona Roja*—the quasi-legal red district area in Tijuana— have migrated from the southern states of Mexico to work in the sex industry. The majority of these women lead a secret life and tell their families that they work at a *maquiladora* (assembly factory) when the reality is that they can make more money selling sex, especially with the inflow of American tourists.

HIV prevalence among Mexican FSWs was found to be 0.9 percent in 1985-1990 and 0.3 percent in 1991-1996, while among male sex workers (MSWs) prevalence was 10.2 percent and 13.6 percent, respectively [27]. Such relatively low rates for FSWs mask regional differences. In northern Mexico, where the epidemic is driven by a combination of transactional sex and drug use, especially along the border, prevalence for the same periods is higher. In southern Mexico, however, the epidemic has been driven by homosexual and bisexual transmission and by unprotected intercourse between men and women, especially from underserved communities, and prevalence is lower [28, 29].

HIV prevalence in 2006 was 6 percent among FSWs in Tijuana and 16 percent among IDUs living in the border cities of Tijuana and Ciudad Juárez, which is notably higher than Mexico's national prevalence of 3.9 percent among IDUs [30]. An assessment of the overlap between IDU and sex work conducted in these two cities found that among FSWs who injected drugs in the previous month, 52.6 percent reported using a non-sterile needle, 73.7 percent reported passing their needles to someone else, and 70.3 percent had shared injection paraphernalia. A prevalence of HIV among FSW-IDUs of 12 percent was more than twice the 5 percent among FSWs who did not inject drugs [1].

In 2004-2005, findings from a multi-site study with 924 FSWs in Tijuana and Ciudad Juárez that implemented a behavioral intervention to increase condom use were of major concern. Twelve percent of FSWs had injected drugs in the previous month, 14 percent always used drugs before or during sex, 73 percent reported having clients who were drug users, 32 percent of the clients were IDUs themselves, and 90 percent of FSWs reported that other coworkers used drugs or alcohol with their clients [1, 31]. A qualitative study of 25 FSWs in Tijuana found that they were very knowledgeable about condom use but that economic incentive was their strongest motivation not to use a condom [32].

The Caribbean

Unprotected sexual relations between SWs and their clients is a key factor in the transmission of HIV in the Caribbean. The use of alcohol and non-injection drugs, in particular crack cocaine, has been increasing [33], and MSM populations

significantly contribute to the high transmission of HIV [33, 34]. Overall, the contexts in which the Caribbean epidemics evolve are shaped by extreme poverty, unemployment, gender inequality, and AIDS-related stigma.

Out of an estimated 100,000 FSWs in the Dominican Republic, HIV prevalence varies from 2.5 to 12.4 percent [35]. In 2005, the prevalence of HIV in registered SWs in the capital city of Santo Domingo was 3-4 percent. This relatively low prevalence is believed to be a consequence of efforts led by government institutions and non-governmental organizations (NGOs) that promote the consistent use of condoms and safer sex interventions targeted towards SWs [34, 36]. A study conducted in 1996-1997 in the three main ports of the Dominican Republic—Las Américas (in Santo Domingo), Puerto Plata, and Punta Cana—, found that out of 381 FSWs, more than 75 percent had fewer than nine years of education. Most FSWs reported early sexual initiation, abuse, and child prostitution. The consistent use of condoms was found to be high, with 95 percent of the participants reporting condom use with their last five clients. However, 60 percent of them reported having a regular partner, 48 percent of whom did not use condoms with their partners [20]. Similarly, an assessment of 258 FSWs and 278 male paying clients in Santo Domingo found that condom use among FSWs was low when the relationship was perceived to be an intimate relationship [37].

Structural interventions that target FSWs include initiatives that address stigma, policy changes to provide protection for SWs—implemented in the city of Puerto Plata—, and community interventions aimed at improving skills to prevent HIV transmission, social support, and collective responsibility. Policy changes that include a community solidarity component have been associated with higher levels of protective practices and a pronounced reduction in the prevalence of sexually transmitted infections (STIs) among SWs over time, in comparison to interventions that do not include a policy change component [38]. Further analysis showed that the intervention combining community development and policy change was more cost-effective than the other [39]. One example of a successful intervention is the “100 percent condom use” campaign, to which low HIV infection rates have been attributed in Santo Domingo [23].

Although the incidence of HIV in Cuba has increased in recent years, the epidemic remains the smallest in the Caribbean region [40]. Injection drug users are virtually absent in Cuba, but the misuse of alcohol and illicit substances has been reported in the context of a flourishing sexual tourism industry, which has been fostered by the economic collapse and the introduction of a two-tier economy which uses both Cuban and convertible pesos. Many women have left their regular employment to join the foreign currency-driven sex industry in recent years [41]. The marginalization of MSM and transgenders, who are frequently engaged in commercial sex, has hampered the delivery of targeted interventions and contributes to keeping such populations away from health services, even though health care is provided free of charge. The strategies that Cuba has adopted to curb the epidemic include the mobilization of groups of MSM and transgenders to increase their awareness on the importance of preventing HIV and other STIs. Although intolerance of sexual minorities remains a problem, health authorities have managed to sensitize decision makers on issues of sexual diversity and efforts have been implemented to incorporate MSM and transgenders into health services and outreach activities [40].

Central America

With an adult prevalence of HIV of 2.1 percent, Belize is the country with the highest prevalence in Central America [34]. Data on HIV and other STIs among SWs and MSM have been assessed but remain fragmented and outdated [42]. An important factor in Belize that must be accounted for is the strong presence of gangs. Gang members participate in high-risk practices such as drug use and sexual practices that might involve multiple gang members sharing one woman, and often forcing her to exchange sex for her survival. *Machismo* prevails in these groups and condom use is infrequent. The program “Youth for the Future,” a government-funded program supported by the Organization of the Petroleum Exporting Countries (OPEC) that works with the community and with gang members in Belize City, has been promoting condom use as well as providing free condoms and educational material [43]. Another prevention project conducted by the Caribbean Association for Research and Action (CAFRA) that targeted SWs from Belize was successful at increasing access to health care services and changing stakeholders attitudes in order to create more inclusive HIV prevention strategies [44]. Although CAFRA’s report includes interviews with SWs, no data on HIV prevalence are provided within the document.

Different prevention initiatives have been implemented in Belize, including outreach programs that promote behavior change, educational programs, and programs to increase access to testing and counseling. Interventions funded by the non-

governmental Pan American Social Marketing Organization (PASMO) have increased access to cheaper health services by implementing educational programs as well as behavioral interventions for SWs. In 2007, over 300 SWs in Belize were engaged in the activities offered by the organization. Other areas addressed by PASMO include empowerment, peer counseling, improvement of gender relations, and sexual negotiation skills [45]. Despite a nationwide campaign—“Know Your HIV Status, Get Tested Today”—that included free access to testing and antiretroviral therapy, existing AIDS-related stigma and discrimination prevails even within the health sector and remains a barrier for people with HIV who seek care [42].

In Panama, a report summarizing the findings from the Monitoring AIDS Pandemic (MAP) and the Epidemiologic Network for HIV/AIDS in Latin America and the Caribbean (EpiNet) found a relatively low HIV prevalence among more than 4,000 FSWs, ranging from 0.3 percent to 0.9 percent in 1997 [46]. Another study with FSWs from five different Latin American countries, including two in Panama—Panama City and Colón—found an HIV prevalence among FSWs of 0.2 percent [47]. In Costa Rica, the same MAP-EpiNET study reported low HIV infection rates for women in 1997 among the population at large and among FSWs. The rate of infection for the capital, San José, was around 0.25 percent among pregnant women and FSWs [46]. In 2006, prevalence remained low at 0.2 percent [34]. The interpretation of such figures over time is compromised by the lack of additional information about the representativeness of the samples and the reliability of the different surveys [48].

SWs and MSM are the main vulnerable populations to HIV in Nicaragua. HIV prevalence is estimated at around 1 percent among FSWs, with the most affected locations being Managua—the capital city—and Chinandega [49]. A randomized controlled trial that compared two strategies to foster condom use during commercial and non-commercial sex taking place in motels, condoms were more likely to be used if they were made available in motel rooms. Directly handing condoms to couples was effective in the context of commercial sex, but less effective for non-commercial sex. Paradoxically, condoms made available together with educational material were less—instead of more—likely to be used in the context of commercial sex and had no effect during non-commercial sex, compared to the distribution of condoms alone [50].

In 2003, the prevalence of HIV infection in El Salvador was 16 percent among street-based SWs in the capital city San Salvador and in Puerto de Acajutla, San Salvador’s major port. Stigmatization and limited access to ART remain obstacles to comprehensive HIV prevention and care [51]. In Guatemala, SWs and MSM are the most vulnerable populations to HIV and comprise 36 percent of the total estimated number of people with AIDS in 2005. Among FSWs and MSWs, HIV prevalence is around 5 percent, and among brothel-based SWs it has been reported as 4 percent compared to 15 percent among street-based SWs [52].

Honduras has the highest HIV prevalence among FSWs in the LAC region. In a five-country study that included the cities of Puerto Cortés—the country’s main sea port—and San Lorenzo—in the Pacific Ocean—HIV seroprevalence for FSWs was found to be 9.6 percent, although the proportion of FSWs from Honduras who attended counseling and testing services and received results was the highest among the five participating countries [47]. Among SWs from Tegucigalpa—the capital city—the median prevalence in 2001 was 8 to 9 percent, while in San Pedro Sula—a northwestern medium-sized city located close to the Caribbean Sea—prevalence was reported to be 13 percent for the same year. In 2003, the national prevalence for SWs was estimated as 9.7 percent [53, 54]. Education and prevention programs targeting vulnerable populations such as the Garifuna—who populate Honduras, Guatemala, Belize, and Nicaragua and are scattered throughout other areas in Central and North America [53, 54]—have been implemented through a range of organizations from various NGOs, churches, educational centers, and from the private sector [54, 55]. Honduras was successful at creating a proposal to receive funds from the Global Fund to Fight AIDS, Tuberculosis and Malaria to curb the epidemic among SWs, MSM, the Garifuna, prisoners, and youth. PASMO provides support with interventions that foster behavioral change and communication [53, 54].

Andean Region

The Andean countries have urban epidemics concentrated among MSM [34]. Venezuela seems to be less affected by the HIV epidemic than any other country in Latin America, but this may be due to scarcity of data [46, 53]. A study conducted in 1992 in Caracas, the capital city, found that 6 percent of sex workers tested HIV positive, and no AIDS cases were found among SWs in Caracas in 1994. Despite being of vital importance, many such surveys have not been updated. Also in the early 1990s, 4 percent of street sex workers in the Caribbean island of Margarita tested HIV positive, which is an increase from previously having no recorded evidence of HIV infection among registered sex workers [56]. Surveillance information in Venezuela has only been reported for the population at large and for prisoners. The 2008 UNAIDS Global AIDS Report did not

publish any current data on HIV prevalence for either MSM or FSWs [34], thereby hindering the implementation of targeted and evidence-based prevention programs.

The scarcity of prevalence and incidence data is an obstacle to an accurate estimation of the epidemic in Colombia [57]. In the capital city Bogotá, sentinel surveillance in 2000-2002 reported that HIV prevalence among FSWs is 0.7–0.8 percent [53]. A small study conducted in Montería—the capital city of the northern department of Córdoba—assessed 69 FSWs and found that most of them had low education levels, low socio-economic status, and reported violence and sexual abuse within their own families. In a 2007 survey, the proportion of SWs nationwide that were tested for HIV in the previous 12 months and received their results was 85 percent for FSWs and 71 percent for MSWs. In the same survey, the proportion of female and male sex workers who reported condom use with their most recent client was 97 percent and 82 percent, respectively [34]. The Colombian health system has loopholes that make access to health care difficult, particularly for marginalized populations who do not have proper identification or a formal job, which is significant because at least 14 percent of the population has no insurance at all [58]. Some people with HIV have refused to use health services as they perceive them to be inefficient or stigmatizing. Vulnerable populations in Colombia include MSM, SWs, and those displaced by the armed conflict, including indigenous groups, Afro-descendants, and peasants [59].

In Santa Cruz, in Bolivia, a study in 1998 with more than 1,000 SWs found that 0.3 percent had HIV [46]. Truck drivers are considered bridging populations because they use the services of SWs in various locations throughout their journey, potentially facilitating the transmission of HIV and other STIs. A study conducted with 246 male truck drivers in Santa Cruz in 2002 found that 31 percent of participants reported never using condoms, 57 percent had used them, but not recently, and 43 percent had used them within the past month. Participants from the Bolivian highlands were more likely to have never used condoms, compared to participants from the Bolivian tropics. Only 37 percent reported using condoms with their regular partners [60], which supports the argument that Bolivian truck drivers play a role in bridging their regular partners with the larger population despite allegedly being engaged in a mutually monogamous relationship. Interventions targeting truck drivers and sex workers are essential in the attempt to curb the spread of the epidemic.

A study assessed a total of 1,845 FSWs in Argentina, Bolivia, Ecuador, and Uruguay in 1999-2002. Thirty-four out of 37 FSWs diagnosed with HIV were non-immigrant, and the overall prevalence of HIV among immigrant FSWs was 1.6 percent [0.3-4.7]. Researchers found that FSWs who were immigrants from Ecuador and Uruguay were more likely to use illegal drugs, whereas in Argentina non-immigrant FSWs were more likely to use drugs. In Bolivia the number of immigrant FSWs was too low, therefore precluding further analysis [61].

In Peru, the epidemic remains concentrated in the main urban areas, particularly in the capital city, Lima. The prevalence reported among female SWs from Lima in the late 1990s was 1.6 percent, compared to 0.6 percent in the rest of the country [46]. HIV transmission in Peru primarily occurs among MSM, though MSWs are a relevant group contributing to HIV transmission [62-65]. In a study conducted in 2007 among 129 MSWs in Lima, high prevalence of STIs were found and 92 percent of participants reported that clients asked them not to use condoms for sex [62]. A second study conducted with 1,206 MSWs found that their mean age was 26.6 years, had a frequency of 54.4 percent condom use with their last client, and 41.8 percent had never been tested for HIV. These studies highlight the relevance of MSWs in the dissemination of HIV and STIs into the MSM community and to the population at large due to the high frequency of unprotected sex with both male and female partners [64].

In Ecuador, sex work has a legal characteristic that has stimulated the immigration of FSWs from other parts of South America, and most migrant FSWs come from neighboring Colombia and Peru [61]. As in Tijuana, Mexico, FSWs in Ecuador are required to be periodically tested for HIV and other STIs [31]. FSWs who are immigrants have been found to be more likely to work in the streets and to have higher illegal drug use compared to non-immigrant women [61]. HIV seroprevalence among FSWs is believed to be around 2 percent in the main cities, but data are scarce [66, 67].

Brazil

In the early years of the HIV epidemic in Brazil, the populations most affected were MSM and people who received blood products or transfusions. Since the mid-1980s, the epidemic has increased among IDUs, but heterosexual contact has been the leading cause of transmission since the mid 1990s. The Mercosul free trade zone has shaped migration patterns in Brazil

[68]. Although it was created for legal commercial purposes by increasing the mobility of people, Mercosul has also stimulated illegal activities including sex work and the transit of illegal drugs [69]. Aside from efforts to provide free ART, the Brazilian government—in partnership with different NGOs, including gay and lesbian populations, FSW, and transvestites groups—has contributed significantly to the response to HIV through the implementation of innovative prevention activities. Although more work needs to be done, Brazil's campaigns to prevent AIDS-related stigma and discrimination have been successful

Brazil is one of the world's largest tourist spots, with its peak tourist season during Carnival in February. Brazil also houses large harbors such as Santos—the largest harbor in Latin America—and Rio de Janeiro, where sexual tourism and drug trafficking flourish. In 1996, a study of 697 SWs in the city of Santos found that most women who worked in the streets had low educational levels, with 6.5 percent of them being illiterate. Findings on condom use and drug consumption were of concern: 13 percent of FSWs agreed to have unprotected intercourse if they needed the money, 16 percent of the women used marijuana, 13 percent snorted cocaine, and, 6.6 percent had smoked crack at least once in the previous month. The highest HIV prevalence was found among illiterate FSWs, with 7 percent. This 1996 study also found that drug-using FSWs were less likely to use condoms and had more sexual encounters, possibly to pay for their drug consumption. Crack-using FSWs had started having sex at earlier ages and earned a lower average income than non-crack users [70]. A 2005-2006 study conducted in the same city with 175 FSWs using respondent-driven sampling (RDS) found that inconsistent condom use with clients was reported by 27 percent of the interviewees and, overall, HIV prevalence was 5.7 percent [71].

A study conducted in Manaus, Amazonas in 2005-2006 with 154 FSWs found a 2.6 percent HIV prevalence. Among SWs who had a steady partner, 36.3 percent reported to have always used condoms with them, 25.2 percent always used condoms with casual partners, and 88.8 percent had used condoms in their last sexual relationship [72]. Another study carried out in the same city and year, with 114 FSWs, reported an HIV prevalence of 3.0 percent [73].

In Espirito Santo, southeastern Brazil, a study conducted in 1998 with 180 FSWs found that 31.1 percent of the interviewees always used condoms, 52.0 percent sometimes used condoms, and 16.7 percent never used condoms [74]. A study carried out in Santa Catarina in southern Brazil among FSWs in 2003-2004, found a significant association between HIV infection and the number of clients per day, rates of unprotected sex, and the use of inhaled illicit drugs [15]. Also in southern Brazil, a qualitative study conducted in 2003 in Foz do Iguaçu, located on the triple frontier with Argentina and Paraguay, found that most FSWs who use crack were homeless or lived in slums, and rarely had access to health services, including testing and counseling. They did not benefit from initiatives aimed at increasing social support and improving access to prenatal and reproductive health. Most were engaged in unprotected sex with multiple partners and were more likely to have unprotected sex if clients paid more, were regulars, or "looked clean." FSWs-crack users had low self-perceived HIV risk despite being engaged in high-risk practices, and physical and sexual violence among occasional and steady clients and partners was a common obstacle for the negotiation of condoms [75].

Similar high-risk prostitution, drug trafficking, and drug consuming patterns have been described along the frontiers of Brazil, which has one of the largest frontiers in the world. The border extends for 15,000 kilometers and is shared with ten different countries across 588 Brazilian municipalities [76]. Brazil's frontier line is divided into three arcs: North, Central, and South. A recent study conducted in six frontier municipalities of the central arc, using WHO's strategic approach methodology, described a virtual absence of governmental structure and response to HIV at the borders; it also reported a notable absence of social cohesion and mobilization among the diverse groups of population and communities situated at the borders with regards to HIV [77], corroborating findings from other studies [75, 76].

Southern Cone

In Chile, local authorities have given a high priority to programs that target female and transvestite sex workers, but discrimination has hampered their implementation. Although sex work in Chile is illegal, there have been attempts to regulate it. In a recent study with 626 FSWs, a high rate of condom use was reported, with only 6.6 percent of interviewees reporting occasional or no condom use with clients. Not a single HIV infection was found in this study, which is a suspicious finding [78]. Although prevention strategies in recent years have included the implementation of rapid assessment and response studies and the delivery of educational activities targeting IDUs, such initiatives remain limited in scope [79]. NGOs have managed to advocate for the rights of minorities through developing strategies to mitigate homophobia and promoting HIV prevention [80].

According to UNAIDS, the HIV prevalence in 2007 in Buenos Aires, the capital city of Argentina, was 10.9 percent among FSWs and 6.7 percent among IDUs [34]. A study that found FSWs to be a high-risk population reported inconsistent use of condoms with their steady partners and the perception that they are at risk only with their clients but not with their spouses and lovers, which is an almost universal pattern among FSWs [81]. A study conducted in Buenos Aires as part of a larger study with immigrant and non-immigrant FSWs found that immigrant FSWs in Argentina are more likely to be single and to charge small fees per sex act, compared to local FSWs [82]. Successful interventions for at-risk populations in Argentina have been implemented mainly for injection drug users, generally providing syringe and condom distribution [83], but additional interventions are necessary to address inconsistent use of condoms as well as the entrenched stigma of sex work.

Data from Uruguay are also scant. A study found that most immigrant FSWs working in Uruguay were Brazilian and reported higher numbers of sexual contacts with foreign customers compared to local FSWs. Immigrant FSWs were found to have high rates of alcohol consumption, but condom use with clients was higher than for their non-immigrant counterparts [61]. A prospective study in 1999-2001 of 60 HIV-negative male transvestite SWs in Montevideo, Uruguay found a seroconversion incidence density rate of 6.03 per 100 person-years. Factors found to be related to HIV infection included the inconsistent use of condoms and the use of illicit drugs, such as snorted cocaine and marihuana [5].

A study using RDS methodology was conducted among 160 FSWs in Ciudad del Este, Paraguay, a town bordering Argentina and Brazil. The study found that consistent condom use was very low among FSWs and that condom use was significantly lower with steady and non-paying partners. HIV prevalence among FSW was relatively low but was higher than the prevalence among the population at large [84]. The study documented an active prostitution scene with overlapping, possibly synergistic, risk factors such as low rates of condom use, little HIV testing, and high rates of history of child abuse among current SWs.

Challenges and Responses

There have been diverse responses to HIV prevention efforts. Sometimes the response towards HIV prevention is in harmony with the needs of the most affected populations, but other times it is limited due to scarcity of funds, prejudice, lack of political will, and conservative social forces. In most areas of Latin America and the Caribbean, the stigma of sex work, homosexuality, and drug use hamper the implementation of interventions. Other obstacles include the illegal and clandestine character of prostitution, which make some SWs harder to reach, and anti-prostitution regulations under which corrupt authorities may commit human rights violations [80, 85].

There is a need to increase financing and to draw from national and international sources to ensure that successful projects no longer remain isolated achievements but rather become elements of a concerted and comprehensive strategy [86]. Structural and community based interventions targeting SWs have been implemented in some countries—such as the Dominican Republic—where they proved to be successful [38] and cost-effective [39], and in the city of Rio de Janeiro [87], which has shown modest results. Contrasting findings may be associated with varying characteristics among individual prostitution and drug scenes, and with the acceptability of the different interventions by the targeted populations and their subsequent motivation and mobilization. Targeted behavioral interventions have also proven successful with high-risk populations, as has been observed among FSWs and their clients in low- and middle-income countries [88]. Examples of such interventions have included distribution of condoms at hotels and prostitution locations, education, promotion of HIV and STI testing and treatment, and continuous behavioral and epidemiological surveillance [80].

Most countries in Latin America, and particularly in the Caribbean, lack a well-functioning surveillance system [89]. Such deficiency jeopardizes the monitoring of the epidemic and responses to HIV, while methodological limitations and the absence of regular, up-to-date assessments compromise the ability to generalize findings. A thorough understanding of each context is essential for the development and implementation of interventions tailored to each setting [90], but comprehensive assessments of local sex work scenes have been rare in LAC. A survey conducted in the early 1990s in Brazil documented an extremely heterogeneous situation according to the social stratification of FSWs [91], but seldom have similar studies been carried out in Brazil or in other countries in the region.

Despite these obstacles, new sampling strategies, such as RDS, have been used in recent studies targeting SWs and their clients, although convenience and small samples continue to be the norm. A new generation of projects using RDS have been launched in Honduras, El Salvador, Nicaragua, Panama, Costa Rica, and Brazil [92]—where preliminary findings seem promising [93].

Recommended Strategies

Community-based interventions have proven successful in different parts of the world as key components of successful responses to the AIDS epidemic. Education and HIV prevention with SWs are associated with an increase in condom use [94, 95], a desire for HIV testing, reduced stigma and discrimination, enhanced self-esteem, and an openness to address cultural and social barriers to healthy sexual practices [96]. Health promotion efforts and prevention of HIV and other STIs have also proven to be successful tools for education [97], community development, and capacity building [98]. In addition, increasing community participation and training community members as educators is an essential effort to curb the HIV epidemic in Latin America and the Caribbean [99].

The intersection between sex work and drug use increases the risk of transmitting or acquiring HIV. More interventions are therefore needed to assist SWs with safer sex negotiation, and will require fully integrated strategies aimed at reducing drug- and alcohol-related harm. The interconnections between sex work, stigmatization of SW, the tourism industry, and the HIV epidemic require attention by the public health system, tourism developers, and civil society in an effort to improve the structural conditions that contribute to vulnerability among sex workers and other vulnerable populations [85].

HIV in Latin America and the Caribbean, as in the rest of the world, confronts us with contentious issues: sexuality, gender inequality, commercial sex, MSM, drug use, violence, social oppression, racism, and death [100]. The interaction and synergy of all these issues are the greatest obstacles to the delivery of health care, particularly to vulnerable populations.

The increasing need to understand how social and structural factors shape HIV risk demands the creation of an inclusive definition of risk environment which may provide a greater understanding of the contexts in which high-risk interactions take place. Such broader perspectives call for community action and structural changes that aim to minimize inequality, promote and protect human rights, and to fight stigma and discrimination [101].

Discriminatory policies, such as mandatory screening of SWs, have been counterproductive and have further driven the SW population away from health services. Non-judgmental and user friendly management and care should be available to all persons, irrespectively of their social status, ethnic background, sexual identity and practices, and—last but not least— independently from their engagement into any form of paid sex or otherwise illegal or stigmatized practice. Unfortunately, such policies—and especially their translation into concrete actions by health professionals—have been rather an exception in high-, middle-, and low-income countries, as documented in the dramatic case reports conducted in New York [7] or in a recent nationwide survey in Brazil [102].

Comprehensive, multilevel interventions targeting SWs have been successfully implemented in different contexts in Latin America and the Caribbean, such as in the Dominican Republic [38] and Brazil [103]. They include initiatives taking place with individuals, their partners and friends, their extended risk and social networks, and in the broader context where risk and protective practices take place. This broader context includes factors as diverse as the national legal framework, law enforcement by local police and other security forces—some of them illegal themselves, such as the militia—, the interaction between drug and prostitution scenes, and the relationships between SWs and their clients with the health system and health professionals and with society at large. A preliminary list of interventions taking place with social networks has been proposed [7] and fully explored by recent demonstration projects [104].

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Chapter 4

Prevention of Mother-to-Child Transmission of HIV and Syphilis in Latin America and the Caribbean

Regional Situation and Trends

In Latin America and the Caribbean (LAC), each year thousands of children are born with HIV and congenital syphilis—both highly preventable infections with serious health consequences if left untreated. Based on 2007 estimates on number of births and prevalence of HIV and syphilis among pregnant women, each year in LAC an estimated 4,200 to 8,300 children become infected with HIV—the majority of them through mother-to-child transmission (MTCT) [1]— and 250,000 are born with congenital syphilis (see Figure 4.1 for incidence of congenital syphilis)—while more than 100,000 pregnancies are lost to fetal death or spontaneous abortion as a result of maternal syphilis [2]. The estimated toll of children under the age of 15 living with HIV in the region is between 46,400 and 70,000 children, while between 3,200 and 5,800 died from AIDS in 2007 alone [1]. Integration of the prevention, diagnosis, and treatment of both HIV and syphilis into routine maternal and child health care is an urgent public health priority that cannot continue to lag behind.

Figure 4.1: Incidence of congenital syphilis in Latin America and the Caribbean, 2005-2007



Source: [2]

It is estimated that in 2007 there were 660,000 women with HIV in Latin America and the Caribbean, representing a proportion of 35 percent of all adults with HIV in the region [1]. However, this estimated proportion is higher than 50 percent in Belize, the Dominican Republic, Guatemala, Guyana, Haiti, and Trinidad and Tobago [1]—reflecting the driving forces of socioeconomic disparity, gender inequality, and women’s biological vulnerability to the epidemic [1, 3]. Recent data on reported cases indicate that the majority of HIV transmission is attributed to unprotected heterosexual intercourse [4-9] and that women often become infected through sexual intercourse with their steady male partner—many of whom have acquired HIV via sex with other men [5, 8, 10, 11].

Over the past 25 years, the scientific and medical fields have made tremendous strides in the prevention of mother-to-child-transmission (PMTCT) of HIV. MTCT rates of less than 2 percent are reported from settings with comprehensive

PMTCT programs, which include antiretroviral treatment (ART) or antiretroviral prophylaxis (ARP), elective cesarean section, and replacement of breastfeeding with infant formula [12]—compared with a 15-40 percent transmission without any interventions. In addition, HIV testing at 28 weeks of gestation or before can result in earlier provision of ART or ARP and greater reduction in the rate of MTCT (8 percent vs. 2 percent) [13].

The 2006 WHO clinical guidelines on ARV drugs for treating pregnant women living with HIV and preventing HIV infections in infants [13] follow the 2006 WHO clinical guidelines on ART for adults and adolescents [14]. These include starting lifelong ART in all pregnant women with symptomatic HIV disease (regardless of CD4 count or viral load), in asymptomatic women with a CD4 cell count less than 200/mm³, and should be strongly considered in those with a CD4 cell count between 200 and 350/mm³ [14]. All other pregnant women with HIV should receive ARP to prevent perinatal transmission. The 2006 ARP recommendations consist of zidovudine (AZT) starting at 28 weeks of pregnancy, single-dose nevirapine (Sd-NVP) plus AZT or lamivudine (3TC) during intrapartum, and AZT or 3TC for seven days postpartum, combined with Sd-NVP and AZT for seven days for the infant [13].

At a WHO expert consultation conducted in 2008, the need to update these guidelines with a new definition of comprehensive PMTCT strategies became apparent [15]. Meeting participants recommended the urgent review of the eligibility criteria for initiating ART for the own health of pregnant women—to promote earlier initiation—and of ARP regimens—which should recommend interventions that are more efficacious than Sd-NVP. New clinical guidelines will likely include cesarean-section at 38 weeks in women whose viral load is unknown or above 1,000 copies/mL during the last trimester, particularly if women are not receiving triple therapy; vaginal birth will be recommended for those who do not have a clinical indication for c-section, who are receiving ART, and whose viral load is less than 1,000 copies/mL during the last trimester. The new clinical guidelines on antiretroviral treatment for pregnant women and on PMTCT will be published in the WHO website on December 1, 2009.

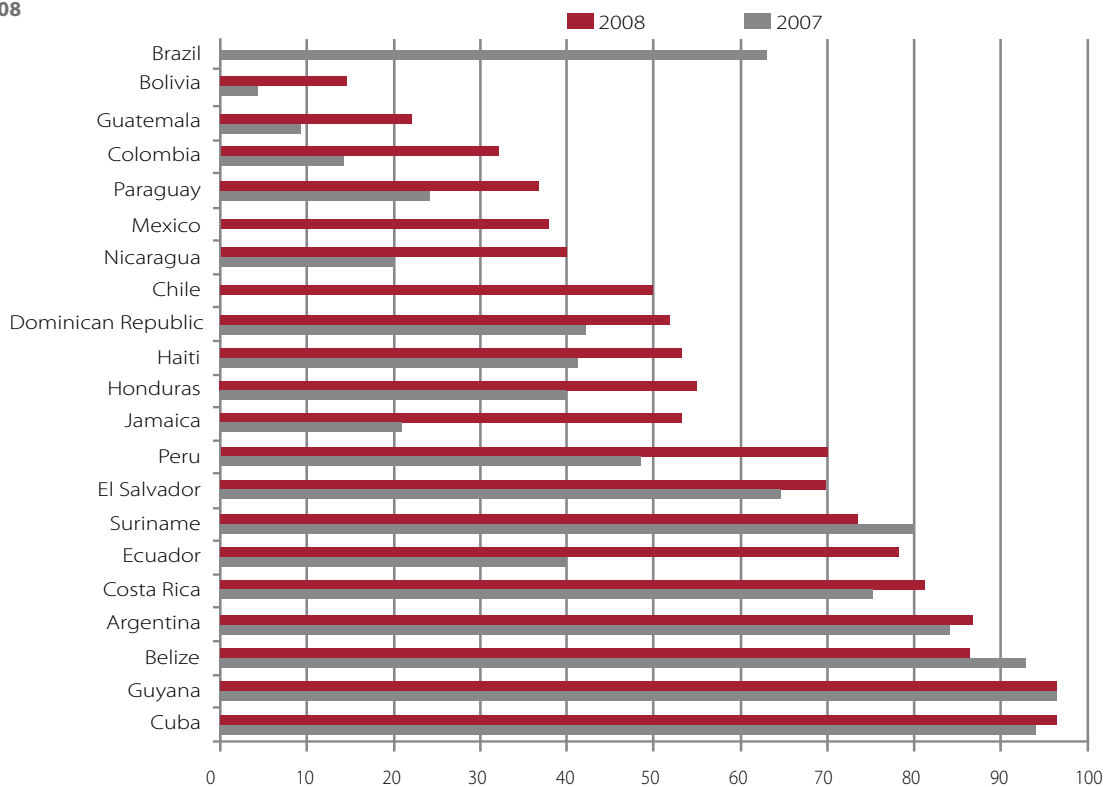
Regarding infant feeding, WHO and UNICEF have published guidelines to manage HIV in children [16, 17]; the general consensus to prevent HIV transmission is to recommend breastfeeding cessation when formula feeding is acceptable, feasible, available, sustainable, and safe (AFASS) [17]. Although still controversial, recent studies show that if breastfeeding is maintained, the risk of HIV transmission can be reduced with the provision of ART to the mother and exclusive breastfeeding followed by weaning at six months [18-21]; when the mother does not need lifelong ART, other studies show that the provision of ARP to the breastfeeding infant can also reduce the risk of acquiring HIV [22].

Effective PMTCT programs contribute to HIV control by reducing HIV transmission and AIDS-related morbidity and mortality for both mother and child. When a pregnant woman is diagnosed with HIV before or during prenatal care and receives ART for her own health, her chances of living a longer and healthier life increase and the reduction of her viral load as she responds to treatment lowers the risk of HIV transmission to her fetus and newborn, to her current or future sexual contacts and, if she subsequently becomes pregnant, to her new children. For women with HIV who wish to have more children, harm reduction strategies have been recommended [23] and, for those who do not wish to have more, further prevention of sexual transmission can be achieved through condom use, if available. When pregnant women test HIV-negative, post-test counseling can help raise awareness about HIV and provide information on how to prevent becoming infected, but this approach—although necessary—is not sufficient to bring about changes in safer sexual practice.

PMTCT, particularly if initiated early in pregnancy, contributes to the reduction of the number of children born with HIV and prevents, through the provision of replacement feeding, HIV transmission via breastfeeding. It facilitates early initiation of cotrimoxazole and ARP in infants exposed to HIV and of ART if the infant is diagnosed with HIV. In Barbados and the Bahamas, PMTCT programs have been proven to reduce AIDS-related mortality among children [24].

However, these interventions are not available to all: in 2008, based on estimates, 46 percent of pregnant women in Latin America and the Caribbean were tested for HIV (up from 19 percent in 2004) (see Figure 4.2 for data disaggregated by country) [25]. Only five countries in the region reported that at least 80 percent of pregnant women were tested for HIV in 2008: Argentina, Belize, Costa Rica, Cuba, and Guyana [25]. Among the estimated 32,000 [24,000 to 41,000] who tested HIV-positive in 2008, 54 percent [42 to 71 percent] received antiretrovirals (including ARP and ART), with data varying from 52 percent [36 to 87 percent] in the Caribbean to 54 percent [42 to 71 percent] in Latin America [25]—while a smaller number of pregnant women with advanced HIV disease received ART. Coverage of at least 80 percent of pregnant women with HIV who receive ARP or ART has been reported in Argentina, Brazil, Guyana, Jamaica, and Nicaragua [25].

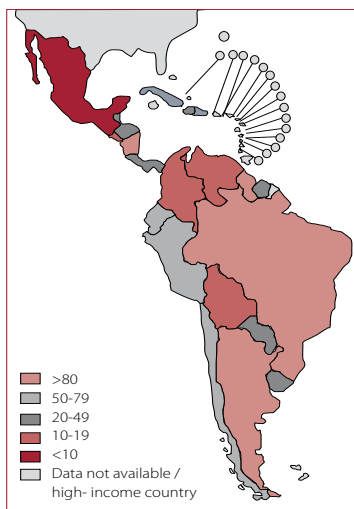
Figure 4.2: Percentage of pregnant women who are tested for HIV in selected Latin American and Caribbean countries, 2007-2008



Sources: [25, 26].

Figure 4.3 and Table 4.1 show the distribution of antiretroviral coverage for PMTCT in LAC countries. The coverage of ARP among infants exposed to HIV is estimated to have increased from 7 percent in 2004 to 32 percent in 2008 in the world, and from 42 percent in 2007 to 54 percent in 2008 in Latin America and the Caribbean [25]. Oftentimes, due to resource constraints, only the cheapest, easiest, and least efficacious measure—Sd-NVP—has been implemented, without giving due attention to the strengthening of comprehensive prenatal care [27] or to promoting comprehensive PMTCT approaches that adhere to more efficacious drug regimens [15].

Figure 4.3: Coverage of antiretrovirals to prevent mother-to-child transmission of HIV, 2008



Source: [25].

Table 4.1: Percentage of HIV-positive pregnant women who received antiretrovirals to reduce mother-to-child transmission of HIV in Latin American and Caribbean countries, 2008

	2008
Argentina	>95 %
Belize	20-68 %
Bolivia	6-21 %
Chile	32->95 %
Colombia	8-24 %
Costa Rica	13-50 %
Cuba	34->95 %
Dominican Republic	37->95 %
Ecuador	24-81 %
El Salvador	23-69 %
Guatemala	9-29 %
Guyana	85->95 %
Haiti	46[29-92] %
Honduras	27-94 %
Jamaica	70->95 %
Mexico	5-16 %
Nicaragua	65->95 %
Panama	13->95 %
Paraguay	29->95 %
Peru	29->95 %
Suriname	22->95 %
Venezuela	8-27 %

Source: [1].

Syphilis is a chronic, often latent, sexually transmitted infection with clinically recognizable stages [28] caused by the bacterium *Treponema pallidum*; if untreated, it can result in neurological and cardiovascular disease among many other pathologies [29]. Pregnant women with untreated syphilis (maternal or gestational syphilis) can transmit the infection to the fetus *in utero* or by direct contact with lesions during childbirth; the resulting congenital syphilis is the most prevalent form of vertically-transmitted neonatal infection in the world [30]. Syphilis can cause serious adverse outcomes for the pregnancy, depending on the timing since the sexual transmission and on the gestational age; infection with syphilis during pregnancy is associated with significantly more adverse outcomes than prior infection [31], with a risk of MTCT of up to 80 percent [32]. It is estimated that at least 25 percent of pregnant women with untreated syphilis will suffer stillbirth or spontaneous abortion and at least 25 percent will result in serious neonatal infection or low birth weight, both of which are associated with increased risk of perinatal death [28]. Children with congenital syphilis who survive can later develop mental retardation, deafness, and blindness, among other pathologies [33]. Additionally, some studies suggest that maternal syphilis is associated with a greater risk of mother-to-child transmission of HIV [34].

Of the estimated 12 million people who become infected with syphilis each year, 3 million live in Latin America and the Caribbean [35], where the prevalence of maternal syphilis is estimated at 3.9 percent in 2008—well above the world average of 1.76 percent [36]. This translates to around 540,000 cases of maternal syphilis each year—of which it is unknown how many are diagnosed and treated. Incidence of congenital syphilis varies from 0 cases per 1,000 live births in Cuba to 4 cases per 1,000 live births in certain areas of Brazil [37] to 12 per 1,000 live births in Bolivia in 2005 [38]. Testing for syphilis during pregnancy is easy to perform, the results of some diagnostic tests can be ready in minutes, and *in situ* treatment with benzathine penicillin is feasible and low-cost [30].

Efforts to eliminate congenital syphilis in LAC were initiated in 1991 by the Pan American Health Organization. As a result of several consultation meetings, in 1995 a working group developed the Regional Plan of Action for the Elimination of Congenital Syphilis in the Americas. Its main goal was to eliminate congenital syphilis as a public health problem by year 2000 by reducing the incidence of congenital syphilis to less than 0.5 cases per 1,000 live births. However, only one country—Cuba—achieved that goal on time [39]; Chile is the only other country in the region to have since eliminated congenital syphilis [2].

Situation at Country Level

The magnitude and distribution of HIV and syphilis during pregnancy in Latin America and the Caribbean is not well known due to extensive under-reporting of data and the dearth of published and available information. Consequently, the availability of data is uneven between and within countries—as reflected in this section. A few epidemiological sentinel surveys and published studies indicate that access to PMTCT for HIV and syphilis varies geographically, institutionally, and socially, but the mechanisms that create such inequalities are poorly understood.

South American countries

In **Brazil**, the national AIDS program has introduced different strategies since 1996 to reduce MTCT of HIV, which are routinely monitored and evaluated. These include: specialized care (services that work with multi-professional teams to assist individuals living with HIV/AIDS); training of health care professionals to follow official prophylactic and therapeutic guidelines; access to antiretroviral drugs; laboratory diagnosis (HIV testing, CD4 cell count, viral load, genotype and opportunistic infections assays); offering of HIV tests for all pregnant women; compulsory reporting of all HIV-positive pregnant women and of children exposed to HIV; rapid HIV tests in maternity units; breastfeeding substitution; and provision of infant formula to all children born to HIV-positive mothers. These initiatives have taken place in the context of a steadily increasing availability of resources for the diagnosis and treatment of HIV/AIDS, including universal free access to AZT in 1996 and ART since 1997.

Despite increased access to PMTCT services, missed opportunities still occur in the timely diagnosis and clinical management of HIV during pregnancy, particularly among women with low educational status. Failures in PMTCT have been associated with the lack of availability of HIV tests, delays in obtaining the test results, and the lack of acceptance of prophylaxis by the pregnant woman [40]. A study using data from the 2002 National Sentinel Surveillance Study showed that 52 percent of pregnant women were tested for HIV and received the result before giving birth, while only 27 percent received all the care recommended by national guidelines [41]. Large social and regional inequalities were found. Among illiterate women, 39 percent had an HIV test and 19 percent received the result before giving birth, while among women with a high school degree or more, 76 percent had an HIV test and 64 percent received the result before giving birth [41], as shown in Table 4.2.

Table 4.2: Percentage of pregnant women who were tested for HIV and received the result by women's education, Brazil 2002

Educational level	No prenatal care	Prenatal care, but HIV test not offered	Prenatal care, HIV test offered, but woman does not accept test	Prenatal care, HIV test provided, woman accepts test, but test result unknown	Prenatal care, HIV test provided, woman accepts test and receives test results
Illiterate	18.8	38.6	8.1	8.7	25.1
Primary school	6.6	32.1	4.3	9.1	48.0
Secondary school	3.7	18.9	3.0	10.0	64.5
High school not completed	1.9	14.2	3.0	6.8	74.3
High school degree	1.7	15.0	3.0	9.7	70.6
College degree	0.6	11.4	2.8	3.9	82.2

Source: [41].

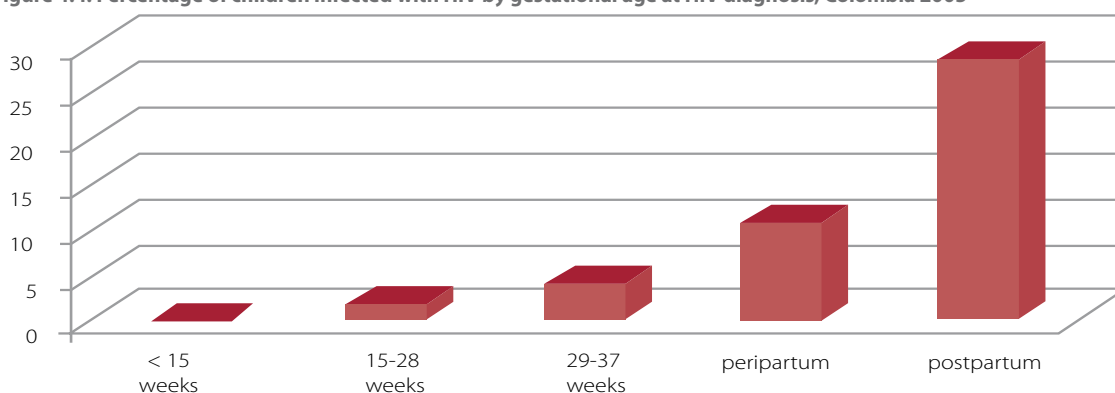
The State of São Paulo, located in the Southeast, has a population of 39,876,000 and represents the largest percentage of reported AIDS cases in Brazil (41.5 percent for the period 1980-2007 and 31.2 percent for 2006), the second largest

prevalence of HIV among pregnant women (3.0 per 1,000 live births in 2006), the largest number of HIV-positive pregnant women [42], and the highest proportion of MTCT, with 40.2 percent of cases nationwide [43]—and where reported cases of AIDS caused by MTCT of HIV fell by 71 percent between 1997 and 2005 [44]. This reduction in AIDS cases was probably the result of a combination of decreased MTCT and the delayed progression of HIV infection to AIDS among infected children because of improved access to treatment. Studies conducted to measure rates of MTCT of HIV in São Paulo State show an infection rate of 16 percent in 1995, 9.0 percent in 2000 (95% confidence interval, 7.0–11.3%), 7.5 percent in 2001 (5.6–9.9%), and 2.4 percent in 2002 (1.3–4.1%) [45, 46]. In 2006, 1,906 cases of HIV among pregnant women were reported in São Paulo State, out of an estimated total of 2,959 cases—reflecting an under-reporting of 35.6 percent [44]. Of the 1,906 cases, 9.1 percent were diagnosed with HIV during childbirth and 3.6 percent after giving birth (compared to 8.1 percent and 7.1 percent respectively in 2000); 13.4 percent did not receive ART or ARP during pregnancy in 2006 compared to 9.2 percent in 2000 [44].

Reporting of congenital syphilis has been compulsory in Brazil since 1986, although average annual under-reporting is estimated at 67 percent [47]; compulsory reporting of prenatal syphilis was only introduced in 2005 [47]. A cross-sectional study conducted in 2005 showed a prevalence of maternal syphilis of 2.3 percent in such different settings as the cities of São Paulo (capital of São Paulo State) and Fortaleza (capital of Ceará State) [48]. Data on reported cases show an increase in the incidence of congenital syphilis from 0.1 cases per 1,000 live births in 1998 to 1.6 cases in 2004, resulting in an estimated 12,000 live born children with congenital syphilis per year [49]. A cross-sectional national study with data from 2000 found that, among pregnant women admitted for labor or curettage, 36.6 percent of white women and 43.6 percent of non-white women had never been tested for syphilis [50]. In São Paulo State, in 2006 only an estimated 35.2 percent of cases are reported [44]. Among reported cases of syphilis in women between 2001 and 2005 in São Paulo State, 76.3 percent attended prenatal care, but only 59 percent of them and 13 percent of their sexual partners were treated during pregnancy [44].

In **Colombia**, of reported HIV cases since 1983 for which mode of transmission is known, 96 percent were via sexual relations, with an increased trend toward heterosexual transmission; of the remaining cases reported, 73.0 percent are due to MTCT [9]. However, under-reporting of HIV cases is estimated at 40.8 percent [9]. The estimated prevalence of HIV in Colombia in the age group 15 to 49 is 0.6 percent [51]. Its distribution shows wide regional differences: the department with the highest prevalence of HIV is Atlántico, in the Caribbean coast, with 1.20 percent in 1999 and 1.67 in 2003. Based on sentinel surveillance among pregnant women the national prevalence of HIV is estimated at 0.06 in 1991, 0.24 percent in 1999, and 0.65 percent in 2003 [9]. Between 2003 and 2005, during the implementation of the National Program to Reduce Mother to Child Transmission of HIV, the highest prevalence of HIV among pregnant women was found in the departments of the Caribbean, in Quindío, and in Santander [52]. Epidemiological data from that program show that the Caribbean region has the lowest coverage of prenatal care in the country (13.1 percent of women do not receive prenatal care), the greatest percentage of women diagnosed late for HIV (4.8 percent before week 16 of pregnancy and 23.8 percent after week 37), the greatest number of pregnant women with a timeframe under 90 days from the confirmed diagnosis of HIV to the time of giving birth (in 50.4 percent of pregnant women), and the lowest frequency of cesarean sections performed in women with HIV (75 percent) [52]. MTCT of HIV was higher in the absence of prenatal care, in cases of late recruitment of pregnant women, and when the initial viral load of women was greater than 10,000/mm³; the earlier in pregnancy when women were diagnosed with HIV, the lower the MTCT of HIV, as shown in Figure 4.4 [52].

Figure 4.4: Percentage of children infected with HIV by gestational age at HIV diagnosis, Colombia 2005

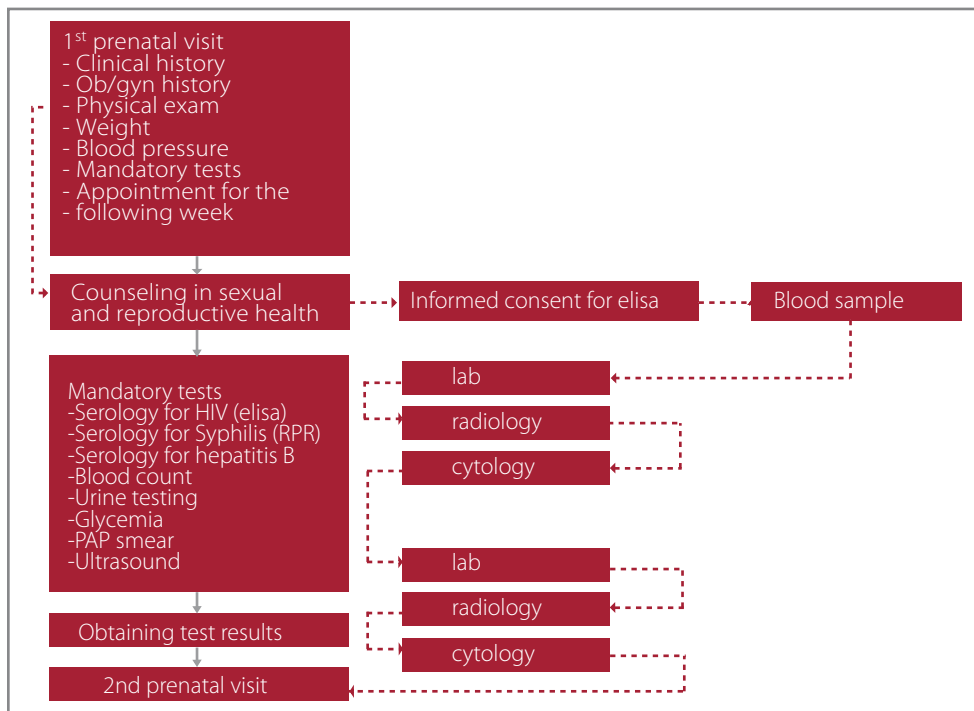


Source: [52].

In areas where health policies were designed from a social medicine perspective—as in Bogotá—or with the involvement of organizations of people with HIV—as in Cali—the diagnosis of HIV and syphilis during pregnancy occurred at an earlier stage and the trajectory of pregnant women in their search of health care was swifter. Several barriers, however, were identified. First, the fragmentation of primary health care contributes to the weakening of the laboratory infrastructure and makes the experience of health seeking for pregnant women more difficult, as maternal and child health centers may subcontract the provision of different tests required during prenatal care with a variety of health providers, sometimes located at far distances (and shown in Figure 4.5)—all of which contribute to diagnostic delays. Second, the low prioritization of HIV and syphilis among health personnel and the high turnover of clinicians disrupt the continuity of care. Third, the extensive under-reporting of epidemiological data on HIV and syphilis precludes the visualization of these epidemics and contributes to its low prioritization and funding. Finally, the internal armed conflict amplifies most of the existing barriers to early diagnosis and care [53].

In 2002, the prevalence of syphilis among pregnant women in Colombia was estimated at 2.2 percent, while the incidence of congenital syphilis was estimated at 1.5 cases per 1,000 live births [37]. Co-infection of syphilis is estimated at 5.8 percent among HIV-positive pregnant women [54]. Since 1996, Colombia has required syphilis testing during pregnancy, but for 50 percent of institutional births the test is not registered; 60 percent of registered cases are diagnosed during the last trimester of pregnancy, and only one third of diagnosed cases receive complete and timely treatment [54].

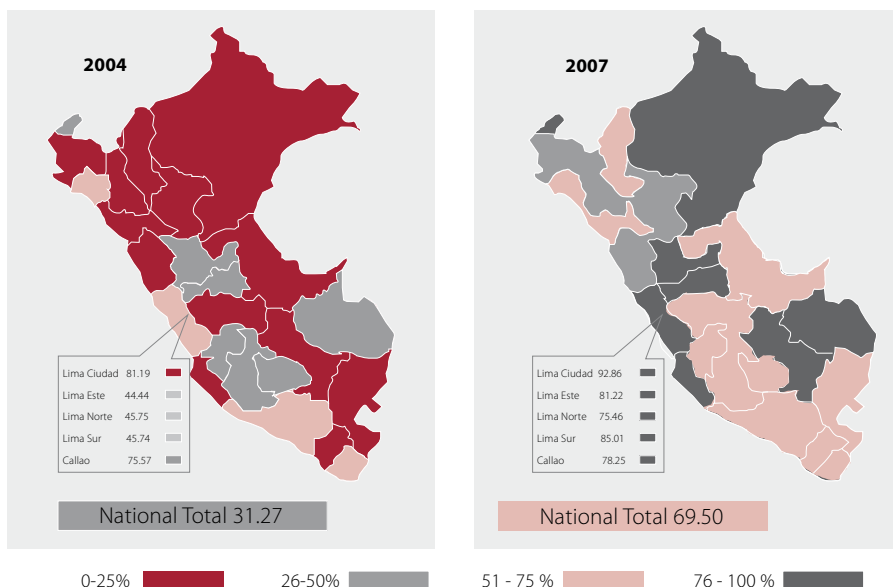
Figure 4.5: Frequent experience of pregnant women seeking care in Colombia, 2007



Source: [55]

In **Peru**, the ministry of health has developed a new integrated PMTCT strategy that addresses both HIV and syphilis, as reflected in the 2008 technical guidelines [56]. A total of 529 women diagnosed with HIV during pregnancy were reported in 2007 [57]. The prevalence of HIV in pregnant women is estimated at between 0.2 and 0.3 percent, which translates to around 450 children born each year with HIV in the country; in Lima, the estimated prevalence in pregnant women is 0.44 percent for 2002 [58]. Between 1987 and 2005, 1,823 cases of HIV/AIDS among people younger than 18 years were notified, of which 65 percent were in Lima [58]. With 68.6 percent of pregnant women tested for HIV in 2007, Peru has made considerable efforts to increase testing coverage (see Figure 4.6). The percentage of women who test positive and receive ARP or ART has also increased from 50.6 percent in 2006 to 81.9 percent in 2007 [59]; however, an analysis of data disaggregated by province showed that there is no association between the increase in testing and the increase of PMTCT coverage [59].

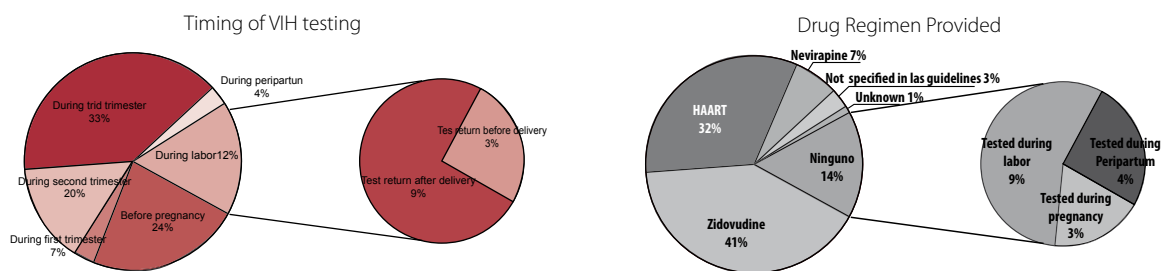
Figure 4.6: Coverage of HIV testing during pregnancy in Peru, 2004-2007



Source: [60, 61].

A study conducted in 2005-2006 evaluated the efficiency of the interventions for preventing vertical transmission of HIV in seven maternity centers of Lima and included all 198 women diagnosed with HIV who gave birth at those hospitals during the study period [62], summarized in Figure 4.7. Of the 200 newborns delivered by the 198 women, 68.5 percent did not receive any test in accordance with the national guidelines, and the hospitals do not know their HIV status. With respect to the children who were tested with virological tests at six months of age or with enzyme-linked immunosorbent assay (ELISA) at 18 months, 10.3 percent of those born in 2005 and 15.4 percent of those born in the first trimester of 2006 were diagnosed with HIV. Of all the children diagnosed with HIV, only 20 percent were tested as part of the standard care protocol; the remaining 80 percent were tested as part of research studies [62]. The high percentage of MTCT reflects the failure to comply with existing clinical protocols.

Figure 4.7: Timing of HIV test performance during pregnancy and drug regimen provided to a cohort of 198 pregnant women diagnosed with HIV in seven maternity hospitals in Lima, Peru, 2005-2006



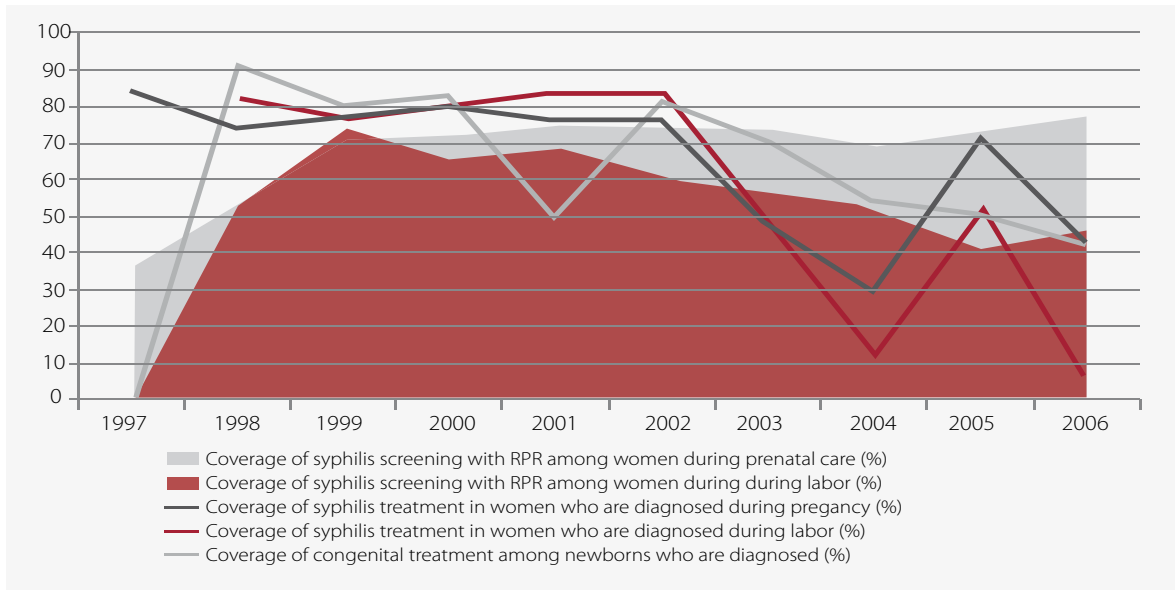
Sources: [59, 62].

In a 2000 sentinel study carried out through anonymous participation during the peripartum in 25 Peruvian cities, the prevalence of syphilis was found to be 1.36 percent nationally, 1.30 percent in Lima, and 1.41 percent on average in the rest of the cities; the sample included women who had never sought prenatal care [63]. The national prevalence of syphilis observed in 2002 is 0.56 percent, with greater prevalence in rural areas of the mountains and the jungle [58]; in the same year, a study conducted in 24 cities showed a prevalence of 1.1 percent in both women and men aged 18 to 29 [63]. In a study of 10,212 pregnant women who sought prenatal care in 2002 and gave their consent for study participation, the

prevalence of syphilis was found to be 0.56 percent overall, 0.95 percent in the jungle, 0.94 percent in the mountains, and 0.19 percent on the coast; the prevalence of HIV was found to be 0.21 percent overall, 0.34 percent in the jungle, 0.30 percent on the coast, and 0.03 percent in the mountains [58].

Figure 4.8 shows that screening for syphilis in pregnant women has oscillated around 72 percent since 1999, while treatment coverage during prenatal care has fallen since 2002. In puerperal women, screening has fallen since 1999, and treatment coverage has fallen since 2002; treatment coverage for congenital syphilis has fallen since 1998.

Figure 4.8: Evolution of the coverage of syphilis screening and treatment in pregnant and puerperal women and of the coverage of congenital syphilis health facilities of the Ministry of Health. Peru, 1997-2006.



Sources: [59], based on [63, 64].

Bolivia, where the 0.2 percent estimated prevalence of HIV in adults is the lowest in South America [1], has one of the highest prevalence of congenital syphilis in the world. Sentinel surveillance data from 2002 show a prevalence of HIV of 0.2 percent among pregnant women in major urban areas [65]. In 2007, at the 2,983 prenatal care facilities in the country, 20 (or 0.7 percent) provided HIV testing and counseling and, of the estimated 318,000 pregnant women, 2.5 percent received a test result [66]. Of the estimated 759 pregnant women with HIV, 34 (or 4.5 percent) received antiretroviral prophylaxis or therapy in 2007 [66]. A cross-sectional study conducted in 2004 in four provinces showed that prevalence of syphilis among 1,594 postpartum women was 7.2 percent; fewer than eight years of education in both parents and lack of prenatal care were strong predictors of congenital syphilis [67]. A total of 80.3 percent of women who attended prenatal care in 2002 were never tested for syphilis due to lack of laboratory facilities, particularly in rural areas [67]. A study conducted in 2003 and 2004 found that the average cost of a syphilis test was US\$1.48 using rapid plasma reagin (RPR) and US\$1.91 with a rapid test (immunochromatographic strip or ICS); in health centers without laboratories, the cost per women screened with a rapid test was US\$2.84 [68].

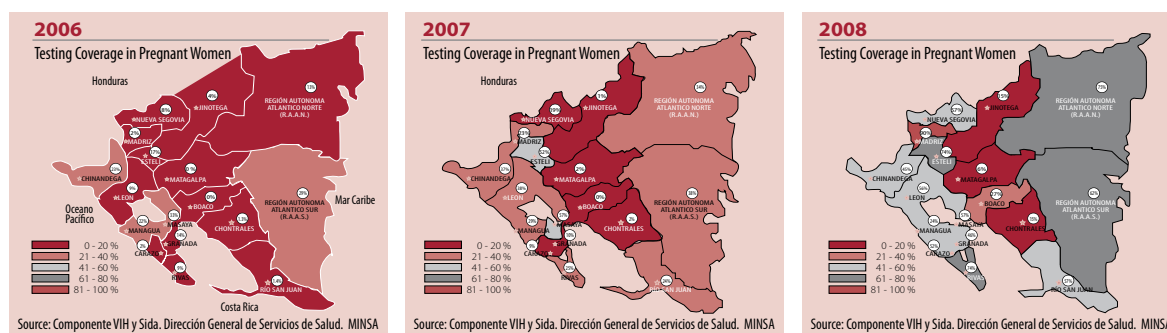
Central American countries

The estimated prevalence of HIV in **Panama** in 2007 and 2008 is 1.0 percent in adults—the second highest in Central America after Belize [1, 69]. Among pregnant women, it is 0.3 percent in 2008—and as high as 1.9 percent in the Caribbean province of Colón [69]. In 2008, coverage of PMTCT is 53 percent of institutional births, which represent 98 percent of all births [69]. At the aggregate level, the national prevalence of HIV among pregnant women has decreased from 2005, when it was estimated at 0.7 percent [70]. MTCT of HIV accounts for 3.6 percent of HIV transmission and, as of September 2006, 322 children under the age of 15 had been diagnosed with AIDS [71]. Incidence of congenital syphilis between 1990 and 2005 has ranged from 0.1 to 0.5 per 1,000 live births [71]. HIV test during pregnancy has been provided free of charge to pregnant women since March 2006 [71].

A situation analysis of public health institutions in Panama showed that: syphilis testing during pregnancy is considered a routine procedure but gaps still persist in the provision of treatment to those who test positive, training on HIV did not include PMTCT, the majority of health professionals had not been trained on pre- or post-test counseling, clinical protocols for PMTCT were not always available, women who present for labor were not tested for HIV, labs were often not equipped with updated biosecurity measures and reagents were not always available, cases of HIV during pregnancy were categorized as very high risk pregnancies but a clear referral system did not exist, viral load and CD4 tests among pregnant women were only performed once a year, a national clinical protocol for the management of children exposed to HIV did not exist, and data collection and reporting of clinical and process indicators for epidemiological surveillance were often incomplete [71].

In **Nicaragua**, HIV prevalence among adults is estimated at 0.2 percent in 2007 [1], with 94 percent due to sexual transmission; of the 672 cases of HIV reported in 2007, 35 percent corresponded to women [72]. In 2008, coverage of HIV counseling and testing was expanded to all municipalities, resulting in 61.6 percent of pregnant women being tested for HIV with rapid tests in eight prioritized Nicaraguan departments, up from 21.0 percent in 2006 [73] (see Figure 4.9). At the national level, 43 pregnant women diagnosed with HIV—52.2 percent of the total—received ARP in 2007, up from 43.9 percent in 2006 [74]. Increased coverage was achieved thanks to the acquisition of laboratory equipment and reagents and the training of 152 technicians on HIV diagnosis; in the Caribbean municipalities, which are predominantly indigenous and Afro-descendant, health units have solar-powered technology for HIV diagnosis. PMTCT outreach strategies have been strengthened through mobile brigades aimed at providing education, counseling, and rapid HIV testing, at referring people with HIV-positive test results to the nearest health unit, and through home visits provided by 236 traditional midwives and community leaders who provide community counseling activities for PMTCT [75].

Figure 4.9: Expansion of HIV testing coverage during pregnancy, Nicaragua 2006, 2007, 2008



Source: [73].

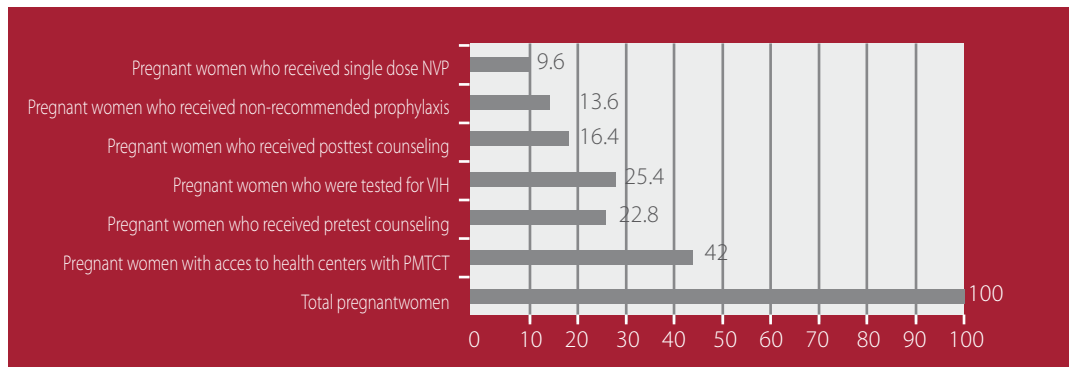
Caribbean countries

In the Caribbean, the Bahamas, Barbados, Cuba, and Jamaica have achieved or are headed towards universal coverage of PMTCT of HIV programs, whereas Belize, Guyana, Haiti, Suriname, Trinidad & Tobago, and the Dominican Republic are lagging behind [24]. **Haiti**, the Caribbean country with the largest number of people living with HIV, has an estimated adult prevalence of 2.2 percent in 2007 and an estimated 6,800 children with HIV [1]. In the 98 sites with PMTCT in the country, a total of 143,037 pregnant women were tested for HIV in 2008; a prevalence of HIV of 3.13 percent was found and, of all children born in those health institutions that year who were exposed to HIV, 25.8 percent were diagnosed with HIV [76]. Among the 105,429 women who were tested for syphilis, 4.97 percent tested positive [76]. Data from two studies conducted with higher resources than average for Haiti show promising results. In a PMTCT center in Port-au-Prince, the capital city, a retrospective study on MTCT was conducted among infants born to women who were HIV-positive between 1999 and 2005; among the 407 women who received short course zidovudine or Sd-NVP, transmission occurred in 10.8 percent of cases, whereas of the 60 women who received HAART, MTCT was 1.9 percent [77]. In PMTCT centers in Central Haiti, where the majority of the population lives in abject poverty, the use of dried blood spots (DBS) on filter paper for diagnosing HIV in infants exposed to HIV was introduced in 2004. Infants are tested at one and four months of age and DBS are processed overseas by polymerase chain reaction (PCR) tests. A study conducted with the first 138 children enrolled in the program showed that median time from blood collection to obtaining test results in Haiti was 1.7 months, while the median age at which HIV status was confirmed (among 15 children total) was 7.3 months (compared to 18 months without DBS) [78]. Early diagnosis with DBS allowed the immediate initiation of ART and proper diagnosis of childhood diseases that have similar

clinical presentations (such as tuberculosis or malnutrition), while suspending cotrimoxazole prophylaxis in those confirmed to be HIV-negative. In Haiti, where most pregnant women in rural areas do not have access to syphilis testing, a study projected that integrating rapid syphilis testing with a national program of PMTCT of HIV would prevent each year more than 1,100 cases of congenital syphilis and more than 1,200 neonatal deaths or stillbirths, mostly in rural areas, with an estimated cost of US\$108 to US\$218 per adverse outcome prevented [33].

In the **Dominican Republic**, 1,649 HIV-positive pregnant women were reported to UNAIDS [1]; the estimated national prevalence of HIV in pregnant women in 2006 is 2.3 percent [79] and the coverage of PMTCT for HIV is estimated at 41 percent [24]. In 2005, HIV surveillance data from nine hospitals show a prevalence of HIV in primiparous pregnant women ranging from one hospital with 4.09 percent (municipality of Boca Chica in Santo Domingo), to five hospitals with a prevalence of between 2 and 3 percent, to three hospitals with a prevalence under 2 percent [80]. Although over two thirds of pregnant women receive prenatal care, HIV prevention efforts are focused on the prevention of MTCT with Sd-NVP—with no follow-up for HIV-positive women [81, 82]. In an effort to reduce MTCT of HIV, in 2000 the Ministry of Health introduced PMTCT in all mother and child health-care institutions in the country. Nonetheless, two obstacles were encountered: low numbers of voluntary counseling sessions (28 percent of pregnant women) and inadequate number of HIV rapid tests (54 percent of women attending prenatal care received an HIV test) [82]. In 2005, the Ministry of Health set the goal of 0 percent cases of MTCT of HIV. Between 2005 and 2006, however, of all estimated HIV-positive pregnant women in the country, 25.4 percent were tested for HIV, 9.6 percent received Sd-NVP (as shown in Figure 4.10)—the standard national prophylactic measure at the time—and an estimated 1,558 to 3,896 newborns acquired perinatal HIV [79].

Figure 4.10: Gaps in PMTCT in the Dominican Republic, 2005-2006 (Coverage in %)



Source: [79].

Regarding syphilis, which is addressed by a different program within the Ministry of Health, a study conducted in 2006 found that, among pregnant women in the Dominican Republic, only 107 syphilis tests were performed, compared to 22,800 HIV tests [79]. A sentinel survey conducted in 2006 in 13 health facilities from throughout the country found a prevalence of maternal syphilis of 1.38 percent among women ages 15 to 24 and 1.43 percent among those ages 25 to 49 [83].

In **Cuba**, the estimated prevalence of HIV is the lowest in the Americas, with 0.1 for the total population [1] and 0.01 for pregnant women [84]. An estimated 99.4 percent of infections are through sexual contact [85]. Of the total 10,655 Cubans who had been diagnosed with HIV by the end of December 2008 [86], 2,074 (19.5 percent) were women. Since HIV was first diagnosed at the end of 1985 [87, 88], a study of the reproductive histories of 26 percent of HIV-positive pregnant women found that fertility rate among HIV-positive women increased from 0.12 children per woman in 1985-1996 to 0.21 in 2002-2006 [10, 89, 90]. A total of 354 HIV-positive women had given birth to 382 children by September 2009, the majority of whom were born after 2001 [10, 86, 91]—when ART became widely available in Cuba [92]. Although 36 of all these children acquired HIV during pregnancy, labor, or breastfeeding—of whom 11 had died as of September 2009 [93]—the rate of MTCT in Cuba has decreased as more comprehensive prevention measures have been introduced; Table 4.3 shows actual figures of mother-to-child transmission of HIV by different types of clinical interventions; the 72 children who are under evaluation have not been included in the table. Coverage of PMTCT is 100 percent [94] and the country has reported having eliminated HIV among children [24]. As a result, UNAIDS has touted Cuba’s PMTCT of HIV program as “among the most effective in the world” [95].

Table 4.3: Percentage of mother-to-child transmission of HIV by type of birth and antiretroviral regimen in Cuba, January 1986—September 2009 (%).

Type of birth and antiretroviral regimen	Number of HIV-positive pregnant women	Number of children diagnosed with HIV	Percentage of MTCT
Vaginal + no ARVs	51	22	43.1
Cesarean + no ARVs + no breastfeeding	49	6	12.2
Cesarean + AZT started later than 14 weeks + no breastfeeding	55	4	7.3
Cesarean + AZT started at 14 weeks + no breastfeeding	46	2	4.3
Cesarean + HAART + no breastfeeding	109	2	1.8
Total	310	36	

MTCT: mother-to-child transmission of HIV

Sources: [91, 93].

Multiple reasons have been cited to explain this relative success: the existence of a solid and accessible maternal and child health program prior to the HIV epidemic, routine testing of HIV during the first and third trimesters of pregnancy, easy access to voluntary pregnancy interruption during the first 12 weeks, provision of ARP or ART starting at the 14th week of pregnancy (AZT from 1997 to 2008 and ART since October 2008), surgical birth, recommendation of breastfeeding cessation, and distribution of evaporated milk—all of which are fully publicly subsidized and provided free of charge to all Cuban nationals [87, 92, 96, 97]. Cuba is the only Latin American country that eliminated congenital syphilis by year 2000 [39].

Diagnosis and follow-up of children with HIV in Cuba follows a well-established protocol. All children born to women with HIV are followed at the Hospital of the Institute of Tropical Medicine Pedro Kourí in Havana; air or ground transportation for the child and up to two family members is provided by the Ministry of Public Health. PCR on filter paper with dried blood spots is performed on newborns at 15 days after birth. If negative, the infant is followed by PCR, ELISA, Western Blot (WB), and Protein 24 Antigen (P-24) tests routinely at 3, 6, 9, 12, 18, 24, and 36 months of age; when two PCRs and two WBs are negative, the child is diagnosed free of HIV and is referred to healthy infant care through the neighborhood family doctor program. If the PCR on filter paper is positive, the test is followed by a PCR on whole blood; if this second test is also positive, the infant starts ART independently from the CD4 and viral load results—to stop viral replication and facilitate the infant’s immunological development. If the infant has a positive PCR test with dried blood and a negative PCR test with whole blood, the infant is followed by PCR, CD4 count, and viral load tests every three months for clinical staging and for ART if needed [98-100]. Since 1996, all children born to HIV-positive mothers have been diagnosed prior to their second birthday and, since 2001, before they reach their first birthday [101]. However, for children who may have missed some of their appointments—due to long distance, difficulty in arranging transportation, or other causes—the follow-up may continue until 36 months of age.

Major Challenges in the Expansion of Prenatal Care to Include Routine PMTCT of HIV and Syphilis

The birth of thousands of children with HIV and congenital syphilis indicates the lack of adequate prenatal care, existing shortages of supplies (HIV and syphilis tests and reagents, kits for cesarean sections) and medications (antiretrovirals, penicillin), centralization of laboratory and specialized services such as HIV and high-risk obstetrics, and lack of coordination (including referral and counter-referral) between obstetric and HIV care providers [53, 59, 102]. Barriers inside the health care setting result in the failure to provide HIV and syphilis testing as routine procedures to pregnant women, delays in obtaining test results, subsequent gaps in follow-up prophylaxis and treatment, and loss to follow-up of children exposed to HIV or syphilis and their mothers. These limitations exist within a context of limited infrastructure and non-integrated health programs that are the norm for most low- and middle-income settings. Political instability resulting in interrupted health services, frequent changes in Ministry of Health leadership, and lack of universal health care for women and children further contribute to the limited coverage of PMTCT during pregnancy in many settings. It also indicates that prenatal care is not being fully utilized as an entry point to promote early diagnosis of HIV and syphilis infection among pregnant women, which would allow interventions not only to prevent vertical transmission of HIV and syphilis, but also to initiate penicillin treatment and lifelong ART in those women who need treatment. Additionally,

existing PMTCT programs tend to focus on preventing the transmission of HIV to the child without giving due attention to the follow-up of the pregnant or puerperal woman.

Women may not seek prenatal care, testing, and adhere to treatment due to the need to prioritize child care or paid work over health seeking—especially if asymptomatic and if financial resources are limited, as documented in Haiti [103] and in Peru [59]. Even when women reach the health system, prenatal care can be provided through a complex, time-consuming series of encounters that place additional burden on the pregnant woman to navigate through a long and costly process, as documented in Colombia, where only in a few settings are mechanisms incorporated to seek or rescue women who drop out of this process [53]. Women who are actually enrolled in PMTCT programs may be lost by the health system, along with their children, if they give birth at home or at a different hospital where they are unaware of her HIV or syphilis status—missing the opportunity to provide timely prophylaxis to the newborn. In some cases, due to lack of awareness of the severity of HIV and syphilis, disclosure concerns, AIDS-related stigma, or fear of domestic or political violence [104], pregnant women diagnosed with HIV may stay away from health facilities—particularly if they are located in their neighborhoods—and forgo HIV care both for themselves and their children. Even when women bring their children to health facilities, they may not disclose their exposure to HIV or syphilis, particularly if the child shows no symptoms that the mother can recognize.

The current heterogeneity in access to both prenatal, HIV, and syphilis care in LAC countries is cause for concern and points to the need to improve access to prevention and treatment [105] and to promote early diagnosis of HIV and other STIs while strengthening primary health care. While coverage of prenatal care—which should include at least four visits per pregnancy—varies across LAC, it is estimated that 86 percent of women are attended at least once during pregnancy by skilled health personnel (doctor, nurse or midwife) [106]. The proportion of women who were never attended during pregnancy is as high as 40 percent in Guatemala, 31 percent in Ecuador and Bolivia, and 30 percent in Costa Rica, while the proportion of women who have at least one prenatal visit is as high as 86 percent in Mexico and Brazil, 91 percent in Colombia, 98 percent in the Dominican Republic and 100 percent in Cuba [106]. Even among countries with adequate prenatal care coverage, effective scale-up of integrated prenatal with HIV and syphilis care has been difficult. Of the LAC countries reporting data on MTCT, nine offered prevention of MTCT of HIV in only less than 30 percent of health facilities, one in between 31-60 percent, and ten in over 61 percent [79], while the number of women in those MTCT centers who received care for their HIV infection is not known.

Few recent studies highlight the link between barriers to testing for HIV and syphilis in pregnancy with poverty, low education, and gender inequality—and much of the work stops short of addressing these problems in a directed and broad-based intervention. That is, there is a need to identify the existing barriers to comprehensive PMTCT programs across social gradients with the objective of implementing effective strategies that will redress the current situation. If barriers at all levels are not taken into consideration, intervention strategies are unlikely to have an impact on the entire targeted population; in particular, the most vulnerable women and children—those at greatest risk for acquiring HIV and syphilis—are least likely to benefit from any intervention that fails to address individual, social, and health systems barriers to care.

There is also the need to understand the magnitude and distribution of prenatal and neonatal HIV and syphilis. Although sentinel surveillance systems exist in many countries, epidemiological knowledge is limited due to under-diagnosis and to poor reporting systems that often rely on multiple paper forms where information is not collected in a systematic way and on reporting procedures conducted by overworked staff—which results in extensive under-reporting. Additionally, current reporting of PMTCT program data can create confusion, as the numerator includes women who receive either ARP (Sd-NVP or prophylactic combinations of two or three ARVs) or ART, without disaggregating by different types of drug regimens [107]—limiting the relevance of the data for clinical, epidemiological, and programmatic purposes. Only eight LAC countries reported disaggregated data by type of regimen in 2008 [26], although specific data on drug regimens by country have not been published.

Priority Strategies for the Integration of Prenatal Care with the Diagnosis and Clinical Management of HIV and Syphilis

In accordance with the Millennium Development Goal number 6, the Pan American Health Organization has set the target, by 2015, of a reduction of MTCT of HIV to less than 5 percent and an incidence of congenital syphilis of less than 0.5 cases per 1,000 live births [108]. Among the strategies envisioned to meet these goals, it was expected that: "By 2007, prevention of mother-to-child transmission interventions, including the prevention of congenital syphilis, will have been integrated into antenatal services. Follow-up will include ART for eligible women with HIV and care for the mother and infant after delivery ("PMTCT+")" [108]. Furthermore, PAHO and UNICEF launched in 2008 the Initiative for the Elimination of Vertical Transmission of HIV and Syphilis in the Americas, aimed at reducing MTCT of HIV to ≤ 2 percent for 3 years and incidence of congenital syphilis to ≤ 0.5 cases per 1,000 births for 3 years by 2015 [109]. Finally, the Regional Strategy and Plan of Action for Neonatal Health within the Continuum of Maternal, Newborn, and Child Care [110], is an inter-agency strategic consensus that also promotes the prevention of mother-to-child transmission of HIV and syphilis in Latin America and the Caribbean.

Implementation plans based on rigorous operational research can help achieve these goals. The Latin American and Caribbean Initiative for the Integration of Prenatal Care with the Testing and Treatment of HIV and Syphilis (ILAP), launched in November 2007 in Panama City, has the goal of using operational research to strengthen health systems through the integration of prenatal care with the testing and treatment of HIV and syphilis and the development of health care delivery mechanisms that contribute to the Universal Access global strategy on HIV prevention, treatment, and care [55]. ILAP brings together the expertise of the national AIDS programs from Brazil, Colombia, Cuba, Dominican Republic, Nicaragua, Paraguay, Peru, and Uruguay, public health decision-makers, program managers, and practicing clinicians from multiple countries and international institutions (UNICEF and UNAIDS) with rigorous ethnographic and epidemiological operational research and health policy analysis (Harvard Medical School). The shared goal is to develop a multicountry intervention-oriented plan guided by operational research to universalize testing and treatment for HIV and syphilis during pregnancy and neonatal care. Its implications for public health are enormous: ILAP's objectives are to contribute to the early diagnosis and timely treatment of HIV and syphilis in women, decrease the numbers of mother-to-child transmissions of HIV, congenital syphilis, and other STIs, and provide better care for large numbers of women and children in LAC—while providing a framework for national and international large-scale policy change aimed at strengthening health systems. The same mechanisms can be used to prevent and treat other sexually transmitted infections. Although each plan of action is specific to each country, the collaborative work through ILAP allows the sharing of implementation strategies and problem solving, and helps advance ILAP countries towards meeting the goals of the PAHO-UNICEF Initiative for the Elimination of Vertical Transmission of HIV and Syphilis in the Americas—thanks to UNICEF's coordination.

Promoting early access to prenatal care, expanding currently available maternal and child health care and boosting those centers that are less well equipped should be a priority in expanding early testing and treatment for HIV, syphilis, and other STIs during pregnancy and as mechanisms for strengthening health systems. Such a strategy may further prevent additional HIV transmission through risk-reduction counseling and ART-mediated viral suppression [111].

Recommended strategies should include:

1. Develop mechanisms to integrate all activities related to PMTCT of HIV with those related to PMTCT of congenital syphilis. This should be part of a strategy to integrate prenatal care with the detection and management of HIV, syphilis, and other STIs during pregnancy.
2. Revise national guidelines and clinical protocols and update them with the latest WHO/PAHO treatment guidelines for HIV and syphilis, the WHO Integrated Management of Adolescent and Adult Illness (IMAI) [112], and the WHO/UNICEF Integrated Management of Childhood Illness (IMCI) [113] strategies. Include their training modules in the formal training of medical doctors, nurses, community health workers, and other health professionals, as is already being done in some countries.
3. Universal screening of HIV and maternal syphilis of pregnant women should be included in national guidelines and clinical protocols [114-116] and should be provided to all pregnant women without the need to request approval from public or private health insurance providers.
4. Laboratory turnaround time for HIV and syphilis testing—the interval between blood collection to clinical decision based on availability of test results—would be shortened if rapid tests were used more frequently, particularly in remote

areas. In all cases, blood collection from pregnant women for HIV and syphilis testing should be performed during the first clinical encounter to avoid missed opportunities—regardless of the need to perform other tests—and when presenting for labor.

5. Early diagnosis of HIV infection followed by immediate evaluation for ART eligibility for possible immediate initiation of treatment would improve health outcomes for both mother and infant—with direct additional benefits to the family unit as a whole. For syphilis, it has been suggested that it is feasible to introduce rapid testing in settings with no laboratory infrastructure at a small incremental cost per women screened [68] and, in settings where syphilis confirmation tests during prenatal care are not always available, the policy of test and treat has been recommended [33, 117-119]. If proven beneficial for pregnant women, the test and treat approach for HIV [120] should also be considered.
6. Testing positive for HIV during pregnancy should elicit closer follow-up and qualify within the group of high risk pregnancies—without singling them out to prevent stigmatization—even though a confirmatory test is not yet available. Pro-active clinical follow-up and epidemiological reporting mechanisms should be put in place to avoid losing to follow-up pregnant women with a presumptive HIV diagnosis.
7. Testing of partners of women diagnosed with HIV and syphilis should be encouraged to prevent reinfection of women and to provide treatment to their partners through post-test counseling and by promoting the involvement of male partners in the processes of pregnancy and prenatal care. However, this may not be feasible when HIV is highly stigmatized, particularly when women may suffer domestic violence as a result of their diagnosis. In such cases, indirect mechanisms through community participation and community outreach to encourage partners and others to get tested and treated should be promoted.
8. All newborns exposed to HIV and syphilis should be tested and treated as soon as possible and their mothers should receive complete information on infant feeding options, including access to breastmilk substitutes, as part of an integrated health care approach. Pro-active clinical follow-up and epidemiological reporting mechanisms should be put in place to avoid losing to follow-up these children and their mothers.
9. For women who have been diagnosed with HIV prior or during pregnancy, all mechanisms should be put in place to provide clinical follow-up after they give birth—giving birth should not be seen as the end point for the provision of ART—, counseling on secondary prevention to avoid infections and reinfections, and counseling on contraception or planning future pregnancies.
10. Data collected through the clinical history forms of pregnant women and newborns should be better utilized to improve their clinical follow-up and to strengthen monitoring and evaluation systems.

Implementing these ten recommendations would have immediate health outcomes for pregnant women and their children and would contribute to decreasing transmission of HIV and syphilis, while strengthening health systems.

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Chapter 5

Antiretroviral Therapy in the Latin America and Caribbean Region: An Overview and Challenges for the Future

Knowing Your Status: The Entry Point to HIV Care and Treatment for People with HIV

Comprehensive care of people with HIV requires more than antiretroviral therapy (ART). While antiretroviral (ARV) medications are a crucial component of national AIDS programs (NAPs), they should be considered as being part of a comprehensive program that includes a broad range of activities, such as effective communication and prevention strategies, adequate access to testing and counseling, and improvement of the quality of care provided to people with HIV. Together, they contribute to reducing HIV/AIDS-related morbidity and mortality. Expanding and improving HIV testing and counseling services should therefore become the top priority when designing scaling up of ART programs in Latin America and the Caribbean (LAC).

Communication and prevention strategies aim to reduce HIV transmission by providing reliable information about how to decrease the risk of acquiring HIV, while creating an environment that enables people to make informed decisions about the importance of learning one's own serological status. HIV testing and counseling services play an important role in early detection and timely access to treatment. Although coverage of HIV testing and counseling remains very low, data indicate upward trends in the number of facilities providing HIV testing and counseling services, such as in Bolivia, Dominican Republic, El Salvador, Guatemala, Guyana, Haiti, Honduras, and Paraguay [1].

Access to HIV testing and counseling is impaired by the lack of adequate laboratory infrastructure—a problem that could easily be solved with greater use of rapid tests—, low health services coverage, lack of sustained funding and adequate supply chain management for testing facilities, lack of trained counselors and other human resources, and low demand of HIV testing and counseling. New approaches, including provider-initiated testing and counseling for all populations and specific interventions tailored to most-at-risk populations could contribute to scaling up HIV testing and counseling in health facilities. In Latin America and the Caribbean, the lack of adequate epidemiological data makes it difficult to generate a reliable estimate of the extent of knowledge of HIV status. Only a few countries in the region report estimates of percentage of people aged 15 to 49 who know their HIV status for the period 2006-2008: Brazil (39 percent), Dominican Republic (75 percent), Guyana (23 percent), and Honduras (19 percent) [1].

Testing is an issue of particular concern for pregnant women. Although HIV testing is accepted as a priority intervention in all LAC countries, in 2008 only 46 percent of pregnant women were tested for HIV in the region [1]. Such a low testing coverage hinders the possibility of offering comprehensive prevention of mother-to-child transmission (MTCT) of HIV. Among children, although data are scarce, it is estimated that the gap of access to virological diagnosis is even greater. Providing access to HIV testing for children would allow an earlier start of treatment, thereby reducing infant mortality—as has been shown in recent studies [2].

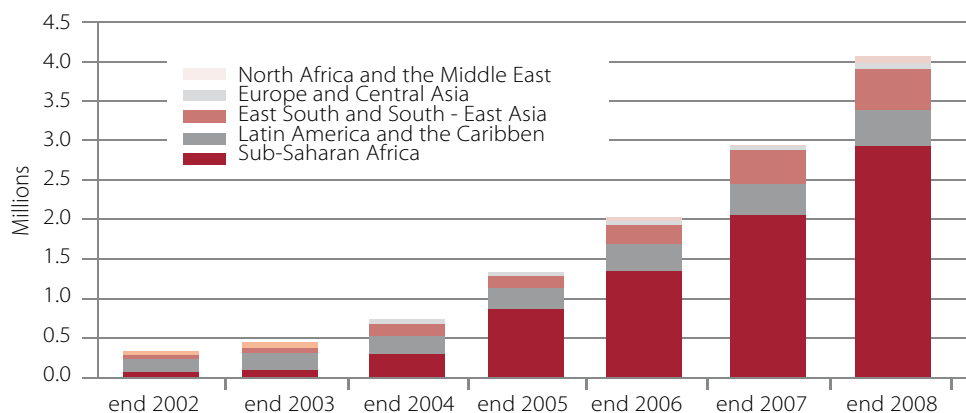
Universal Access: ART Needs and Coverage

Since the development of highly active antiretroviral therapy in 1996, the LAC region, led by Brazil, has been at the forefront of setting up programs that provide ART. More recently, countries that use simplified and standardized approaches to initiate, deliver, and monitor treatment have significantly increased the number of people receiving ART, both worldwide and also in Latin America and the Caribbean [3]. When the World Health Organization (WHO) launched the "3 by 5 Initiative" in 2003, around 200,000 people in the LAC region were estimated to be receiving ART [4]. Since then, increases in political commitment, resource mobilization, and other efforts led by countries, civil society, and other stakeholders have resulted in a significant increase in the number of people receiving ART.

At the end of 2008, WHO, UNICEF, and UNAIDS estimate that 4.030.000 people [3.700.000-4.360.000] were receiving ART—more than one million more than at the end of 2007 (see Figure 5.1) [1]. This represents a 36 percent increase in one year and a

ten-fold increase in five years. Due to attrition from treatment programs, the one million people increase in 2008 is lower than the number of people who initiated ART during that year—a number that has not been reported by countries. Sub-Saharan Africa, the region with the greatest need and the greatest ART expansion, experienced a 39 percent increase in ART coverage in 2008: from 2.100.000 people [1.905.000-2.295.000] receiving ART at the end of 2007 to 2.925.000 people [2.690.000-3.160.000] at the end of 2008. The number of people in Latin America and the Caribbean receiving treatment at the end of 2008 is estimated at 445.000 [405.000-485.000], of which 405.000 [370.000-440.000] live in Latin America and 40.000 [35.000-45.000] live in the Caribbean [1]. This represents an estimated 54 percent [51-60 percent] of those needing ART, which has slightly increased from 50 percent [47-55 percent] in 2007 [1]. However, the percentage increase in ART coverage is lower than in other regions.

Figure 5.1: Number of people receiving antiretroviral therapy in low- and middle-income countries, 2002-2008



Source: [1].

Although many LAC countries—such as Argentina, Brazil, Chile, Cuba, Mexico, and Uruguay—have already reached coverage greater than 80 percent, some Caribbean and Central American countries continue to have coverage below 60 percent. For example, in 2007, coverage reached 49 percent in Paraguay and 55 in Antigua and Bermuda [5]. Twelve-month survival in people starting ARV is high in most LAC countries, but gaps still remain.

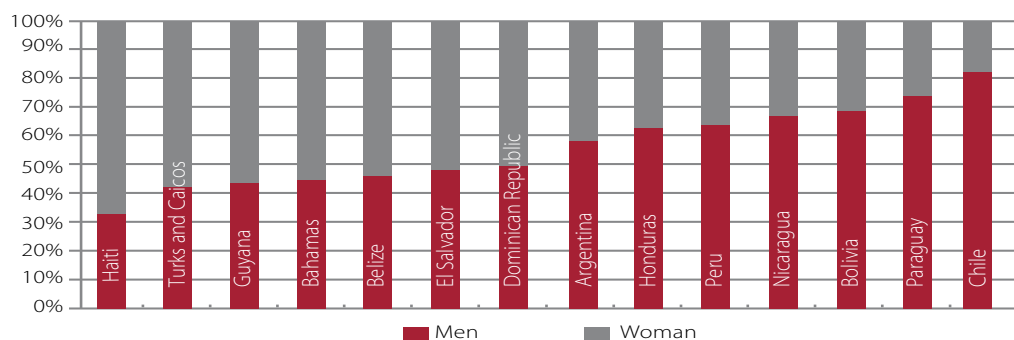
The LAC region is therefore faced with a paradoxical situation, where some countries have already reached a standard of universal access and are now dealing with the effects of a “mature post-HAART epidemic”—with emergence of chronic viral hepatitis, HIV-associated cancers and other long term non-AIDS related complications, multidrug resistance, and decrease in prevention efforts—while other countries still face a pre-HAART scenario, in which late diagnosis and lack of sustained access to ART result in a high incidence of major AIDS-associated opportunistic infections and higher rates of mortality.

Gender equity in access to antiretroviral therapy

Equitable access to ART for women has been a concern given social and economic inequities between men and women around the globe and the greater biological risk for women as compared to men. As in other low- and middle-income countries in the world, however, most women in the LAC region do not seem to be at greater disadvantage than men in access to ART. In four of the five countries analyzed, the proportion of people on treatment who are women was higher than the proportion of women among people in need of treatment. In other words, the supply of ART needed for women exceeded the demand for this population. The exception was Chile, where women were at a disadvantage since the proportion of females to the total population in need of treatment was higher than the supply of ART provided to women.

The number of males and females receiving ART is shown in Figure 5.2. All countries in the LAC region collect data on gender equity in access to antiretroviral therapy. Included in this data are the male-female breakdown, which is important for determining whether the needs of women living with HIV are being met, and the proportion of women represented in both the population in need and the population receiving treatment, which serve to evaluate whether the information collected corresponds with epidemiological trends.

Figure 5.2: Distribution of persons, in percentages, receiving antiretroviral therapy by sex in selected countries in Latin America and the Caribbean, 2007



Source: [6].

Antiretroviral therapy for children

In 2007, there were between 46,400 and 70,000 children younger than 15 years of age with HIV in the LAC region [7], most of whom acquired HIV infection through MTCT. Each year, the low coverage of HIV testing and prevention of mother-to-child transmission (PMTCT) interventions further raise these figures by an estimated 4,200 to 8,300 children [7]. Without therapy, half of them will die before their second birthday and, in 2007 alone, an estimated 3,200 to 5,800 HIV-positive children died in Latin America and the Caribbean [7]. A study has shown that early HIV diagnosis and early ART can reduce early infant mortality by 76 percent [2, 8].

The number of children receiving treatment in the region has increased significantly from 10,628 in 2005 [9] to 16,100 children in 2008 [1]. ART coverage among children in the region is estimated at 76 percent [65 to 91 percent], although its distribution is uneven: coverage is estimated at 82 percent [70 to 95 percent] in Latin America and 55 percent [43 to 72 percent] in the Caribbean [1]; these data, however, are being revised. As more children with HIV in the region receive ART, it will be important for countries to generate data disaggregated by age group in order to provide information on progress towards ART coverage in children.

HIV-tuberculosis coinfection

HIV emerged worldwide as one of the key factors undermining global efforts to control tuberculosis—the leading cause of death among people with HIV—particularly in areas with high HIV prevalence. The 2009 WHO Global TB Control Report showed that during 2007 there were an estimated 9.27 million incident cases of TB in the world, most of them in Asia (55 percent) and Africa (31 percent) [10]. The number of cases in LAC represents 3 percent of total cases of the world. TB prevalence and mortality rates are declining and it may be possible to achieve the WHO Stop TB Partnership targets that aim to halve the 1990 prevalence and death rates by 2015, but the rate for treatment success for new smear positive cases was 75 percent, which lies below the >85 percent target. Based in 2007 data, Brazil represents the country with the largest number of TB patients in the region (92,102 cases, incidence of 48 per 100,000 in 2007), although Haiti (306 per 100,000), Bolivia (155 per 100,000), and Peru (126 per 100,000) are the countries with the highest TB incidence in Latin America and the Caribbean. In LAC, only one third of the 294,636 reported cases of TB were aware of their HIV status; HIV prevalence for incident TB cases was 11.3 percent (ranging from 2 percent in Cuba to 30 percent in The Bahamas) [10].

HIV patients are at greater risk to acquire or reactivate tuberculosis, and diagnosing TB in patients with advanced HIV disease can be difficult because extrapulmonary and disseminated TB presentations are more frequent among them. Among HIV-TB coinfecting patients, most deaths are due to the progression of HIV, which highlights the need to provide early HIV testing and treatment to patients receiving anti-tuberculosis therapy. The best time to start ARV in patients with TB and stable HIV disease is being evaluated in several studies, but it has become clear that in very advanced HIV patients—those with CD4 cell count less than 200 cell/mm³—ARVs should be started as soon as possible to avoid HIV progression and reduce mortality. In 2007, less than 35 percent of cases of incident tuberculosis in people with HIV in LAC received simultaneous treatment, with figures ranging from 5 percent in Haiti or 14 percent in Paraguay to 100 percent in the Dominican Republic, Barbados, Costa Rica, El Salvador, or Saint Kitts and Nevis [5].

There are several factors that complicate simultaneous HIV-TB treatment. Drug interactions are a primary concern because several HIV drugs, in particular protease inhibitors, cannot be coadministered with rifampicin—a first-line anti-tuberculosis drug. Pill burden represents another significant limitation; where combination anti-TB formulations are not

available, TB treatment usually requires 10 to 13 pills a day. Drug tolerance and potential side effects are another issue that creates the need for more frequent patient monitoring. Additional factors that limit the effective control of TB in patients with HIV include lack of resources and trained personnel, insufficient coordination between TB and HIV activities (usually operated as two separate programs) and low adherence to prevention and care guidelines of tuberculosis in HIV patients.

Harmonizing services for TB and HIV is an important and an essential step to reducing the TB burden on people living with HIV. In addition, increased funds, better trained staff, greater research to improve TB tests, improved TB prevention and treatment among HIV patients, and more advocacy and public awareness initiatives on TB and HIV co-infection will bring additional effective results. Greater involvement of civil society in collaboration with governments will help to promote greater attention to the connection between TB and HIV and will provide better individual and community support to government actions.

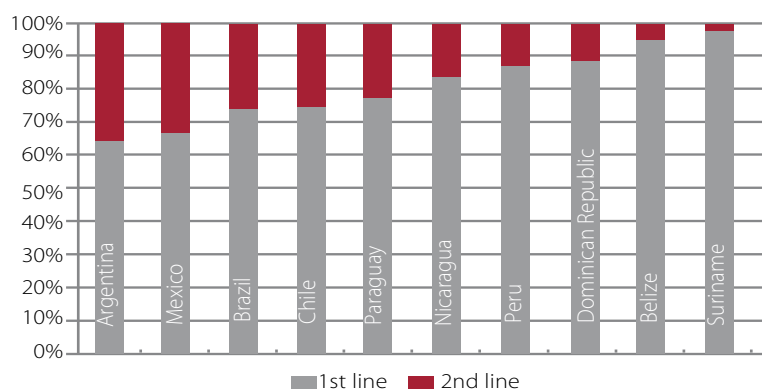
The WHO strategy to combat TB includes the “Three Is” approach, composed of: (a) intensified TB case finding; (b) introduction of isoniazid preventive therapy (IPT); and (c) ensuring TB infection control in health care and other settings. Case finding and infection control are tasks carried out in many HIV health clinics, but the use of IPT continues to be extremely low in many countries. In 2007, some countries were able to increase enrollment of HIV patients in IPT: 31 percent in Honduras and 46 percent in Guyana [4].

Antiretroviral Drug Regimens: Moving from First- to Second-Line

WHO has developed detailed guidelines based on the public health approach of maximizing survival at the population level by offering standardized treatment regimens that deliver simplified formularies to individuals using simple clinical decision-making and standardized monitoring [11]. Globally, in the 36 low- and middle-income countries that reported the composition of drug regimens in 2008 to WHO—representing 65 percent of the estimated 4 million people receiving ART in low- and middle-income countries—99 percent of adults received first-line therapies [1] in accordance to the 2006 WHO clinical guidelines [12]. Although few countries in the LAC region report data on the distribution of antiretroviral regimens provided to people with HIV, in the great majority at least 70 percent are receiving first-line ARVs. In Argentina, Brazil, and Mexico, where their national AIDS programs introduced protease inhibitors (PIs) in first-line regimens in the 1990s, the percentage of patients receiving PIs in first- or second-line therapy is greater. However, PIs are recommended by WHO in second-line regimens and currently represent less than 60 percent of the ARV prescriptions in Latin America and the Caribbean (see Figure 5.3).

National recommended regimens, the use of standardized first- and second-line therapies, and the criteria to switch lines of treatment vary widely across the region. In a LAC cohort involving 4,503 patients receiving ART, the probability of patients changing therapy during the first year was 31.3 percent [13]. In addition, the loss of patients is relatively common, with rates as high as 17 percent after the first year of therapy in some countries [14]. Targeted measures to maximize ART program retention are needed to maintain ART efficacy and to reduce the risk of generating and transmitting ARV drug resistance (HIVDR).

Figure 5.3: Distribution of individuals according to first and second line antiretroviral drug regimens in Latin American and Caribbean countries, 2007



Note: Data for Argentina are from 2008

Source: [6].

Laboratory services for people receiving antiretroviral therapy

Measurement of CD4 counts is an important immunological indicator for deciding the optimal time to initiate ART and for assessing response and adherence to therapy. Latin America and Caribbean countries reported a higher proportion of facilities using CD4 monitoring (95 percent) than low- and middle-income countries from other regions, where the proportion was 69-80 percent. Although the majority of countries in the LAC region reported that 100 percent of facilities that provide ART do so using CD4 monitoring, coverage is lower in El Salvador, Guatemala, and Honduras, and very low—17 percent—in Costa Rica, as shown in Table 5.1.

Table 5.1: Availability of CD4 testing for antiretroviral treatment patient monitoring in accordance with national protocols in Latin America and the Caribbean, 2006-2007

	Number of facilities providing ART and CD4 monitoring	Total number of designated ART sites	Percent of facilities providing ART and CD4 monitoring
Argentina	390	390	100
Bahamas	3	3	100
Belize	8	8	100
Bolivia	10	10	100
Brazil	672	672	100
Chile	56	56	100
Costa Rica	5	29	17
Dominican Republic	60	60	100
Ecuador	28	28	100
El Salvador	16	18	89
Guatemala	5	6	83
Guyana	14	14	100
Haiti	38	38	100*
Honduras	14	22	64
Nicaragua	15	15	100
Panama	10	10	100
Paraguay	4	4	100
Trinidad and Tobago	6	6	100

* Although facilities in Haiti have the capacity to perform CD4 counts, a stock-out of reagents in 2007 resulted in the use of clinical criteria instead of CD4 counts.

However, the provision of CD4 counts requires not only the availability of laboratory equipment and reagents, but also the physical and human resources to carry out the testing, analysis, and delivery of results, as well as the monitoring of these resources at both local and national levels. Health services may face challenges in the form of servicing and maintaining laboratory equipment, insufficient human and physical resource capacity to meet the demand for testing, and delays in returning results to both the clinician and the person being monitored. This was the case recently in Haiti, where despite ARV eligibility being based on CD4 count, a stock-out of reagents in 2007 resulted in the use of clinical criteria instead of CD4 counts.

Viral load measurements are useful in monitoring ART efficacy while still allowing the detection of treatment failure earlier than when using immunological or clinical criteria alone. There is therefore great need to promote cheap and available HIV viral load tests, for reasons that include the early identification of failing patients to avoid the accumulation of mutations associated with ART resistance, the early identification of loss of adherence, and the early diagnosis of HIV in exposed children.

Management and supply of antiretroviral drugs

The development and maintenance of a logistics management system for ARV supplies is an important element of an effective antiretroviral treatment program. Stock outs of ARVs have serious implications that include unplanned treatment interruptions, the associated risk of developing HIVDR, and switching to second-line treatment or providing a different formulation of the stocked out drug.

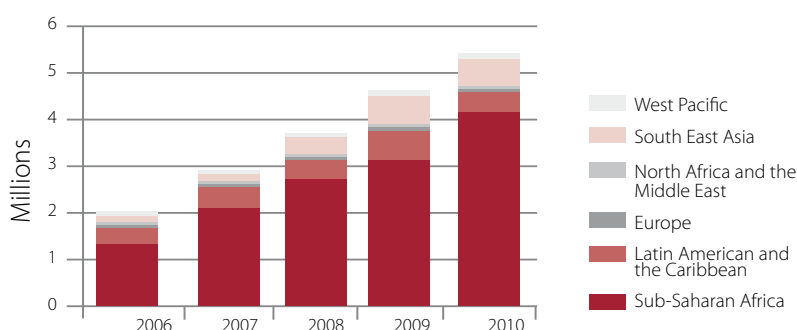
All LAC countries need to maintain up-to-date logistics management systems and must ensure that health facilities are continuously reporting supply and demand information for the different drugs that compose ART regimens in order to ensure the best possible results for people living with HIV. A number of actors have been providing this form of support to LAC countries, such as the Clinton Foundation and the Cooperative of Hospitals from Antioquia (COHAN)—a WHO Collaborating Center in Colombia.

PAHO is providing support through its Strategic Fund on product forecasting, strengthening of the medicines supply system, and the procurement of ARVs and other medications used to treat AIDS-related opportunistic infections [15]. Currently, 20 countries in the region have signed participation agreements in the Strategic Fund, and 11 of these countries used its mechanism to procure ARVs in 2008.

Forecasting the Consumption of ARVs in Latin America and the Caribbean

Due to the considerable growth in the number of people receiving life-long ART in the last five years, there has been a higher need for countries to procure ARVs associated with the greater number of people who need ART. One problem that has been identified in the scale up of ART has been that the insufficient production of ARVs leads to shortages. To fill the gap, WHO has been working with a technical working group since 2005 to forecast the global demand for ARVs and their pharmaceutical ingredients. Projections for 2010 estimate that between 5.6 and 6.2 million people will initiate ART in low- and middle-income countries. The largest increase is expected in Africa where there is the greatest need, whereas, based on the historical patterns of the past three years, the growth in Latin America and Caribbean will be relatively small (Figure 5.4).

Figure 5.4: Evolution and forecasting of ART consumption by regions, 2006-2010



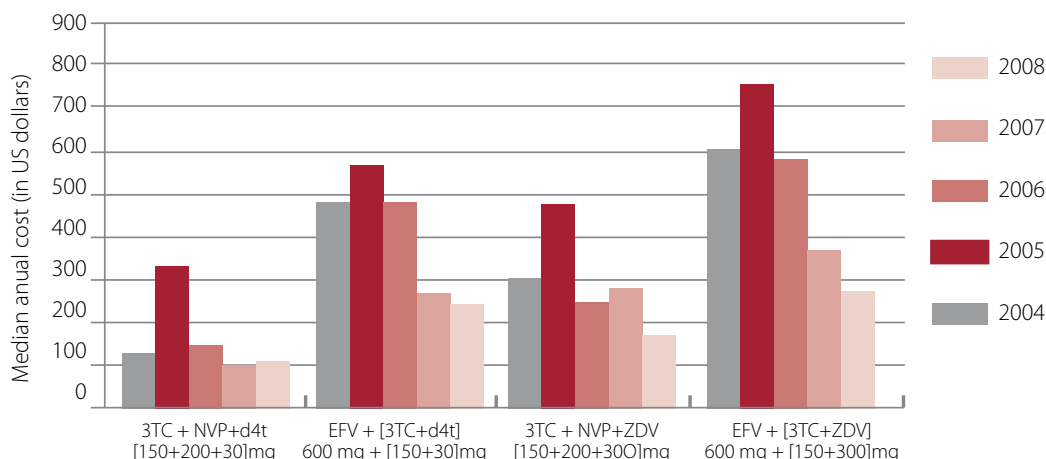
Source: [16].

The Price of Lives: Evolution of the Cost and Prices of Antiretrovirals in LAC

At the global level, the overall cost of the main combinations used for first-line ART has decreased. Data reported to WHO show that prices of most first-line regimens decreased by 30 to 68 percent between 2004 and 2008 and by 10 to 40 percent between 2006 and 2008, which has contributed greatly to the wider availability of ART [1]. The weighted average median price of the four first-line regimens used in 91 percent of prescriptions in low-income countries was US\$143 per person per year in 2008 (16 percent lower than in 2007) and US\$162 in lower middle-income countries (22 percent lower than in 2007) [1]. Price differences among first-line regimen combinations are shown in Figure 5.5.

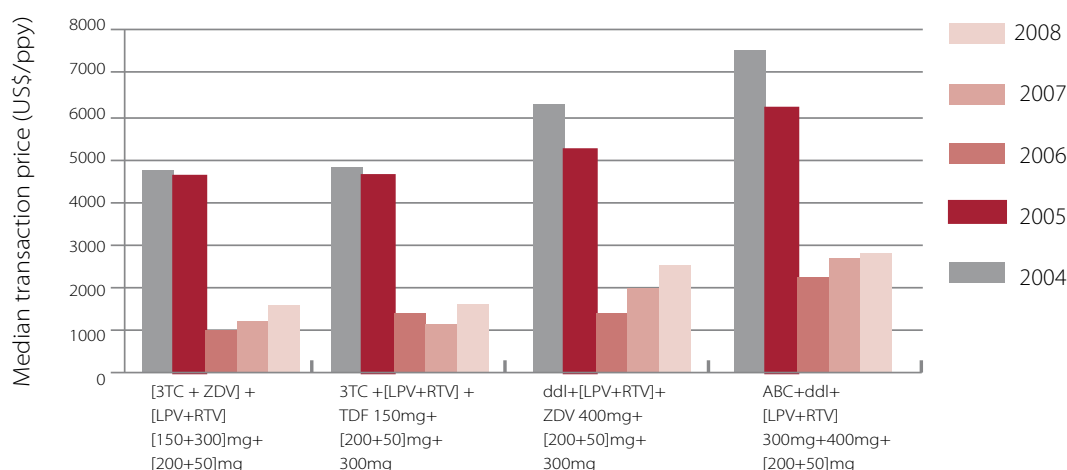
Similarly, the evolution of prices for the most commonly used second-line regimens for adults has shown a substantial reduction in prices. Although prices paid vary significantly between countries, throughout the world they continue to be significantly more expensive than first-line combinations; prices can be as high as US\$1,105 per person per year in low-income countries and US\$2,192 in lower middle-income countries [1]. Figure 5.6 shows the evolution of prices of second-line regimens in lower middle-income countries.

Figure 5.5: Price trend for the most commonly used first-line regimens in lower middle-income countries for adult patients, 2004-2008



Source: [1].

Figure 5.6: The price trend for the most commonly used second-line regimens in lower middle-income countries for adult patients, 2004-2008



Source: [17].

In 2003, ten countries in Latin America—Argentina, Bolivia, Colombia, Chile, Ecuador, Mexico, Paraguay, Peru, Uruguay, and Venezuela—launched a global policy of joint negotiation of antiretrovirals and reagents. This effort was based on the shared concern on the lack of access to essential drugs in the region due to the high price of drugs and the non-equitable differential pricing policies. In June that year, the ten countries initiated in Lima the 1st Round of Joint ARV and Reactive Price Negotiations. Participants included the ministers, vice-ministers, and other health representatives of each country, along with delegates from the Pan American Health Organization (PAHO)/WHO, the Andean Health Agency, the General Secretariat of the Andean Community, the Joint United Nations Program on HIV/AIDS (UNAIDS), and pharmaceutical companies. The outcomes of the negotiations were satisfactory from political, social, and economic dimensions, as countries were able to recognize the severity of the epidemic and overlook their differences to find common solutions. Of the 37 items negotiated, 15 proposals obtained prices that were lower than standard prices in the region, with a reduction of 30 to 93 percent for first-line ART regimens and a reduction of 9 to 72 percent for second-line ART. Standards of quality were agreed upon for all the topics negotiated. For reagents, the range of ceiling prices was lowered to the minimum, though price reductions varied among different types of reagents. Prices for rapid tests decreased by 62 to 81 percent, ELISA tests by 13 to 33 percent, CD4 tests by 5 to 70 percent, and viral load tests by 22 to 82 percent. In September 2004, one year after the 1st

Round of Negotiations, the ten participating countries initiated a process of impact assessment and, overall, access to HIV drugs and reagents in all ten countries improved from 2003 to 2004 [18]. This improvement can be attributed to a set of regional, national, and local strategies and international initiatives, such as the implementation of projects financed by the Global Fund. Nevertheless, reports evaluating the 1st Round of Negotiations identified some challenges that generated from implementing regional joint negotiations into national procurement processes. More specifically, the agreements that were reached in the negotiations were not always compatible with commercial policies, intellectual property laws, and other regulations of participating countries. In addition, some ARV drugs were not even registered in all countries.

On September 2004, during the meeting of the 45th PAHO Directing Council, the 35 Member States addressed the problem of access to comprehensive care for people with HIV. During this event, the Resolution CD45.R10, which discusses the expansion of treatment as part of an integrated response to HIV infection, was adopted [19]. Resolution CD45.R7 [20], which also passed, addressed access to drugs in the LAC region. This resolution urges PAHO Member States to continue to implement a broad range of strategies to contain drug costs, maximize the efficiency and utilization of existing resources, and monitor and evaluate the impact of these strategies on drug price and access. At the 4th Meeting of Ministers and Ministers of Health and Social Protection of South America (April 2005, Santiago, Chile) [21], delegates called attention to the need for adequate access to drugs and for drug procurement that is timely, reasonably priced, and of good quality. Based on the outcomes of the 1st Round of Negotiations, joint negotiations were recognized as an effective tool for obtaining fair drug prices and improving drug access and coverage. The 2nd Round of Joint Negotiations was launched in Buenos Aires in 2005 with the participation of 11 countries and 26 pharmaceutical companies. As a result from these negotiations, prices for the most commonly used therapeutic schemes were reduced by 15 to 55 percent. For example, a basic therapy scheme (AZT+3TC+NVP), whose cost offered by the pharmaceutical industry in 2003 was US\$350 per patient annually was reduced to US\$241. Participating countries also established a consultative group to provide support in obtaining the negotiated prices.

In 2007 and 2008, LAC countries analyzed the evolution of ARV prices with the support of the **ARV Negotiation Monitoring Group (GAN, for its Spanish acronym)** and PAHO. Considering the broad availability of generic drug manufacturing in the region, the high cost of branded drugs, and the fact that competition has now always led to price reductions, developing strategies to reduce costs for second- and third- generation ARVs was identified as a priority. With PAHO support, LAC countries have expressed the need to create a regional dialogue to address broader determinants of access—including ARVs and other high-cost essential drugs—to develop and improve regional and national strategies. It was proposed that these efforts be implemented as part of the Overall Strategy on Public Health, Innovation, and Intellectual Property, which was adopted by the World Health Assembly with the support of Brazil [22] and was backed by the adoption of the Resolution on Public Health, Innovation, and Intellectual Property by the 48th PAHO Directing Council in 2008. Within this context, the 1st International Meeting on Access to Drugs of Limited Sources and High Cost was organized in Brasilia, Brazil, in 2008.

In addition, PAHO, through its Strategic Fund mechanism in Latin America and the Caribbean, executed the first annual joint bid for ARVs to be purchased in 2009 on behalf of PAHO Member States participating in the Strategic Fund. During this process, the needs for ARV drugs for all participating countries were aggregated and then procured through the Strategic Fund mechanism. Pricing for ARV drugs from the Strategic Fund for 2009 can be obtained from the PAHO Procurement Services website [23].

Towards Universal Access: Challenges for the Region

Despite several accomplishments in HIV prevention and treatment strategies in Latin America and the Caribbean in comparison to other regions of the world, there are a number of challenges that must be overcome in order to provide universal access to ART. Despite existing inequalities in society and in health system infrastructure, it is possible to treat people in an equitable manner. A renewed interest has emerged to strengthen health systems to provide better health care for all in addition to providing care for people with HIV. Nonetheless, approaches towards guaranteeing the sustainability of this process are needed and the lessons learned in this region can be very useful for other parts of the world.

It is a priority to improve **testing strategies** in order to identify and treat more patients. Currently, 40 percent of new diagnoses are performed on patients with severe or advanced HIV disease—which reflects on the lost opportunities in HIV testing. Ideally, HIV testing should be made available in all health services, and especially in primary care and prenatal services, youth centers, and STI clinics.

There is a need to **increase coverage** to increase life expectancy and prevent HIV transmission. In 2007, an estimated 62 percent of HIV-positive people in the region have access to ART—but only 34 percent among HIV-positive pregnant women. **Pediatric care** needs to be strengthened. Even though the number of pediatric cases of HIV is relatively small compared to other regions in the world, access to care and treatment for children with HIV remains an unattended priority.

Improving coverage will also require some degree of **decentralization of services**. Most countries in the region have a concentration of specialized HIV facilities in large urban centers, while the epidemic continues to expand to small towns and rural areas. In addition to including HIV in all healthcare activities, HIV should be considered as an entry point for other interventions and programs to improve the health and quality of care of people attending health services. This will require **interdisciplinary teams and collaborations**, such as in existing programs that integrate care for HIV with services for tuberculosis, sexual health, cancer (lung, cervix, breast, prostate), cardiovascular diseases, hepatitis, mental health, and programs that promote healthier lifestyles (reduction of tobacco, alcohol, and other drug use).

Strengthening adherence, uninterrupted care services, and sustained ARV supply are key to avoid HIV progression and prevent the emergence of HIVDR and of new transmissions—for which political commitment, increased resources, and optimization of health management are required. Establishing standards and indicators for quality of care and continued monitoring for the improvement of healthcare services are needed to assure quality.

The high cost of antiretroviral drugs, particularly for second-line therapies, represents an important challenge for expanding and creating **sustainable ART programs** in the future. Intellectual property rights are an issue of critical importance and there is a need for greater efforts to establish regional drug price negotiations and procurement mechanisms. In addition, there should be greater use of **Trade-Related Aspects of Intellectual Property Rights (TRIPS)** flexibilities to encourage the purchase of generic medicines and to promote domestic drug production. The debate surrounding the initiation of treatment and the decisions made by each country will have a significant impact on the estimation of ART regional needs. WHO guidelines for resource-limited settings, which are currently under revision, recommend to initiate ART before blood CD4 cell counts fall below 200 cells/mm³ (with an upper threshold of 350 cells/mm³). In the past year, international ARV guidelines [24-28] have reviewed the criteria for ARV initiation based on clinical findings from cohort studies that have shown a higher risk of death [29, 30], higher morbidity, higher mortality secondary to AIDS [31, 32], and higher mortality due non-AIDS events [33-35] in patients with CD4 counts between 200 and 350 cells/mm³. In addition, new ARV regimens that are widely available in high-income countries have been shown to be safer and well tolerated [36]. If the CD4 threshold to initiate treatment is raised, there will be an increase in demand for ART and more funding will be needed. In countries with low or moderate ART coverage, operational research is needed to address programmatic implementation, potential risks such as ARV drug resistance, availability of second- and third-line regimens, and cost-effectiveness of interventions to support earlier treatment initiation [37].

The need for **multisectoral responses**, especially at country level, and the involvement of the private sector will be particularly important for the achievement of universal access to ART in many countries. The private sector can be a sound development partner in the areas of capacity building, technology transfer, and financing, and can also serve as an entry point for improving access to care and treatment. Workplace programmes can help ensure broad-based participation of workers by building ownership, reduce fear of discrimination, improve trust on prevention messages, and increase uptake of services such as testing and treatment. The private sector can also mobilize funds for the response to AIDS.

Increasing coverage will also require an expansion of services for ART, particularly in **human resources for health**. Trained workers continue to migrate towards capital cities or to higher-income countries in search of better opportunities and higher salaries, which represents a loss of the investments made by governments in their education. In order to prevent the drain of health professionals, policies must be created and implemented to create job opportunities and retain health workers.

Stigma and discrimination continue to be major barriers to access to ART in many countries in Latin America and the Caribbean, despite the establishment of laws and regulations that protect people with HIV. Sex workers, IDUs, MSM, and transgender populations continue to face denial, violence, exclusion, and other barriers that hinder their access to health care.

From a public health perspective, countries and programs need an effective system for **monitoring and evaluation (M&E)**, with standardized methodologies and performance indicators to provide an adequate assessment of the impact, effectiveness, and sustainability of ART programs and HIV prevention and care activities over time. As the HIV epidemic

evolves, strategic data are needed to understand their direction and progression in order to guide a more effective response to the epidemic. This requires improving regional and national capacity to collect and analyze data, particularly for data related to ART and treatment outcomes, as well as identifying gaps and inequities that can undermine the ability to reach targets. Additional recommendations include establishing and improving coordination between the institutions responsible for HIV M&E at national, sub-national, and service delivery levels to ensure the integration of patient monitoring systems. Monitoring data quality periodically and addressing the obstacles to producing high quality data are also important elements, along with enhancing the analysis and timely dissemination of data that will facilitate its use and serve to guide policy formulation and program planning.

Finally, despite being available in most countries, ARV diagnosis and treatment are not fully accessible for all persons and greater efforts are needed to achieve universal access. It is widely recognized that **addressing poverty and inequity** continue to be key issues in Latin America and the Caribbean, the region with the highest socio-economic inequalities in the world. Because poverty and inequity increase the vulnerability to HIV infection and make access to health care difficult, it is crucial to tackle inequity in a comprehensive manner in order to overcome this regional challenge.

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Chapter 6

HIV Drug Resistance in Latin America and the Caribbean

Introduction

The emergence and transmission of HIV drug resistance (HIVDR) in Latin America and the Caribbean (LAC) is an important challenge and a serious concern because the region has experienced a rapid scale up of antiretroviral treatment (ART)—reaching a regional treatment coverage of 54 percent at the end of 2008 [1]—and because drug resistance to antiretroviral (ARV) drugs is an inevitable event in populations taking medications for HIV. The emergence of mutated drug-resistant virus strains and the consequent virologic treatment failure have been demonstrated in many high-income countries, where ART has been extensively used since the 1990s [2-4]. The emergence and transmission of HIVDR should therefore be considered a serious threat for ART efficacy in LAC, from both patient-oriented and public health perspectives. In fact, HIVDR may be responsible for individual treatment failure in patients and may compromise the efficacy of ART and prophylactic regimens—such as in prevention of mother-to-child transmission and in pre- and post-exposure prophylaxis—at a population level.

At the population level, the emergence of HIVDR may be estimated as the percentage of patients experiencing first-line treatment failure, while its prevention can be assessed by the retention of patients on first-line treatment with complete viral suppression over time. HIVDR assessment is a fundamental outcome indicator of universal access to ART. At the individual level, genotyping tests are useful tools for HIVDR patient monitoring and for guiding ART prescription after treatment failure, and are part of the tools used by HIV clinicians in high-income countries. When scaling up ART in low- and middle-income countries, the use of genotyping tests for individual patient monitoring has been very limited and is generally only recommended for HIVDR epidemiological assessments. In LAC, where there is a wide variety of different socio-economic and public-private healthcare settings, the development of in-country laboratory capacity for HIV genotyping has rapidly improved thanks to national investments and external grants. Despite this progress, HIV genotyping still remains inaccessible in the lowest-income countries.

HIVDR prevention, monitoring, and surveillance remain unmet needs. It is therefore necessary that regional efforts towards universal access to ART be complemented and coordinated with HIVDR prevention activities as well as with ongoing assessments of emerging and transmitted drug resistance. Strategic information from HIVDR assessment activities should be used by national programs in the region for *ad hoc* policy adjustments and actions to minimize further development of preventable HIV drug resistance.

Evidence of HIVDR in Latin America and the Caribbean

In recent years, several research groups in the region have conducted studies on HIVDR with the objective of estimating the prevalence of transmitted drug resistance in ARV naïve patients, describing HIV subtype distribution, and monitoring the emergence of HIVDR in patient cohorts receiving ART

The prevalence of primary HIVDR has been estimated at 10 percent in a study conducted in 2007 in Venezuela in a small sample of 20 recently diagnosed ARV naïve participants with a high CD4 count (≥ 450 cells/mm³) [5]. A larger study conducted in Argentina assessed primary HIVDR among 284 people accessing testing and counseling centers in Buenos Aires and found that 4.2 percent had HIVDR mutations [6]. Another study, which had a different methodology and sample selection, was conducted in the same period in Buenos Aires and in other three regions in Argentina on 52 recently infected participants; it found an estimated prevalence of 7.7 percent of nucleoside reverse transcriptase inhibitor (NRTI) primary resistance mutations [7]. Third-generation HIV sentinel surveillance with integrated primary HIVDR assessment has been successfully implemented

in Peru among the population of men who have sex with men (MSM), with an estimated 3.3 percent of drug resistance in a sample of 359 ARV naïve patients who were diagnosed with HIV during the survey [8]. A number of other studies on primary HIVDR designed with varying methodologies have been conducted in Honduras [9], Chile [10] and Cuba [11], and have had estimates of prevalence of drug resistance mutations of 9.2 percent, 2.5 percent, and 7.4 percent, respectively.

Since Brazil launched its universal access national program in 1996, a considerable amount of research has been performed to document the distribution of the HIV-1 subtype across the country, the emergence and patterns of HIVDR in patients with treatment failure, and the estimates of HIVDR prevalence among ART naïve patients [12]. Sentinel surveillance of transmitted HIVDR in recently diagnosed chronically infected patients was performed in Brazil in 2001, sponsored by the National Program for STI-HIV/AIDS and conducted by the Brazilian Network for HIV Drug Resistance Surveillance [13]. This survey took place in 13 testing and counseling centers from six geographic areas of the country, and the results obtained from genotyping 409 specimens from people of mixed ages and risk groups showed 2.4 percent of samples with NRTI mutations, 2.1 percent with non-nucleoside reverse transcriptase inhibitor (NNRTI) mutations, and 2.3 percent with protease inhibitor (PI) mutations.

A study conducted in Haiti in 2003-2005 in a population of 79 people aged 13 to 25 years showed that, at 12 months after initiating ART, 51 percent of participants had plasma HIV-1 RNA concentrations ≥ 50 copies/ml that were associated with poor adherence [14]. Among 29 patients with >1000 copies/ml at 12 months, resistance mutations to NNRTIs were detected in 23 cases (79 percent), to both NNRTIs and the NRTI lamivudine in 21 (72 percent) cases as well as to NNRTIs, lamivudine, and other NRTIs in 10 (35 percent) cases.

Even though such studies have answered important research questions, the lack of a standardized design and sampling methodology is a major limitation to the generalization of the results and does not allow for the use of these HIVDR estimates for public health recommendations or for actions at a national level. Nevertheless, some of these results are a serious warning for national programs in the LAC region and serve as evidence for the need to develop routine national strategies for HIVDR prevention and assessment.

WHO Global HIV Drug Resistance Strategy

To address HIV drug resistance worldwide, the World Health Organization (WHO) has developed a global prevention and assessment strategy based on three principles [15]: (a) ongoing evaluation and support of factors and practices in ART programs potentially associated with HIVDR prevention (see Box 6.1); (b) use of a standard methodology for ongoing population-based evaluations of HIVDR emergence and transmission; and (c) evidence-based actions to minimize preventable HIVDR and maintain efficacy and durability of ART.

Box 6.1: Program practices and activities related to HIVDR prevention

- ✓ Standardized and appropriate ART prescription practices.
- ✓ Quality assurance for ARV drugs.
- ✓ Adequate and continuous ARV drug supplies to ART delivery sites.
- ✓ Standardized individual treatment records for patient and cohort monitoring.
- ✓ Support for and monitoring of adherence.
- ✓ Removal of barriers to continuous access to care.
- ✓ Prevention programs to reduce HIV transmission from persons receiving treatment.
- ✓ Routine and continuous collection of HIVDR strategic information through population-based surveys and ART site-based program indicators.

The HIVDR prevention and assessment strategy, recommended by WHO and the Pan American Health Organization (PAHO), includes various elements that are listed in Box 6.2.

Box 6.2: Elements of the WHO-recommended HIVDR prevention and assessment strategy.

- A. Formation of national HIVDR working groups and development of three-to-five year work plans and budgets.
- B. Regular assessment of HIVDR Early Warning Indicators (EWIs) from all ART sites (or from a selection of representative ART sites) [16]. These include:
 1. EWI 1: ART prescribing practices
 2. EWI 2: Patients lost to follow-up during the first 12 months of ART
 3. EWI 3: Patient retention on first-line ART at 12 months
 4. EWI 4: On-time ARV drug pick-up
 5. EWI 5: ART clinic appointment-keeping
 6. EWI 6: Drug supply continuity
 7. EWI 7: Pill count or standardized adherence measure
 8. EWI 8: Viral load suppression following 12 months of first-line ART
- C. HIVDR Monitoring Surveys to monitor HIVDR prevention and associated factors in sentinel ART sites [17].
- D. Threshold surveys for surveillance of transmitted HIVDR in recently infected individuals and in geographic areas where ART has been widespread for 3 years or longer [18].
- E. Development of national HIVDR databases.
- F. Designation of an in-country or regional WHO-accredited HIVDR genotyping laboratory [19].
- G. Review of and support for HIVDR prevention activities.
- H. Preparation of annual HIVDR report and recommendations.

Source: [20].

HIV Drug Resistance Prevention and Assessment Strategy in Latin America and the Caribbean

The global HIVDR prevention and assessment strategy recommended by WHO has been introduced in the LAC region with the support of PAHO through a number of sub-regional workshops and training activities (see Box 6.3). These programs aim to represent the principal elements of the strategy by raising awareness, advocating the implementation of national HIV drug resistance strategies, and evaluating the feasibility of their potential application in the LAC region. These workshops also provide the opportunity for the development of country plans that define implementation activities and timelines.

Box 6.3: Workshops and training activities in Latin America and Caribbean

- **Fort de France, Martinique, May 10-12, 2006:** First Workshop on the Development of a Caribbean Strategy for the Prevention, Surveillance, and Monitoring of HIV Drug Resistance
- **Port-of-Spain, Trinidad, January 23-26, 2007:** Caribbean HIV Drug Resistance Monitoring and Surveillance Training Workshop.
- **Rio de Janeiro, Brazil, November 26-28, 2007:** Latin American Workshop on HIV Drug Resistance Prevention, Surveillance, and Monitoring.
- **Lima, Peru, April 15-17, 2008:** Advances and Challenges in the Production of HIV Strategic Information in Latin America.
- **Port-of-Spain, Trinidad, November 18-21, 2008:** Regional Meeting towards the Implementation of HIV Drug Resistance Strategies in the Caribbean.

In Latin America, the planning and implementation of the WHO prevention and assessment strategy has progressed slowly since its introduction in late 2007. National HIVDR working groups or committees have been formed in a number of countries. Their wide range of functions include discussing individual patient cases to identify ART failure, prescribing second line and salvage therapies, providing indications for HIV-genotype testing, and planning HIVDR prevention and assessment national strategies. However, the development of HIVDR prevention and assessment country plans has not followed the formation of national working groups in every Latin American country. The integration of population based HIVDR assessment activities with national surveillance and with monitoring and evaluation programs is advancing in Latin America and some preliminary results will become available in 2010.

In the Caribbean, efforts to introduce the WHO HIVDR prevention and assessment strategy began as early as 2006. Their purpose includes: (a) to understand the impact of ART availability on HIVDR; (b) establish a common Pan-Caribbean approach to guide public health action on first and second line ART regimens; (c) introduce corrective actions at treatment sites to minimize the emergence of drug resistance.

As a result of the 2006 and 2007 workshops, the Caribbean Regional HIVDR Strategy for prevention, surveillance, and monitoring was developed in accordance with the WHO recommended approach. In 2008, the third regional workshop, convened by the PAHO HIV Caribbean Office (PHCO), provided an opportunity to discuss the progress made at regional and national levels (see Box 6.4) in order to set targets and goals for 2009-2010 and to identify the technical assistance and resources required for the implementation of the HIVDR regional strategy.

Box 6.4: Progress made in the implementation of the Caribbean Regional HIVDR strategy, 2008.

- Two Caribbean genotyping laboratories (Martinique and Puerto Rico) have achieved WHO accreditation to support the implementation of HIVDR surveys.
- Four countries have established National HIVDR Committees, identified focal points, and developed national HIVDR work plans.
- Eight countries have generated at least three HIVDR Early Warning Indicators in 2008.
- Two to four countries are preparing to implement HIVDR monitoring protocols in 2009.
- Funding has been identified for the implementation of the HIVDR strategies in the Caribbean (from Gates Foundation, Pan-Caribbean Partnership against HIV/AIDS, Global Fund, Centres for Diseases Control and Prevention).
- Targets for 2009-2010 include the reporting of HIVDR Early Warning Indicators in 14 countries by the end of 2009 and the implementation of HIVDR monitoring protocols in at least three countries by the end of 2010.

Challenges and Recommendations for HIVDR Prevention and Assessment Activities in Latin America and the Caribbean

Public health strategies for HIVDR prevention, monitoring, and surveillance are urgent and should be recognized as critical components of comprehensive HIV care in all of Latin America and the Caribbean. Prevention of drug resistance through optimal program functioning and good quality of care should be the basic principle of every HIV treatment program, and monitoring the performance of national ART delivery sites should be part of a national quality improvement plan to ultimately benefit the long-term outcome of patients receiving ART and to minimize the emergence and transmission of HIV drug resistance. Preventing drug resistance is especially important given the high cost of HIV genotyping for individual clinical management and of second and subsequent lines of ARVs, which many countries cannot afford (especially in economically uncertain times).

Surveillance of HIV drug resistance is a useful instrument that informs countries about the impact of national program functioning and may orientate policy makers towards sound and evidence-based corrective public health measures, but remains a largely unaccomplished item in national and regional agendas.

The importance of HIVDR prevention and assessment plans as essential elements of comprehensive AIDS programs should be emphasized among national program managers and health care providers, as it is critical to understand the magnitude of HIVDR within each country and to take the necessary corrective measures to minimize preventable drug resistance through evidence based public health policies and recommendations.

Funding for these activities should be considered within the context of national budgets. In certain low-income countries, however, some external financial support may be needed for the implementation of HIVDR surveys. PAHO and other key partners have an essential role in providing the necessary technical assistance to support the development and implementation of national HIVDR prevention and assessment plans.

Challenges and recommendations for HIVDR prevention activities

Preventing HIVDR resistance relies on patients' adherence to ART and on programmatic health system factors that ensure that all people receiving ART have access to a continuous supply of quality-assured ARV drugs that are correctly prescribed as triple therapy and whose continuous usage is supported and ensured.

Many national AIDS programs in the LAC region have been organized according to a vertical service delivery model which is often centralized in specialized health facilities—and which in some instances may parallel existing health care services. This type of centralization may create problems in access to comprehensive care, such as: (a) long distance to access HIV treatment sites, which makes patients incur transportation costs and take time away from work and family responsibilities; (b) provision of care fragmented in different sites (ART prescription, ARV drug pick-up, care for opportunistic infections, family planning, primary health care); (c) inadequate number of HIV health providers as number of AIDS patients increase due to programs scale-up, with reduced quality of care and adherence support. These factors may result in poor ART adherence and in missing clinical appointments and drug pick-ups, which ultimately contribute to HIV drug resistance. A public health approach to ART delivery that is decentralized and/or integrates HIV care into existing health services at the primary, secondary, and tertiary levels, creates easier access to care and involves a wider range of health providers who can deliver comprehensive care and support adherence.

Another service delivery challenge that affects the emergence of drug resistance is the lack of human resources who are trained in the provision of quality care and in appropriate prescription and rational use of ARV drugs. Infectious disease specialists and physicians have been the main providers of HIV care and treatment in the LAC region, with little involvement of other care providers and with limited task-shifting to non medical healthcare staff. While the concept of task-shifting has not been readily accepted in the region, it may be a useful delivery model to support the achievement of universal access in some LAC countries.

To ensure quality improvement in HIV care and service delivery, there is a need for continued training of health providers in all types of health facilities. Though national and regional guidelines have been created to guide patient management and to ensure standardization and appropriate prescribing of ARV drugs, the usage and compliance of prescribers with these guidelines continues to be a challenge. Regional ART guidelines have been recently published and disseminated [21] and many countries have developed their own national guidelines that outline standard first-line and second-line regimens based on the cost and availability of antiretrovirals. Despite these regulations, the still existing lack of standards for the prescription of ART may result in an inappropriate use of ARV drugs—which can promote drug resistance and limit the availability of second-line regimens. LAC countries must therefore develop and update national guidelines for comprehensive HIV care and develop systematic monitoring systems for ART prescribing practices and adherence to national guidelines.

Continuous availability of quality assured ARV drugs at delivery sites is another regional challenge. Preventing stock-outs and guaranteeing the quality of ARV drugs are important programmatic elements that may minimize the number of preventable cases of HIVDR. The procurement of ARV drugs must be integrated into the procurement systems established for other medications, and supply chain management must be enhanced through training and planning strategies that incorporate ARV drugs. As HIV programs scale up and decentralize, the forecasting and timely distribution of ARV drugs to treatment sites should be monitored and ensured.

Systems for quality assurance of medications that use WHO prequalification **standards of quality, safety, and efficacy**—or at least validation and approval of formulations by a national regulatory agency—are not available in all countries. Linkages with regional laboratories that provide these services, which can be supported by the PAHO Strategic Fund, must be enhanced.

In addition to health systems and programmatic challenges, patient adherence is the most crucial factor for the prevention of HIVDR at the individual level. Because maintaining adherence over time is a major challenge for people receiving ART, HIV services must provide ongoing adherence support through continuous counseling. Various strategies for patient support should be used to address patient education and to allow for the identification and referral for co-existing psychological issues, drug and alcohol abuse, or the presence of other co-morbidities which may compromise adherence. Procedures must be in place at a clinic level to assess and monitor adherence and to support patients with identified poor adherence or special needs.

Challenges and recommendations for HIVDR assessment activities

Despite efforts to promote HIVDR surveillance in the region, the implementation of population-based national strategies on HIVDR prevention and assessment has encountered multiple barriers and has progressed slowly.

In some situations, political instability at the country level has led to unexpected changes in programmatic agendas and resource allocation, and has deflected attention away from drug resistance as a fundamental component of national HIV surveillance. The planning and implementation of such programs is further challenged by a high turnover of staff—especially among key persons trained during regional workshops—and by the absence of a consolidated national HIVDR working group or committee. In other cases, challenges come from a combination of limited national capacity to execute plans due to constraints in human resources, infrastructure, and funding, and to limited external technical assistance and guidance on HIVDR surveillance.

The creation of national HIVDR working groups under the leadership of national AIDS programs and with the involvement of key actors in the country—including technical support from internal and external partners—is a course of action needed to build national and regional capacity and develop HIVDR prevention, monitoring, and surveillance strategies as key components within the expansion of national AIDS programs. The creation of regional and sub-regional HIVDR working groups may consolidate regional capacity and promote horizontal collaboration between countries in the same geographic area.

The absence of standardized patient information systems for clinical and pharmacy record-keeping in some countries represents a major obstacle for the collection of strategic information on HIVDR prevention—such as the Early Warning Indicators—and for general monitoring and evaluation of ART program outcomes. Even in countries where electronic patient information systems are in place, their use may not be systematic and data may not always be complete and reliable. Strengthening and standardizing patient information systems and other ART record-keeping procedures are crucial for supporting HIV surveillance and monitoring and for evaluating ART programs at country level, and must therefore be considered a national and regional priority. Collecting strategic information on the functioning of ART sites and national programs is a quality improvement strategy that supports HIV care and the long-term efficacy of ART. Having optimal monitoring systems benefits national AIDS programs in their measurement of progress towards delivering universal access.

Most countries in the LAC region have the capacity for reporting on HIVDR Early Warning Indicators. However, the planning and design of statistically powerful HIVDR epidemiological studies that comply with WHO-recommended survey methodology represents another challenge, particularly because the HIV epidemic in the region is mostly concentrated in vulnerable populations. In countries that have relatively small numbers of recently diagnosed patients, this poses a problem for the surveillance of primary transmitted resistance or—when the delivery of ART is decentralized or when there is a low uptake of new patients per treatment site—for monitoring of emerging HIV mutants. The feasibility of conducting these studies in some Caribbean countries is further limited by small population size and low numbers of people with HIV who seek care. Feasibility assessments for the implementation of HIVDR surveys and local adaptation of WHO survey protocols should urgently be conducted with support and technical assistance from PAHO and other key partners in order to provide tailor-made options for HIVDR surveillance and monitoring to countries in the region.

Numerous laboratories in Central and South America are currently performing HIV genotyping for clinical monitoring and epidemiological surveillance of HIVDR, but none have been accredited by WHO to the **HIV Drug Resistance Network** (WHO HIV ResNet), which is a network **of accredited laboratories that perform quality assured genotyping to support HIVDR surveillance and monitoring**. The development of regional HIVDR lab networks and the accreditation of national and regional labs to the WHO HIV ResNet will strongly support the planning and implementation of harmonized HIVDR surveys with quality-assured genotyping results.

Even though two WHO-accredited laboratories exist in the Caribbean—in Martinique and Puerto Rico—, shipping logistics pose another important challenge. Due to inter-country transportation issues, in some countries it may be more feasible to ship specimens to laboratories in North America and beyond than to their own regional WHO-accredited laboratories. Countries interested in implementing national drug resistance surveys and process samples for HIV genotyping will receive assistance from PAHO to identify available national or regional capacity and, if needed, to apply for WHO accreditation of national HIVDR laboratories. Especially in Caribbean countries, the use of Dried Blood Spots (DBS) will reduce the difficulties of shipping logistics for HIVDR surveys.

Awareness and sensitization on the importance of HIVDR prevention and assessment activities are a regional priority, and it is through strategic information on HIVDR that corrective measures can be taken to minimize preventable drug resistance.

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List of Tables

Table 1.1:	Proportion of males who report having sex with other males in Latin America and the Caribbean, 2003-2007	21
Table 1.2:	Heterosexual sex and relationships among MSM in Latin America and the Caribbean, 2003-2007.....	21
Table 1.3:	Prevalence of HIV among MSM and transgender people in Latin America and the Caribbean, 2003-2007.....	22
Table 1.4:	Prevalence of condom use in Latin America and the Caribbean, 2003-2007	22
Table 1.5:	Prevalence of other sexually transmitted infections in Latin America and the Caribbean, 2003-2007	23
Table 2.1:	Selected studies conducted among IDUs and non-injecting DUs populations in South America (1998-2007).....	32
Table 2.2:	Budgets for drug abuse and HIV prevention in South Cone countries, 2002-2003.	33
Table 2.3:	Budgets for strengthening municipal programs for drug abuse and of HIV prevention in South Cone countries, 2004-2006	33
Table 2.4:	Countries that support harm reduction measures in Latin America and the Caribbean.....	34
Table 3.1:	Typologies of sex work	41
Table 4.1:	Percentage of HIV-positive women who received antiretrovirals to reduce mother-to-child transmission of HIV in Latin American and Caribbean countries, 2008.....	58
Table 4.2:	Percentage of pregnant women who were tested for HIV and received the result by women's education, Brazil 2002	59
Table 4.3:	Percentage of mother-to-child transmission of HIV by type of birth and antiretroviral regimen in Cuba, January 1986—September 2009	66
Table 5.1:	Availability of CD4 testing for antiretroviral treatment patient monitoring in accordance with national protocols in Latin America and the Caribbean, 2006-2007	78

List of Figures

Figure 1.1:	Legal frameworks regarding sexual diversity in low- and middle-income countries	24
Figure 2.1:	Regions with injectable use of heroin and cocaine in Latin America and the Caribbean.....	30
Figure 4.1:	Incidence of congenital syphilis in Latin America and the Caribbean, 2005-2007.....	55
Figure 4.2:	Percentage of pregnant women who are tested for HIV in selected Latin American and Caribbean countries, 2007-2008.....	57
Figure 4.3:	Coverage of antiretrovirals to prevent mother-to-child transmission of HIV, 2008	57
Figure 4.4:	Percentage of children infected with HIV by gestational age at HIV diagnosis, Colombia 2005.....	60
Figure 4.5:	Frequent experience of pregnant women seeking care in Colombia, 2007.....	61
Figure 4.6:	Coverage of HIV testing during pregnancy in Peru, 2004-2007	62
Figure 4.7:	Timing of HIV test performance during pregnancy and drug regimen provided to a cohort of 198 pregnant women diagnosed with HIV in seven maternity hospitals in Lima, Peru, 2005-2006	62
Figure 4.8:	Evolution of the coverage of syphilis screening and treatment in pregnant and puerperal women and of the coverage of congenital syphilis health facilities of the Ministry of Health. Peru, 1997-2006	63
Figure 4.9:	Expansion of HIV testing coverage during pregnancy, Nicaragua 2006, 2007, 2008	64
Figure 4.10:	Gaps in PMTCT in the Dominican Republic, 2005-2006... ..	65
Figure 5.1:	Number of people receiving antiretroviral therapy in low- and middle-income countries, 2002-2008	76
Figure 5.2:	Distribution of persons, in percentages, receiving antiretroviral therapy by sex in selected countries in Latin America and the Caribbean, 2007	77
Figure 5.3:	Distribution of individuals according to first and second line antiretroviral drug regimens in Latin American and Caribbean countries, 2007	78
Figure 5.4:	Evolution and forecasting of ART consumption by regions, 2006-2010	80
Figure 5.5:	Price trend for the most commonly used first-line regimens in lower middle-income countries for adult patients, 2004-2008	81
Figure 5.6:	The price trend for the most commonly used second-line regimens in lower middle-income countries for adult patients, 2004-2008	81

List of Boxes

Box 1: Declaration of Commitment on HIV/AIDS 2001.....	14
Box 6.1: Program practices and activities related to HIVDR prevention.....	88
Box 6.2: Elements of the WHO-recommended HIVDR prevention and assessment strategy.....	89
Box 6.3: Workshops and training activities in Latin America and Caribbean.....	89
Box 6.4: Progress made in the implementation of the Caribbean Regional HIVDR strategy, 2008.	90

List of Acronyms


3TC:	Lamivudine
AFASS:	Acceptable, feasible, available, sustainable, and safe breastfeeding.
AIDS:	Acquired Immunodeficiency Syndrome
ARP:	Antiretroviral prophylaxis
ART:	Antiretroviral Therapy
ARV:	Antiretroviral
AZT:	Zidovudine
CAFRA:	Caribbean Association for Research and Action
CD4:	Cluster of differentiation 4
CDARI:	Caribbean Drug Abuse Research Institute
CHRC:	Caribbean Harm Reduction Coalition
COHAN:	Cooperativa de Hospitales de Antioquia, Colombia
DBS:	Dried blood spots
DU:	Drug user
ELISA:	Enzyme-linked immunosorbent assay
EpiNet:	Epidemiologic Network for HIV/AIDS in Latin America and the Caribbean
EWIs:	Early Warning Indicators
FSW:	Female sex worker
GAN:	ARV Negotiation Group
GFATM:	Global Fund to Fight AIDS, Tuberculosis and Malaria
HAART:	Highly Active Antiretroviral Therapy, or ART
HBcAb:	Hepatitis B core antibody
HBsAg:	Hepatitis B surface antigen
HIV:	Human Immunodeficiency Virus
HIVDR:	HIV drug resistance
HTCG:	Horizontal Technical Cooperation Group
ICS:	Immunochromatographic strip
IDU:	Injecting drug user or injecting drug use
ILAP:	Latin American and Caribbean Initiative for the Integration of Prenatal Care with the Testing and Treatment of Syphilis
IMAI:	Integrated Management of Adolescent and Adult Illness
IMCI:	Integrated Management of Childhood Illness
INPUD:	International Network of People who Use Drugs
IPT:	Isoniazid preventive therapy
LAC:	Latin America and the Caribbean
LPV/r:	Lopinavir/ritonavir
M&E:	Monitoring and Evaluation
MAP:	Monitoring AIDS Pandemic
MENA:	Middle East and North Africa
MDGs:	Millennium Development Goals
MSM:	Men who have sex with men; it is an epidemiological construct of biological males who engage in sex with other males that is independent from self-identification categories.
MSW:	Male sex worker
MTCT:	Mother-to-child transmission

NAP:	National AIDS Program
NGO:	Non-governmental organization
NNRTI:	Non-nucleoside reverse transcriptase inhibitor
NRTI:	Nucleoside reverse transcriptase inhibitor
NVP:	Nevirapine
OPEC:	Organization of the Petroleum Exporting Countries
P-24:	Protein 24 Antigen
PAHO:	Pan American Health Organization
PASMO:	Pan American Social Marketing Organization
PCR:	Polymerase chain reaction
PHC:	Primary health care
PHCO:	PAHO HIV Caribbean Office
PI:	Protease inhibitor
PMTCT:	Prevention of mother-to-child transmission
RDS:	Respondent-driven sampling
RPR:	Rapid plasma regain
Sd-NVP:	Single-dose nevirapine
STARHS:	Serological testing algorithm for recent HIV seroconversion
STI:	Sexually transmitted infection
SW:	Sex work or sex worker
TB:	Tuberculosis
TRIPS:	Trade-related aspects of intellectual property rights
UN:	United Nations
UNAIDS:	Joint United Nations Program on HIV/AIDS
UNGASS:	United Nations General Assembly Special Session on HIV/AIDS
UNICEF:	United Nations Children's Fund
UNODC:	United Nations Office on Drugs and Crime
WB:	Western Blot
WHO:	World Health Organization
WHO HIV ResNet:	WHO Global HIV Drug Resistance Network

Esta memoria se terminó de imprimir
en los talleres Gráficos de



Luisa Beausejour 2444 Urb. Chacra Rios, Lima
Central Telef. 3367144 / 3366578

 Canadian International
Development Agency Agence canadienne de
développement international

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