

Status of the HIV/AIDS epidemic and methods to monitor it in the Latin America and Caribbean region

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The paper presented is a review of the available epidemiological data on the situation in the Latin America and Caribbean (LAC) region, and looks at HIV prevalence in specific population groups. At the end of 2001, HIV remains an important health issue in the LAC region. Twelve countries in the region have an estimated prevalence of 1% or higher among pregnant women. Most of the LAC countries with generalized epidemics are located in the Caribbean basin. In the past decade there has been a slow but continuous increase in HIV prevalence rates among the general population and vulnerable groups, although information in some countries is limited. In many countries, the highest HIV prevalence among vulnerable groups is found among men who have sex with men. HIV infections related to injecting drug use are concentrated in the countries of the Southern Cone and Brazil. HIV is well anchored in the region, concentrated in vulnerable groups in most countries, but with an increasing presence in some countries in the general population. There is a need to improve data collection and introduce new tools to monitor behavior trends and the impact of interventions.

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Introduction

By the end of the year 2001 the estimated number of people living with HIV/AIDS was 40 million worldwide. Of these, 1.8 million were located in Latin America and Caribbean (LAC) countries, representing approximately 5% of the global figure [1]. Although the proportion of the global total in this region is relatively low, it still represents a major health problem for countries in the region, with an important number of individuals affected by the epidemic.

Monitoring of the HIV epidemic is usually based on repeated studies of HIV prevalence in specific population groups. However, most LAC countries have based their information systems on AIDS and HIV case reporting. Both methods have their own advantages and problems.

By May 2000, 306 536 AIDS cases were reported to the Pan American Health Organization (PAHO/WHO) [2] from countries in LAC. Only 1.8% were paediatric cases and 1.5% were perinatal. Since 1993 the male-to-female ratio has significantly decreased from 3.3 to 2.3 in 1999, but the sex rate varies from 1.5 in the Caribbean to 3.5 in the Andean region. There are important differences in the mode of transmission in the different sub-regions. Whereas 42% of total cumulative AIDS cases were transmitted by homosexual or bisexual contact in the Andean region, only 9 and 11% reported this mode of transmission in the Caribbean and Central America. Transmission by injecting drug use varies widely, with higher rates reported in Brazil (19%) and Southern Cone countries (up to 33.4%) and much lower numbers in other sub-regions.

The limitations of AIDS case reporting used to monitor

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HIV infection and trends are well known: the long incubation period, underdiagnosis, underreporting and reporting delays are the main limitations. Moreover, with the introduction of the new antiretroviral therapies in many LAC countries, such as Brazil, Argentina, Costa Rica, Chile, Mexico, reported AIDS cases are no longer an effective way to track the epidemic.

The problems associated with the use of AIDS cases to track the course of the HIV/AIDS epidemic are not limited to countries in LAC. Countries in Western Europe and North America have also relied to a large degree on AIDS case reporting, and must now also develop new approaches to track the epidemic. The US Centers for Disease Control and Prevention (CDC) has recognized the increasing limitations of AIDS case reporting to monitor HIV infection in the United States, and in 2000 established new guidelines to monitor HIV infection through HIV reporting [3]. The CDC guidelines have, however, been controversial and have been contested by many groups and health professionals [4]. Nevertheless, many States have been implementing HIV case reporting, and the debates continue at present. As both HIV and AIDS case reporting have important limitations, particularly in developing countries, UNAIDS and WHO recommend conducting repeated seroprevalence surveys in selected population groups as the best method for monitoring the HIV epidemic.

The purpose of this paper is first to provide an overview of the status of the HIV epidemic in countries in LAC. It will highlight the main outcomes and shortcomings of the epidemiological information available for LAC, examine the methods used for tracking HIV infection, and describe recent trends. Finally, we will discuss what we believe should be the best approaches to monitoring the HIV epidemic in these countries in future.

Methods

The information collected and analysed for this review comes from the existing published literature, presentations at AIDS International Conferences, unpublished country reports, or assessments of epidemiological studies and a review of existing HIV databases, including the US Census Bureau (USCB) database and country reports of epidemiological studies. The inclusion criteria were results from HIV seroprevalence studies either for sentinel surveillance or special research studies. We only looked at data available in the past 6 years and published in journals or official reports. The results presented are not exhaustive, but are based on available relevant findings. For the purpose of this paper, we

looked at the different modes of HIV transmission and the geographical areas of the region.

Results

This paper focuses on HIV-1, although some cases of HIV-2 were diagnosed in the early 1990s in Cuba and Brazil. We have not found any reference to the presence of HIV-2 in the epidemiological studies in recent years.

In most of LAC the spread of HIV/AIDS has been slower than in other regions, but the HIV epidemic is now well established. Within some countries we observed multiple smaller ongoing epidemics in different population groups. Although these epidemics are inter-related, they continue their own pattern at different speeds in the populations affected. According to the level of HIV prevalence and primary modes of transmission, three different regions can be identified: the Caribbean basin, Central America and South America.

The dominant mode of transmission varies from country to country, but it is mainly through homosexual and bisexual contacts and injecting drug use in most of Mexico, South America and the Andean countries. In Central America and Brazil, heterosexual transmission plays an increasing and important role for HIV dissemination. Brazil being the largest country and most populated country presents a very different state of epidemics among its population. In the Caribbean basin, the main mode of HIV transmission is by heterosexual sex. Figure 1 presents the main sub-regions of LAC according to the geographical location.

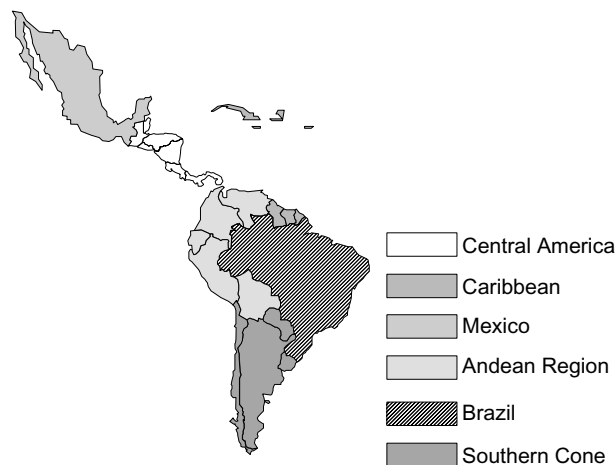


Fig. 1. Latin America and Caribbean region.

Heterosexual transmission among general population

Twelve countries in the region have an estimated prevalence of 1% or higher among pregnant women. According to the new typologies internationally adopted (low level, concentrated and generalized) [5] these countries can be considered to have a generalized epidemic. Most of the LAC countries with generalized epidemics are located in the Caribbean basin. This includes the big islands in the Caribbean sea (Jamaica, Dominican Republic, Trinidad, Bahamas and Haiti), and some Central American countries such as Guatemala, Belize, Honduras, Guyana and Suriname on the Caribbean coast of South America. In these countries,

HIV infection is mainly driven by heterosexual contact, and the epidemic is well rooted among the general population. Brazil includes areas with high HIV prevalence rates among antenatal attendees and areas in which prevalence rates are still quite low.

Overall, HIV seroprevalence studies among pregnant women attending antenatal care services range widely in this sub-region. In the past 5 years, prevalence from individual antenatal clinic sites in the LAC region has ranged between 0.4 and 1.7% in two sites in Guatemala city [6] and 5 and 13% in different sites in Haiti, as presented in Table 1. The country that has been hit the hardest in relative numbers has been Haiti, the first LAC country to identify AIDS cases. A sentinel

Table 1. HIV prevalence among pregnant women.

Countries	Place	Year	No. tested	HIV rate (%)
Dominican Republic	Santo Domingo	1995	1898	2.6
		1996	2172	2.4
		1997	2554	2.1
		1998	2505	1.5
		1999	2578	1.9
		2000	2740	2
Bahamas	Nassau	1993	1019	3.6
Barbados	National	1996	1012	1
		1996	420	1.19
Cuba	National	2000	10 000	0.0–0.4
Haiti	National	1996	NA (9 sites)	2.4–13.1
		2000	2873	2.9–17.2
Trinidad		1990–91	1055	0.3
		1995–96	2041	1
Jamaica	National	1996	140	0.7
	Three parishes	1997	908	0.9
El Salvador	National	1997	750	0.26
Costa Rica	Limon	1997	800	0.25
Mexico	National	1996–98	6300	0.09
		1993	542	0.2
		1994	626	1
		1995	474	2.32
Peru	Several provinces	1999	5110	0.04
Panama	Panama West	1996	197	0.51
	Panama West	1997	227	0.88
Guatemala	Guatemala City	1998	264	0.4
		1998	437	1.7
Guyana	Georgetown	1993	265	3.7
		1995	NA	7.1
		1997	265	3.8
Honduras	Tegucigalpa	1995	NA	2.65
	Tegucigalpa	1997	1063	2.4
	S. Pedro Sula	1998	NA	5
	National	1998	2700	1.4
Colombia	Cali	1999	775	0.26
		1999	775	0.13
Bolivia	Cochabamba	1997	980	0.5
Argentina	National	2000	66 367	0.07–0.69
		2000	30 651	0.69
Chile	Santiago	1998–1999	2002	0.05
Uruguay	Montevideo	2000	NA	0.23
Brazil	Rio Janeiro	2000	1264	1.6
	Sao Paulo	1999	1467	0.95
	Rio Grande de Soul	1999	1541	2.9
	South area	1997	1019	3.14
	Five areas	1998	6290	0.43

Source: HIV database US Census Bureau. NA, not available

surveillance survey carried out in 1996 found an extreme variation in HIV rates in the country between urban and rural areas and geographical locations. In 1999, a second round of HIV studies among more than 3000 antenatal clinic attendees was carried out. The results provided some evidence that HIV prevalence had stabilized or even declined, with a national average of 4.5% [7]. In Jamaica, the National AIDS Programme has been monitoring HIV prevalence among antenatal clinics for the past 10 years. The rates remain low, although with a slow increase, and have not yet reached a level of 1% [8]. The Dominican Republic is probably the country that has monitored HIV trends in antenatal clinics for the longest period of time, as their surveillance system dates from 1991. Prevalence in all antenatal clinics, except one located in the north, appears to have stabilized in the 2% range, after a rapid increase in the early 1990s [9]. Further analysis by age breakdown in Santo Domingo shows similar trends in the youngest group. Since 1995, the prevalence rate among 15–24 year olds has been relatively stable below 2% (T. Moya, Analisis de la vigilancia centinela 1995–1999, personal communication). Honduras and Guatemala have been improving their surveillance system among antenatal attendees in the past few years. In Honduras, high prevalence rates are found in San Pedro Sula (the economic capital of the country), and trends seem to be upward, 1.4% among 2700 pregnant women tested HIV positive in 1998 [10]. In Guatemala, prevalence rates are between 1 and 2% in pregnant women, but data are available only for the past 2 years, making it difficult to determine the trends over time [11]. The other countries relatively more affected by HIV in the Caribbean are: Bahamas, with 3.6% HIV-positive rate (among 3503 women) [12]; Guyana, with 7.1% HIV prevalence among pregnant women in 1996 [8]; and Belize, with rates between 2 and 3.8% [8]; whereas French Guyana showed prevalence rates of 1.3% in 1995 [13]. Unfortunately, no new data have been available for these countries in the past few years, and it is difficult to estimate current prevalence or forecast HIV future trends.

In the other part of the region, heterosexual transmission among the general population seems to be limited. In Peru in 1997–1998, HIV prevalence among pregnant women varied from 0.07% in the provinces to 0.5% in the capital, Lima [14]. In Mexico, recent data from a large programme of counselling for pregnant women in Baja California have shown prevalence rates up to 0.75% from undetectable levels in previous years. However, for the most part HIV rates in pregnant women in Mexico continue to remain below 0.5% [15]. In Colombia, HIV rates varied between 0.1 and 0.7% in 1999 [16].

Brazil, the largest country in the region, began surveillance in pregnant women in 1994, and data have

shown rates that vary enormously among the states. The most relevant data come from a national seroprevalence study in the 13–24-year-old group in 1998. Out of 6290 women tested, 0.4% were HIV positive [17].

Argentina and Chile have recently established large programmes for HIV testing and counselling for antenatal clinics. In the capital of Argentina, which is home to 50% of the country's population, 0.69% of the 30 651 women tested were HIV positive (Table 1). In the northern province of Tucuman the rate was only 0.07% [18]. In Chile, the prevalence of HIV infection observed among pregnant women has been very stable for all sentinel centres, with the rate never rising to more than 0.1% in 1999 [19]. Uruguay also remains in the lower range of HIV prevalence in pregnant women, with HIV rates of 0.23% in 2000, which are similar to figures found in 1997 [20].

Table 1 presents the most recent findings of sentinel surveillance among antenatal clinics in some countries of the region. Most of the countries present recent data on HIV prevalence among pregnant women. In some cases, such as Belize, although there is no recent information, the HIV prevalence trend seems to have been increasing since 1993. Other countries, such as Guyana, presented high levels of HIV infection up to 7%, but with no information about the sample size. From recent data it is difficult to interpret HIV trends in Guyana.

Bridging populations

Table 2 presents the main groups that have been monitored in some countries in the region with the most significant results, location, and date of the study.

Sex workers

Surveys among female sex workers (FSW) in the Dominican Republic showed that prevalence rates, although higher than in pregnant women, appeared to be stabilized in the country, varying from 2 to 7% in the past 3 years [21]. Prevalence trends in FSW in Santo Domingo, as presented in Figure 2, seem to be decreasing, but a decreasing sample size in the site makes the interpretation of trends difficult. Moreover, data could be biased because if FSW are found to be HIV positive they do not receive their official work permit. In Jamaica, in a nationwide study in 1997 the HIV rate among FSW was 5%, whereas in 1995 a rate of 11% [22] had been found.

In Central American countries such as Costa Rica, El Salvador, Panama and Nicaragua, HIV infection seems to remain low among FSW. Different surveys among

Table 2. HIV prevalence among other groups.

Countries	Place	Year	Group tested	No. tested	HIV rate (%)
Argentina	B. Aires	2000	MSM	150	12
	B. Aires	1998–2000	FSW	6625	4.7
	B. Aires	1998–2000	IVDU	600	7.6
	B. Aires	1998	STD	502	2.79
Chile	Santiago	1996–97	STD	394	1.26
	Santiago	1998–99	STD	372	3.5
Uruguay	Montevideo	1997	FSW	169	0.6
	Montevideo	1997	MSM	176	6.3
	Montevideo	1997	IVDU	136	18.4
	Montevideo	1997	Bisexuals	303	4
	Montevideo	2000	MSM	250	21
Bolivia	Cochabamba	1997	STD	99	2
	Cochabamba	1997	FSW	136	0
	La Paz	1998	FSW	1000	0.3
Brazil	Salvador, Bahia	1994–96	IVDU	216	44.1
	Rio Janiro	1994–97	MSM	944	11
	Sao Paulo	1997	IVDU	260	20.4
	Sao Paulo	1997	FSW	700	8.3
	37 sites	1998	STD	7247	3.05
Venezuela	Caracas	1992	MSM	315	30.8
	Bolivar State	1996	FSW	88	1.1
Colombia	Bogota	1998	STD	390	1.8
	Bogota	1998	MSM	630	18.3
Mexico	Mexico City	1999	FSW	2340	0.25
	Mexico City	1998	STD	247	17.4
	16 cities	1991–97	IVDU	2315	6
	16 cities	1991–97	MSM	7742	15
	Mexico City	1999	MSM	184	2.2
El Salvador	San Salvador	1995	FSW	2607	1.95
	San Salvador	1995–97	STD	750	5.3
Nicaragua	Managua	1997	FSW	240	0.2
	Not specified	1996	MSM	250	1.5
Peru	Lima	2000	MSM	3200	16.5
	Lima	1998	MSM	469	18.2
	Lima	1997	IVDU	405	4.4
	Lima	1997	MSM	1328	16.0
	Provinces	1997	MSM	1375	4.9
	Lima	1997	FSW	1402	1.64
	Provinces	1997	FSW	1359	0.66
	Guatemala City	1997	FSW	264	4.2
Guatemala City	1998	FSW	470	4.7	
Panama	National	1996	FSW	4539	0.31
	National	1997	FSW	4285	0.30
Puerto Rico	San Juan	1996	IVDU	1332	28.8
	San Juan	1997	FSW	294	31
Costa Rica	San Jose	1994	STD	520	3.1
	San Jose	1995	FSW	2296	0.9
	San Jose	1995	MSM	650	15.8
Dominican Republic	Santo Domingo	1994	Bisexuals	234	7.7
	Santo Domingo	1996	FSW	197	6.4
	Santo Domingo	1997	FSW	172	3.8
Jamaica	Kingston	2000	STD	339	2.9
	St Andrew	1997	FSW	240	5
	Kingston	1996	MSM	125	33.6

Source: HIV database US Census Bureau. FSW, female sex workers; IVDU, intravenous drug users; MSM, men who have sex with men; STD, sexually transmitted disease patients.

this vulnerable group have shown rates of between less than 1 and 5% [20]. The information is limited as the last HIV studies date from 1996–1997. In Guatemala, HIV rates among FSW were found to be 4.7% in 1997 [11]. In Mexico, rates among FSW remain relatively low, with rates in the range of 5–6% in 1998 [23]. In contrast, in San Pedro Sula city (Honduras) rates

among FSW reached 15% [24], the highest in the country as well as in Central America.

In South America, rates among FSW have remained below 5%, with rates of 4.7% among 6625 sex workers in Argentina [18] between 1998 and 2000. Uruguay, Bolivia and Chile had not reached the 1% level among

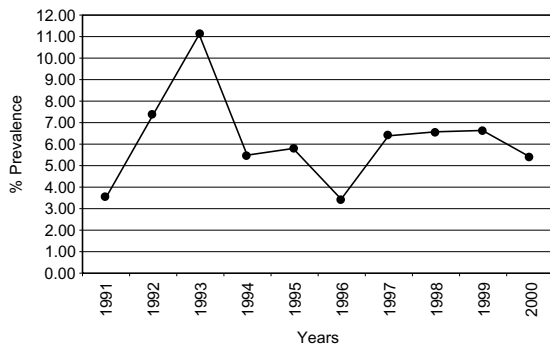


Fig. 2. HIV prevalence among female sex workers, Santo Domingo, 1991–2000.

sex workers in 1997 [20]. Peru, in the same year, presented rates from 0.66% in the provinces to 1.6% in the capital, Lima [25].

Men who have sex with men

The men who have sex with men (MSM) group still accounts for a large proportion of AIDS cases reported in the region, varying from 9% in the Caribbean to 18% in Peru in the Andean region [8]. In many countries, the highest HIV prevalence rates among vulnerable groups are found among MSM. For instance, recent data in Mexico in 1999 showed a 2.2% HIV infection rate in Mexico City. In other parts of the country, rates as high as 15% in MSM were found in a study carried out by the Ministry of Health [26]. In Jamaica, the highest HIV prevalence is found in MSM, with rates of up to 30% [22], but the lack of information about the sample size makes it difficult to interpret these results. In the Dominican Republic, the highest HIV prevalence rates are also found among groups with high-risk behaviour, with 11% of MSM tested being found positive in 1996 [27]. No other data have been available since 1996.

In Central American countries, very few data are available for this group. MSM in Nicaragua showed a 1.5% positive rate in 1996 [8]. In Honduras, HIV rates among MSM were approximately 11% in the mid-1990s, but were up to 20% in a study carried out in 2000 [28]. Little information on HIV prevalence is available among other small Central American countries.

In Argentina, MSM are heavily affected by HIV: 12% of MSM were found to be infected in one study in the year 2000 [18]. In Brazil, 11% of MSM were found to be positive in a survey performed between 1994 and 1997 [29]. The most interesting data come from a cohort of MSM in Bela Vista, where 662 individuals were followed for 36 months, with an incidence rate of 1.45% individuals per year [30]. Other estimations for HIV incidence in similar groups range from 1.5 to 3%

[31]. These figures are similar to the incidence rates found in other countries in the world among MSM. In 1998 in Colombia, an 18% HIV rate was found in this group; whereas 21% HIV prevalence was found among MSM in Uruguay [8,32].

Intravenous drug users

Injecting drug use is becoming a major social problem in many countries, and has a major significance for the spread of HIV infection. The injecting drug user (IDU) problem is a global issue, and is now found in many developing countries as well as in the United States and Europe. Drug injecting is found in countries of all political and religious systems and at all stages of economic and social development [33].

HIV infections related to injecting drug use are concentrated in the countries of the Southern Cone and Brazil, with the highest prevalence rates ranging between 21 and 52% [34]. In 1997, HIV prevalence rates varied from 4.4% in Peru, 18% in Uruguay (Table 2), up to 40% among drug users recruited in centres and in the street in Brazil [35,36]. Nevertheless, the available trends in Sao Paulo presented in Figure 3 seem to indicate a relatively slow decrease in HIV prevalence. Most recently, Argentina reported in its biannual AIDS bulletin in the year 2000 an HIV prevalence of 7.6% in a study among 600 drug addicts [18].

Many of the Caribbean countries have been identified as intermediary countries for the export of illegal narcotics to the United States. There are recent reports indicating that the bridge countries are more and more becoming countries that also consume drugs. Recent research in the Dominican Republic showed that 37% of 71 drug users interviewed were using crack cocaine, 11% used heroin, and 45% reported ever injecting [37]. In Puerto Rico, in a 1996 survey, the HIV prevalence rate was 28.8% [38]. It has also been observed that, in populations in countries such as Puerto Rico and the Dominican Republic, IDU inject more frequently and have greater injection-related risk behaviour than similar populations in the United States. In Mexico, a well-known country for drug trafficking, HIV prevalence reached 6% in a 1991–1997 seroprevalence study among 2315 individuals [39].

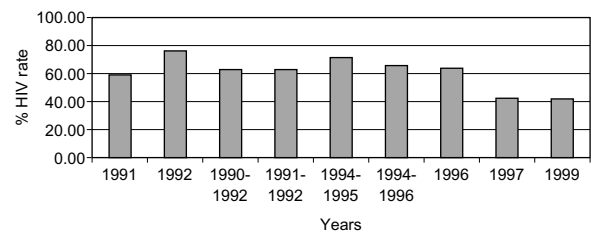


Fig. 3. HIV prevalence among injection drug users, Sao Paulo, Brazil.

Mobile populations

The number of migrant workers coming from LAC to the USA and other European countries is relatively important. For example, it is estimated that 10% of the population of the Dominican Republic and Haiti are living in the east coast of the United States [40]. Similar figures can be found for the Central American countries, although the largest population group is Mexicans. This migrant group is extremely important for the economy of its country. Several studies have looked at these issues, and concluded that migrants and travelling youth are at greater risk when going to a foreign location or on short visits to home countries, because they engage in high-risk behaviour more often than at home [41]. In Canada, young gay male migrants and young immigrant women tend to be at higher risk of HIV than similar Canadian groups. Similarly, HIV prevalence among individuals living in Montreal of Haitian origin was twice as high if they had travelled to Haiti [42].

Discussion

At the end of 2001 HIV remains an important health issue in the LAC region. The HIV epidemic remains for the most part concentrated in MSM and IDU and other vulnerable populations such as FSW. At the same time, 12 countries in the region and some areas in Brazil have reached prevalence rates above 1% in pregnant women, and can be considered to have a generalized epidemic. In the 1990s there has been a slow but continuous increase in HIV prevalence rates among the general population and vulnerable groups. The LAC region presents an opportunity for the epidemic to continue growing, although it would be difficult to project to what level, and if the epidemic will ever reach the levels seen in sub-Saharan Africa in all the countries. On the other hand, there are signs in some areas, such as Hispaniola island, of stabilized HIV rates among antenatal clinic attendees, which might indicate a slowing down of the epidemic that needs to be investigated further.

There have been discussions about why HIV rates in LAC have not reached the level of African countries. One of the possible explanations is that the levels of other factors that facilitate the transmission of HIV are lower. For example, the prevalence of sexually transmitted infections (STI) is double in sub-Saharan Africa (254 cases per thousand) the rate found in the Americas [43]. Other cultural and religious factors that influence sexual behaviour, the level of health and development may also have contributed to slow HIV progression and may explain these differences.

On the other hand, other determinants related to sexual

behaviour, sexual mixing or sexual practices that have proved to be important as possible co-factors in sub-Saharan Africa have been identified in the Caribbean and Central America, which has some similar cultural practices, such as dry sex [44]. The results of the Caribbean Adolescent Health Survey conducted by PAHO (1998) in 100 schools [45] showed that, out of the sexually active population, 40% of school children had started sexual relations at the age of 10 years. The study shows that there is still room for the epidemic to grow, and that risk behaviours are present at an early age.

Recent information about the global distribution of the HIV-1 genetic subtypes has confirmed that, in the LAC region, 80% of new cases belong to subtype B. This subtype is present in approximately 12.3% of total new HIV-1 infections. There is also the presence of subtype C in some populations, including among IDU. This subtype is acquired predominantly through sexual contact and is responsible for approximately 80% of new HIV-1 infection worldwide [46].

The role of the bridge populations and how they may fuel the epidemic in its different stages is well known. Although many countries present low HIV rates among the general population, HIV has been increasing in the MSM and IDU groups. Traditionally and culturally, the MSM population has been marginalized in the LAC countries. Very often MSM do not consider themselves to be homosexual and also have sexual relations with women. In Brazil, 11% of the participants in sexual practices studied in Fortaleza considered themselves to be bisexual [47]. Similar patterns have been reported in the Dominican Republic, where sexual contact of MSM with women is a common practice. Drug users are the second population subgroup that can act as a bridge for HIV infection to the general population. Although the problem with drug use is still very limited in the Caribbean, except for Puerto Rico, there is an increasing social impact in some countries in South America, particularly Argentina, Brazil, and Uruguay. Paraguay is also showing signs of an increasing IDU problem. MSM and IDU constitute the two main groups of individuals infected in South America, and there is a significant interaction between these two epidemics, especially in Brazil and Southern Cone countries.

The low HIV prevalence rates found among FSW are surprising. It should be noted that in many countries FSW are registered by law and given a health card by the health or police authorities. This certification is used as clearance for sex work. Most of the available data for sex workers thus come from the health centres that give this health certificate to the women; male sex workers do not receive a health card because they are not recognized as such. This obviously represents a

major bias for the data coming from sex worker populations.

One of the main limitations in trying to forecast where the HIV epidemic might be going in LAC countries is the lack of consistent data over time. A lot of information has been collected during the past decade, but many countries in the region have not developed or maintained well-functioning surveillance systems. This lack of sustained surveillance may be partly explained by the lower rates of HIV found in different groups in the early or mid-1990s, leading the health authorities to believe that HIV was not a serious problem. There is also another important gap of information in the region. The Caribbean Epidemiology Centre (CAREC) performed an evaluation of the HIV surveillance systems in 1998 among the anglophone countries. They concluded that, because of the focus on AIDS reporting, there was limited analysis of existing data, dissemination and use of the information [48]. In a recent review of the quality of HIV surveillance systems, it was found that, of all countries in the LAC region that have generalized epidemics, only three have sentinel surveillance systems that are fully developed and provide sufficient data to track the epidemic. Two countries have some or most of the aspects of a fully developed system, and the rest did not have even the basic components of a surveillance system. Regarding the countries with low-level or concentrated epidemics, only three have fully implemented sentinel surveillance systems and three have systems that provide some data for tracking the epidemic [49].

Both the Monitoring the AIDS Pandemic group meeting held in 1997, the LAC Epidemiology Network, and the Monitoring the AIDS Pandemic group forum discussion in 2000 recognized the great diversity of the HIV epidemic in the region and the importance of such an epidemic and its impact. Nevertheless they emphasized that the lack of information on HIV seroprevalence or incidence limited both the understanding of the current dynamics of HIV and the possibility of forecasting future trends [50]. Other authors have also suggested the need to implement broader studies on sexuality and psychosocial and community issues in order to understand HIV better in the LAC region [51].

Numerous seroprevalence studies and behavioural research have been conducted in LAC, but there is still an important gap in our knowledge. WHO and UNAIDS, in collaboration with other international organizations, have made recommendations about which HIV surveillance system is more appropriate for each epidemic state, and have introduced the new concept of second-generation surveillance. Improving this information will help countries to understand the epidemic better, and plan to reduce the spread and

impact of HIV. There is clearly a need to improve HIV information systems in order to track its impact and responses from the countries.

As AIDS-reported cases and mortality are starting to decrease in the region as a result of the introduction of antiretroviral therapy, some National AIDS Programmes (NAP) are changing to HIV case reporting as a tool to track the HIV epidemic, or are discussing new strategies for improving HIV monitoring. Although HIV reporting could contribute with some additional information, we strongly believe that the LAC region, in general, needs to improve its HIV sentinel surveillance systems and bring systems up to date in accordance with the latest international recommendations. This will improve the quality and quantity of information available in the region.

The access to adequate services and the stigmatization present are real limitations in most of the LAC countries. The fact that individuals with HIV infection may be asymptomatic and will not look for healthcare is another constraint.

There has been much controversy and discussion about how to integrate HIV/AIDS surveillance into a national health management information system (such as the Integrated Disease Surveillance promoted by WHO). There are both benefits and disadvantages in integration. However, it must be recognized that monitoring the HIV epidemic has special requirements. The long incubation period, the wide variation of the epidemic, the severity and implications of having AIDS, and the multiple determinant factors are key elements that make HIV a special case. For these reasons there is an increasing need to monitor the determinant factors that trigger the HIV epidemic. Moreover, for national AIDS programmes, one of the cornerstones of any planning for HIV programmes must be behavioural and biological surveillance in groups that may be highly exposed to HIV or other STI.

Conclusion

The main conclusion of this review is that HIV is well present and anchored in the region, concentrated in vulnerable groups in most countries, but with an increasing presence in the general population with heterosexual behaviour. However, the main shortcoming of the review is that, even though there is significant information available in many countries, it is difficult to assess the epidemiological situation as the information, when available, is very scattered, limited to few groups or geographical areas, and not of uniform quality.

Taking into account the characteristics of the epidemic in the region, efforts should be addressed in three areas. First, an estimation of the size of the populations affected; second, the introduction and use of behavioural surveillance tools; and third, the publication and wide dissemination of results at the national and international level. Furthermore, the national information systems should further strengthen their AIDS or HIV notification efforts with other surveillance tools (e.g. mortality vital statistics, STI surveillance, behavioural surveillance studies, prevalence data) to advance our understanding of the epidemic, and its prevention and control in the Americas. Finally, there is a need to conduct HIV seroprevalence studies among the main populations affected by HIV infection. In many cases, the data available in many countries are outdated and the lack of consistency in others makes the data difficult to interpret.

One of the main components of what is called second-generation surveillance is behavioural surveillance surveys. Behavioural surveillance surveys act as an early warning system for high-risk assessment for HIV infection, and they provide information to planners and managers. We have not reviewed information about sexual behaviours in the region. Regular serological and behavioural surveillance is required in the appropriate populations. This will provide basic information to monitor the impact of interventions as well as HIV dynamics in the populations.

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