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AIDS Situation in the Americas 1988

Surveillance

As of 31 December 1988 a total of 135,134 cases of AIDS had been officially reported to the World Health Organization (WHO) from 179 countries (Table 1). From these official reports and from selected surveillance studies it is estimated that there are over 250,000 cases of AIDS worldwide. An additional 500,000 individuals are estimated to have symptomatic infection with the human immunodeficiency virus (HIV), the etiologic agent of AIDS. Furthermore, an estimated 5 million asymptomatic individuals may already be infected with HIV.

In the Region of the Americas, HIV infection has already become well established with autochthonous transmission in 44 of 46 countries. The 95,881 cases of AIDS reported in the Americas, represent over 75% of the worldwide total cases reported to WHO. There were 51,901 deaths as of reports received by 30 December 1988, with an average case-fatality rate of 54.5%. With the exception of Montserrat and the British Virgin Islands, evidence of HIV infection has been found in all of the countries and territories of the Americas.

In relation to its population base, the Caribbean subregion has reported a disproportionate number of AIDS cases. Excluding North America, the

Table 1. AIDS cases reported to WHO by continent through 31 December 1988.

Continent	Number of cases	Number of countries or territories reporting		
		Zero cases	1 or more cases	Total
Africa	20,965	5	46	51
America	95,881	2	44	46
Asia	285	16	22	38
Europe	16,883	2	28	30
Oceania	1,180	9	5	14
Total	135,134	34	145	179

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English-speaking Caribbean countries with only 2% of the population and the Latin Caribbean Islands with 7% of the population have reported 11% and 21%, respectively, of all the cases of the Caribbean and Latin America.

Calculation of the ratio of reported cases for a given calendar year to the mid-year population estimates for that year provide a better method of comparison. Of the 658 million individuals residing in the Americas, 402 (61%) live in Latin America distributed through Central America and South America, 250 million (38%) live in North America, and the remaining 6 million (1%) people are distributed in the 22 countries and territories of the Caribbean. On a subregional basis for 1987, the North American subregion has the highest number of AIDS cases per population basis with 67 AIDS cases/million population (Table 2). The Caribbean subregion reported 53.9 cases/million population, and the Latin Caribbean reported 33.7 cases/million population. However, even these averages obscure significant differences between the countries. For example, there were 11.1 AIDS cases reported per million population in 1987 in Brazil with more than 100 million people, whereas the ratios in Bermuda, the Bahamas, and French Guiana, were in the range of 200-300 AIDS cases/million population, where the population base is less than 6 million.

Furthermore, a comparison of the absolute number of cases fails to describe the actual economic and health impact of AIDS within some countries, since many countries are in different stages of development, ranging from among the poorest countries of the world to the most developed.

Nevertheless, as shown in Figure 1, the remarkable similarity in the rate of increase in AIDS cases among the five continents separated only by a matter of several years suggests that HIV spread rapidly throughout the world within that period of time. Once HIV was introduced within a population, autochthonous transmission soon became established, thus propelling the epidemic at a rate similar to that observed in other countries. Consequently, AIDS is now increasing at variable rates in different areas of the Region due to this time difference and other modifying epidemiologic considerations. In North America, AIDS cases increased 13% between 1986 and 1987 whereas in the other subregions where the epidemic is at an earlier stage, dramatic increases were observed. In the Southern Cone, the number of AIDS cases increased 21.3%, in the Latin Caribbean 155%, and in Central America 117% (Table 2). These differences in reported increases may reflect

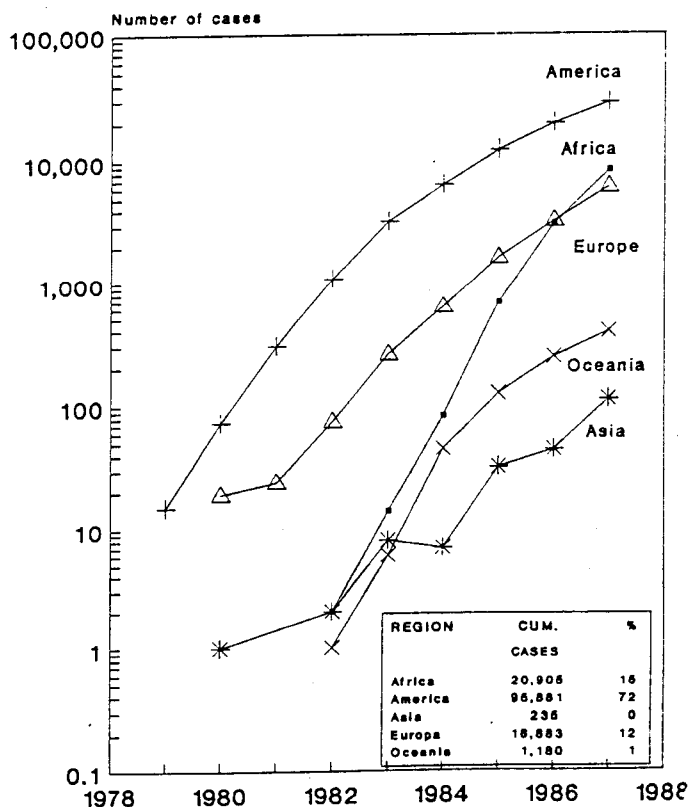
Table 2. Cumulative number of AIDS cases as received by 31 December 1988, and adjusted case rates 1986 and 1987, by subregion.

Subregion	No. cases ^a	1986 case/rate ^b	1987 case/rate ^b	% increase 1986-1987
REGIONAL TOTAL	95,881	26.5	31.7	20
Latin America	9,953	4.5	8.1	80
Andean Area	754	1.3	2.9	123
Southern Cone	340	0.8	2.5	213
Brazil	4,436	6.1	11.1	82
Central American				
Isthmus	458	2.3	5.0	117
Mexico	1,646	5.6	8.0	43
Latin Caribbean	2,323	13.2	33.7	155
Caribbean	1,146	35.1	53.9	54
North America	84,782	59.5	67.2	13

^aDifferences or changes in case definition may lead to discrepancies with other published data.

^bRate per 100,000 population. Mid-year population estimates.

Figure 1. Number of AIDS cases in the world by continent, 1979 to 1987.



several factors such as increased case recognition and reporting, late introduction of the virus to a particular region with an early exponential increase similar to that observed in the early years of the epidemic in the United States of America, and changing epidemiologic patterns of the disease. Regardless of the underlying explanations for these changes, it is apparent that basic modes of transmission responsible for these increasing number of AIDS cases are similar in different areas of the Region with differences in rate attributed primarily to time and efficiency in case reporting.

In North America, 82,367 AIDS cases have been reported in the United States of America as received by 31 December 1988, and 2,323 cases have been reported in Canada. Demographics of these cases are remarkably similar in both countries. There is a 10:1 male to female distribution of cases and the overall mortality was 56% at the time of reporting, and greater than 90% five years from time of diagnosis. AIDS related mortality disproportionately affected persons in the 20-44 year old age group, leading to substantial decreases of life expectancy. One measure of this premature mortality is "potential years of life lost" (PYLL) before age 65. Most causes of PYLL decrease or increase only slightly over time, but AIDS moved from thirteenth in 1984 to eighth place in 1986. In 1986, AIDS accounted for 2.1% of total PYLL in the United States of America. More than 90% of the AIDS-related premature mortality occurred in men with nearly 75% in those 25-44 years old. Among men, AIDS was the 7th leading cause of PYLL; for men 25-44 years, AIDS ranked 6th in 1986.

AIDS cases have been disproportionately high in blacks and hispanics in the United States of America, reflecting higher reported rates of AIDS among black and hispanic intravenous drug users, their sexpartners and infants. Blacks accounted for 25% of the adults and 56% of the pediatric cases, and hispanics were 14% of adult and 24% of pediatric cases. In contrast, blacks and hispanics account for only 11.6% and 6.5%, respectively, of the USA population excluding territories.

A total of 1,108 and 34 AIDS cases were diagnosed in children under 13 years of age in the USA and Canada, respectively. While this represented only 1.5% of the total number of AIDS cases in both countries, there was a 65% increase in the number of cases diagnosed over the previous year in the USA, reflecting the increasing number of HIV infection among women who are intravenous drug users or sexual partners of intravenous drug users.

In the Latin Caribbean subregion, reports of 2,323 cases of AIDS have been received by 31 December

1988 (Table 2). Since 1983, there has been an exponential increase in the number of cases reported in the subregion, with a doubling time of 1 year. As in North America, the majority of cases are between 20 and 49 years of age. However, in contrast to other areas of the Americas, the male to female ratio of reported AIDS cases is 3:1 reflecting increased number of female cases and 9% of the cases were under 5 years reflecting increased mother to child transmission. Indeed, some Caribbean countries (Bermuda, Bahamas, Haiti, and Trinidad and Tobago) have some of the highest per capita rates of reported cases in the world. These high rates initially lead to the description of the Caribbean as an area of "high risk" in some early reports. However, the Caribbean is not homogeneous, as variable case rates have been reported throughout the Caribbean basin. Furthermore, there is no direct evidence for an ethnic predisposition to HIV among residents of this area, but rather the high infection rates in some areas reflect the time of introduction of the virus into a given area, as well as the frequency of certain risk behaviors responsible for the transmission of HIV.

For Latin America, reports of 9,953 cases have been received by 31 December 1988 (Table 2). Brazil with 4,436 cases, comprises 80% of the total cases reported in South America. The overall case fatality rate is 38.3% and the male to female ratio of 10:1 is identical to that observed in North America. However, in some areas there is increasing evidence of heterosexual transmission and female AIDS cases, and subsequently increased evidence of perinatal transmission and pediatric AIDS cases.

Magnitude of HIV Infection and Modes of Transmission

As in all other regions of the world, the number of AIDS cases grossly underestimate the magnitude of the problem since they do not account for the total number of infected individuals. The Pan American Health Organization (PAHO) estimates that approximately 2.5 million people are infected with HIV in this Region. Of these individuals, 1.0 to 1.5 million reside in North America, and approximately 750,000 to 1.0 million are located in Latin America and the Caribbean. Serologic surveys for detection of antibody to HIV better represent HIV infection rates among selected populations and consequently provide a better estimate for the true extent of HIV infection in the Region. Unfortunately, serologic sur-

vey for HIV infection have only recently been undertaken in some countries, and general population surveys are not currently available to provide an accurate estimate of the total number of HIV infected people in the Americas. However, selected studies among military recruit applicants, blood donors and women attending prenatal clinics provide a rough estimate of the general heterosexual population infected with HIV, and serologic surveys of homosexual/bisexual men, female prostitutes, intravenous drug users, their sexual partners, and patients attending sexually transmitted disease (STD) clinics, provide important information about HIV infection among high risk individuals. Unfortunately, the number of individuals within these surveys, and the methodology utilized for enrollment vary significantly, and thus direct comparisons between individual countries and selected populations cannot be made. Serologic surveys of selected populations have been the most extensive in the United States of America, and these rates have been recently summarized by the Centers for Disease Control (CDC). Since the details of these reports will not be presented here, representative rates for selected populations in different countries are shown in Table 3 for the purpose of estimating the extent of HIV infection in these populations.

Sexual Transmission

Common to all areas of the world, the major modes of transmission of HIV are sexual, parenteral, and perinatal. The relative frequency of these three types of transmission and the possible date of HIV introduction and dissemination account for the different epidemiologic patterns among the countries.

In the USA and Canada, 63% and 82% respectively, of reported AIDS cases have occurred among homosexual men who denied intravenous drug use. An additional 7% and 2.4% of AIDS cases, respectively, have been homosexual or bisexual intravenous drug users.

In Latin America, AIDS cases were initially reported among homosexual and bisexual men with a history of travel to the USA. The first cases, many of which had already been diagnosed in Europe and North America, were found in Argentina, Brazil, Colombia, Mexico, and other Latin American countries retrospectively from 1982 to 1985.

Since 1984, more than 50 HIV serologic surveys of homosexual and bisexual men in the United States of America show prevalence rates ranging from 10%

to as high as 70%, with most between 20-50% (Table 3). The highest rates have been in cities with the highest rates of AIDS reported in homosexual men. Similar rates of infection have also been recently documented in other countries of the Americas. From 7-40% of homosexual men sampled in Argentina, Brazil, Colombia, Costa Rica, Dominican Republic, Mexico, Peru, Trinidad and Tobago, and Venezuela, have been found to be HIV seropositive (Table 3). It is most likely that these data overestimate the true prevalence of HIV infection in most homosexual men since most of these surveys were conducted in individuals seeking medical attention for STDs or because of a concern that their past or present sexual behavior had placed them at risk.

An important feature in some Latin American and Caribbean countries is the proportion of bisexual men, who account for 15-25% of all AIDS cases. Many of these individuals are married and have stable female partners.

The high rate of HIV infection among bisexuals in some Latin American and Caribbean countries, and among heterosexual intravenous drug users in the USA, is concomitant with the increasing numbers of women who are becoming infected with HIV due to heterosexual transmission. For example, in 1984, bisexuality was the most common risk factor for HIV infection (36%) in Haitian men, and the sex ratio among Haitian AIDS patients was 3:1. More recently, the male to female ratio is nearly 1:1, and homosexuality or bisexuality is far less frequent a risk factor than heterosexual transmission. Similar patterns are also emerging in other countries in Latin America such as the Dominican Republic, Jamaica and Mexico. In 1987, 41% of the 37 cases of AIDS diagnosed in Jamaica occurred among women. Thus, while the proportion of cases in which heterosexual transmission of HIV is implicated is still low in most countries of Latin America, a significant number of AIDS cases and HIV infection are being detected in women in the Caribbean and selected areas of Central and South America, as well as inner-city populations of the USA.

While studies of bidirectional transmission of HIV have been limited in the USA and Europe, there is biological, clinical, and epidemiological evidence of male to female and female to male transmission in Central Africa and in Haiti. While the relative efficiencies of transmission in the two directions have not been documented, it is evident that most heterosexual transmissions of HIV occurs during vaginal intercourse, and that receptive anal intercourse will also increase the risk of infection in women. In one study in Haiti, 55% of 174 regular sex

**Table 3. Seroprevalence rates for HIV infection.
Selected populations in the Americas.**

Population	Country	Number Studied	% Infected
Homosexual/ bisexual men	Argentina	2,000	17.8-29.0
	Brazil	132	23.4
	Colombia	294	21.0
	Costa Rica	800	20
	Dominican Republic	87	13.8
	Mexico	483	15.0-31.1
	Peru	1,334	11.2
	Trinidad-Tobago	100	40.0
	USA	15,000	20-50
	Venezuela	407	20.6
Intravenous drug users	Argentina	978	22-60
	Brazil	188	15.9
	Puerto Rico	162	52
	USA East	10,000	50-60
	West	5,000	5-20
Female prostitutes	Bolivia	330	0
	Brazil	290	1.7-6.2
	Dominican Republic	986	0.9-1.2
	Mexico	770	0.4-7.0
	Peru	2,449	0.3
	USA	3,895	0-45
Hemophiliacs	Argentina	581	35-56
	Brazil	657	75-94
	Canada	341	55.0
	Costa Rica	163	60.7
	Mexico		20-66
	Peru	243	5.3
	USA Type A	1,794	70
	Type B	345	35
	Venezuela	50	24.0
Heterosexual partners of at risk individuals	Argentina	204	7.7-14.9
	Brazil	13	38.5
	Haiti	918	51-55
	USA	638	8.7-53.1
Blood donors	Brazil	11,807	0.9-7.0
	Canada	1.17 m.	0
	CAREC	37,713	0.61
	Costa Rica	38,000	0.11
	Cuba	388,480	0.004
	Dominican Republic	1,480	1.62
	Guadeloupe	9,356	0.17
	Jamaica	5,724	0.23
	Martinique	10,109	0.20
	Panama	6,279	0.06
	Trinidad-Tobago	6,407	0.92
	USA	12.6 m.	0.020
	Venezuela	1,508	0.07
Pregnant women	Cuba	23,000	0
	Haiti	4,000	9.2
	Peru	860	0
	USA Massachusetts	30,708	0.21

Note: Methodologies vary among countries.

partners or spouses of AIDS patients were seropositive for HIV. The seroprevalence was comparable for both male and female sex partners, 61% and 54%, respectively. In contrast, 23 of 136 sex and age-matched relatives were HIV seropositive, and 21 of 108 sex-matched friends with no sexual relationship to the patient. Of 186 Haitian male AIDS patients, 48% reported sexual contact with an average of 10 or more different female partners/year in the preceeding 5 years and 58%, had history of sex with prostitutes during the preceeding 5 years. In contrast, multiple sex partners were reported by only 2 female AIDS patients and none of the female controls.

Variable rates of heterosexual transmission among spouses or sex partners of HIV infected individuals have been documented in studies in the Americas. The reported rate of infection to a female partner of an infected male hemophiliac has ranged from 9-20%; 26% for female sexual partners of bisexual men; 19.7% and 14.8%, respectively, for female and male sexual contacts of transfusion recipients; and 47.8% and 50%, respectively, for female and male sexual contacts of intravenous drug users. Thus, it would appear that although many of the couples included in these studies of heterosexual HIV transmission have had unprotected sex over prolonged periods of time, no more than 50%-60% of partners have been infected in most studies. This suggests that in addition to behavioral factors, biological factors may contribute to HIV transmission. Infectiousness of the index case may vary over the course of infection with the risk of transmission being greatest among those individuals with less than 200 CD4⁺ cells/mm³ and with antigenemia.

Sexually transmitted disease, particularly genital ulcerative disease, may also facilitate HIV sexual transmission. While studies in Africa have documented the association of HIV infection with a history of STDs such as gonorrhea, genital ulcers, and syphilis, recent studies in the USA have also confirmed the role of STDs in facilitating HIV transmission. In a recent study in Baltimore, Maryland, of patients attending an STD clinic, 5.2% of 4,028 patients were found to be HIV infected. After logistic regression analysis, HIV infections were significantly associated with a history of syphilis and positive serologic test for syphilis and herpes simplex virus type II as well as a past history of genital warts in men and women. Consequently, genital ulcers and other STDs may allow penetration of HIV into the susceptible host by causing epithelial disruption, or by increasing the susceptibility of the individual by increasing the population of T-helper lymphocytes, target cells for HIV at the site of infection within the genital tract.

Female Prostitutes

Female prostitutes are at high risk of HIV infection because of multiple sexual exposures and because intravenous drug use is often common among them. In contrast to studies in Africa which have demonstrated extremely high rates of HIV infection among female prostitutes of 27% to 90%, similar studies in the Americas have not documented such high rates of infection. In the USA the seroprevalence data on female prostitutes varies from 0-45%, with highest rates in large inner city areas where intravenous drug use is common. However, HIV infection in prostitutes with no evidence of intravenous drug use was associated with recent infection with syphilis, hepatitis B, and with large numbers of non-paying sex partners. In the Latin Caribbean, one serologic survey of prostitutes in the Dominican Republic documented 12 (1.2%) of 986 female prostitutes infected with HIV. In Central and South America, rates of infection ranged from 0 to 7% among sampled prostitutes.

Perinatal Transmission

Perinatal transmission of HIV may occur *in utero* through transplacental passage of HIV, natively at the time of delivery where there is a maternal/fetal blood exchange, or postnatally through breast feeding or other possible routes. Risk factors associated with perinatal transmission remain unknown and prospective studies are currently underway in several high risk areas. Of the 1,065 children diagnosed with AIDS in the USA, 828 (78%) were born to a parent with AIDS or engaged in one of the high risk behaviors for HIV, principally intravenous drug use. As mentioned earlier, blacks and hispanics account for 56% and 24%, respectively of these pediatric cases. The large number of pediatric cases among black and hispanics reflect the disproportionately high relative risk of HIV infection and AIDS among these minority groups, residing in inner-city populations of the Northeast section of the USA.

The exact contribution of perinatal transmission of HIV to overall infant mortality, however, is not known in these areas. Diagnosis of HIV infection in children is complicated due to the similarity of clinical features of AIDS in children with other endemic diseases such as parasitic infections, diarrhea, and malnutrition which are extremely common in some developing countries and by the lack of reliable diagnostic procedures to detect HIV infection in newborns. All infants born to HIV infected mothers have detectable antibody to HIV which consists of mater-

nal IgG which is passively transferred through the placenta. Less than one-fifth of the cases in infants and children have been associated with perinatal transmission in Brazil. In Mexico, 16% of cases occurred in infants of infected mothers. The majority of cases in children have thus far been associated with transfusion of blood and blood products, and in rare cases with sexual abuse and child prostitution. However, it can be anticipated that the number of perinatally acquired cases will rise in many of these areas along with documented evidence of increased bisexual/heterosexual transmission to women.

The contribution of breast feeding in perinatal transmission of HIV is unclear at present, although HIV has been isolated from breast milk and anecdotal cases of postnatal transmission through breast milk have been reported. It is likely, however, that breast feeding probably represents only a small incremental risk if mother to infant transmission is compared to *in utero* transmission and that further studies are warranted before recommendations regarding breast feeding for HIV infected women are made for the Region.

Measuring HIV infection among women attending prenatal clinics or in newborns by filter paper blood specimens provide important information about sexually active women between the ages 15-40 years of age. Furthermore, such information has further practical importance since it is relatively predictive of the number of potential HIV infected children, since the risk of HIV transmission from an infected mother to her infant is estimated at 30%-50%. In the USA, information on HIV antibody prevalence is available from 27 studies of women in settings related to women's health and child bearing. Except among groups of women specifically known to be at high risk for HIV infection such as intravenous drug users, the findings range from 1% to a high of 2.6% in the New York City area and in Puerto Rico. Rates as high as 30% have been found among groups of pregnant intravenous drug users. Serologic surveys of pregnant women in Cuba, the Dominican Republic, and Peru have not identified any seropositive women in contrast with the 9.2% infection rate among women attending a prenatal clinic in Port-au-Prince, Haiti.

Parenteral Transmission with Blood and Blood Products

Transmission of HIV infection among intravenous drug users appears to be a major problem in the developed countries of the Americas. Currently, 19%

of reported AIDS cases in the USA have occurred among intravenous drug users with an additional 7% among homosexual men who also acknowledge intravenous drug use. The incidence of HIV infection has been documented to be increasing at the fastest rate among intravenous drug users compared to other high risk populations. In Bermuda, Bahamas, Puerto Rico, and several other countries where the highest reported cases of AIDS per 100,000 population exist, intravenous drug use appears to be the predominant mode of transmission. In contrast, the transmission of HIV among intravenous drug users appears to be far less significant in Latin America, where in general, less than 1% of AIDS cases are believed to be associated with intravenous drug use.

In the USA, data from more than 18,000 intravenous drug users tested in over 90 surveys consistently showed very high prevalence rates in Northeastern United States with rates ranging from 50-60% in New York City and Northern New Jersey, whereas rates of less than 5% were found in most areas of the country other than the East Coast (Table 3). In Puerto Rico, rates as high as 59% have been observed in patients attending drug treatment centers. Since patients undergoing treatment are believed to represent only about 15% of the estimated 1.1 million intravenous drug users in the USA, exactly how many habitual or intermittent intravenous drug users are infected with HIV is not known.

Transfusion of blood and blood products, such as Factor VIII and Factor IX concentrates, have been responsible for 4% of the documented AIDS cases in the USA and 5-10% in other areas of the Americas. Many countries are dependent upon volunteer and paid blood donors and HIV antibody prevalence among these donors has been highly variable ranging from 0% among 4,000 donors in Argentina, and 0.1% in more than 1,400 blood samples in Barbados to a high of 1.5% in the Dominican Republic, and 7.3% among some paid blood donors in high risk areas of Mexico City (Table 3). In many areas, HIV blood screening has not been introduced due to economic or technical constraints. In some of these developing countries screening based on epidemiologic or clinical grounds have thus far been unsuccessful. However, transmission via blood transfusions can theoretically be eliminated if screening becomes a routine practice. The development and implementation of rapid inexpensive diagnostic assays in Brazil, Haiti, and Mexico, as well as in some countries in Central Africa, have already had a dramatic impact in the prevention of HIV transmission via blood transfusion.

Since 1985, donated blood and plasma has been screened for HIV antibody in North America, part of the Caribbean, and a few countries in Latin America. In the USA, the prevalence of HIV infection remains low among the highly selected population of blood donors, 0.020% for 12.6 million American Red Cross blood donations between April 1985 and May 1987. The overall level has declined from 0.035 in mid-1985 to 0.012% in mid-1987, primarily as a result of eliminating previously identified seropositive persons from the donors pool. The overall prevalence among first time donors in the period 1985-1987 has been 0.043%. For other countries in the Americas, the rates have ranged from 0% to a high of 7% in two surveys of paid donors to private blood banks in Mexico and Brazil. As screening of donated blood becomes more available throughout the Americas with the development of new rapid and inexpensive tests, additional information will become available regarding HIV infection among this population.

Before the screening of blood and plasma became routine in 1985, any person with coagulation abnormalities requiring clotting factor replacements as therapy were potentially exposed to infection with HIV. Exportation of blood products from the USA to other areas of the world including the Americas resulted in transmission of HIV to hemophiliacs residing in these other areas. In the USA, approximately 70% of individuals with hemophilia A (Factor VIII deficiency) and 35% with hemophilia B (Factor IX deficiency) are HIV seropositive. Similar rates of HIV infection have been documented among hemophiliacs in Argentina (35-56%), Brazil (75-94%), Canada (55%), Costa Rica (71%), Mexico (22-66%), and Venezuela (24%). Exportation of factor concentrates from the USA to other countries of the Americas is now limited, and all factor concentrates currently manufactured for use in the USA are made from plasma from donors screened for HIV antibody and are heat-treated to inactivate the virus. Follow-up studies of seronegative hemophiliacs receiving heat-treated factor concentrates from these screened individuals are currently underway throughout the Americas.

Clinical Manifestations

Clinical features of HIV infection are diverse and range from acute retroviral infection to asymptomatic infection, to involvement with a wide variety of opportunistic infections, encephalopathy, and/or malignancies. Clinical manifestations vary in

different populations according to the relative frequency of other endemic opportunistic infections. In contrast to that observed in more temperate countries such as the United States of America and Canada where pulmonary symptoms are common, patients in tropical areas such as the Caribbean, Central America, and parts of South America, present with gastrointestinal and dermatologic features more frequently than pulmonary symptoms commonly seen in the AIDS patients in the USA. In contrast to the many detailed clinical studies in North America, there are only a few clinical descriptions of AIDS in other countries of the Americas. Progressive weight loss is found in nearly all HIV infected patients residing in tropical areas. It is frequently accompanied with diarrhea, and in studies in Haiti, diarrhea and weight loss were present in over 80% of patients who progressed to AIDS, reflecting perhaps a greater susceptibility to gastrointestinal pathogens common to a specific geographic location. The diarrhea was described as contradictory intermittent, watery and unresponsive to therapy. Infections included oral esophageal candidiasis, *Mycobacterium tuberculosis*, cryptosporidiosis, cytomegalovirus, and herpes simplex virus infection of gastrointestinal tract.

Many HIV infected patients in the Caribbean and Latin America develop mucocutaneous lesions. Lesions are symmetrically distributed over the body but are frequently found on extremities. Clinically, these papular lesions are pruritic, and the patients may scratch their lesions resulting in superinfection, scarring, and hyperpigmentation. The etiology of this eruption is presently unknown. Oral candidiasis occurring in HIV infected individuals is a poor prognostic sign, predictive of progression to AIDS, and many of these patients develop other opportunistic infections within several months.

Among AIDS patients residing in tuberculosis endemic areas, such as the Caribbean and parts of Latin America, tuberculosis may be one of the earliest opportunistic infections seen among HIV infected individuals. Reactivated tuberculosis is frequently associated with defective cell-immunity and its occurrence in HIV-infected patients often predates the diagnosis of AIDS. Tuberculosis can therefore be present without any other stigmata of HIV associated immunosuppression. Among patients residing in Florida, tuberculosis was diagnosed in 27 of 45 Haitians with AIDS, but in only 1 of 37 non-Haitians with AIDS ($p < 0.001$). Of these 27 Haitians with tuberculosis and AIDS, 19 had extrapulmonary tuberculosis, whereas only 56 of 286 Haitian patients with tuberculosis but without AIDS had extrapul-

monary tuberculosis ($p < 0.001$). Tuberculosis was diagnosed in these individuals 1-17 months (mean, 6 months) before AIDS was diagnosed. In most patients response to conventional therapy is usually similar to that in tuberculosis patients without infections. In 10 HIV infected patients who were followed with conventional anti-tuberculous therapy cultures were negative within one to four months and tuberculosis did not recur.

As with tuberculosis, the immunosuppression associated with HIV infection may exacerbate the clinical manifestations of other endemic diseases, and possibly enhance the transmission of these diseases resulting in a higher incidence and severity of endemic disease within a selected population. For example, it is not currently known what impact HIV infection has had among diseases such as leprosy or leishmaniasis within areas of Central and South America where these diseases are commonly found. Studies are urgently needed to assess the immunological, clinical, and epidemiologic consequences of HIV infection on these widely prevalent diseases which are responsible for considerable degree of morbidity and mortality in Latin America and the Caribbean.

Other Retroviral Infections

HIV-2

In 1985, a second human retrovirus associated with AIDS was identified in West Africa. Referred to as HIV-2, this virus has been documented in relatively high prevalence rates in high risk individuals such as hospitalized patients, female prostitutes, and STD clinical patients in several countries of West Africa. Four additional cases of HIV-2 infection have been diagnosed in the USA and Canada among patients who had visited or lived in West Africa. In one case HIV-2 has been isolated from a Cuban who had lived in Angola, and investigators in Brazil have identified 15 patients with serologic evidence for HIV-2.

Unfortunately, the diagnosis for HIV-2 infection in clinically suspect patients remains problematic. The viral proteins of HIV-2, while divergent from HIV-1, still have a 50% conservation for the gag and pol amino acids. Several HIV-2 ELISAs have been commercially developed and are being utilized in conjunction with HIV-1 ELISA for the presence of either virus. As recombinant antigens for these two viruses are utilized in diagnostic assays, increased specificity may be achieved and accurate diagnosis of HIV-1 or HIV-2 infection may be possible.

HTLV-I Infection

Prior to the recognition of HIV as the etiologic agent of AIDS, a closely related virus, the human T-lymphotropic virus type I (HTLV-I) had been identified as a cause of adult T-cell leukemia/lymphoma (ATL). *In vitro* studies have also suggested a synergistic effect between HTLV-I and HIV infection in coinfecting CD4⁺ cells (T-helper cells) which may serve to accelerate the progression of one or both of these diseases. In a prospective study of 100 men in Trinidad and Tobago, 3 (9%) of 34 men who were HIV positive alone progressed to AIDS within 3 1/2 years. However, of the 6 who were doubly infected, 3 (50%) had progressed to AIDS during the same time. Trend analysis of the dates of diagnosis of AIDS among these 40 men revealed a significant increase among individuals coinfecting with HIV and HTLV-I ($50\% \pm 20\%$) as compared with those infected with HIV alone ($9\% \pm 5\%$). This preliminary follow-up of homosexual men dually infected with HIV and HTLV-I appears to confirm *in vitro* evidence that HTLV-I *tat* gene may accelerate the adverse cytopathic effects associated with HIV replication in cells leading to a more rapid progression to AIDS.

The modes of transmission of HTLV-I have not been well defined. The possible modes of transmission include perinatal transmission, either *in utero*, natively, or postnatally, parenteral transmission via blood transfusion or via exposure to contaminated needles and syringes, sexual transmission, primarily male to female, and among homosexuals.

The Impact of AIDS on Health

Future projections with autochthonous transmission of HIV infection in 44 of 46 countries of the Americas, over 95,000 cases of AIDS, and 2.5 million people infected with HIV within the Region, tell us AIDS will continue to grow as a major health problem. In terms of morbidity and mortality, chronic diseases, malaria, dengue, Chagas disease, diarrheal diseases, and multiple respiratory infections may still be more important than AIDS to individuals in Latin America. However, with the lack of an effective vaccine or curative therapy, and with an understanding of the epidemiology and natural history of HIV infection, it is predictable that infection with HIV and with other human retroviruses such as HIV-2 and HTLV-I will continue to spread rapidly and to have a direct impact on the health systems of the Americas. Since AIDS affects individuals in their most productive years of life, the effects of this disease on society may be more profound than its effect on individuals.

In order to estimate the magnitude of the AIDS epidemic on our society, researchers have attempted to project the growth of the AIDS epidemic over the next several years. In this attempt many issues have been raised about the future of the AIDS epidemic. There are uncertainties as to how many people within a given population are infected with HIV, how many progress to symptomatic AIDS within a given period of time, whether drug interventions will delay the fatalities of AIDS, and in some case decrease infectiousness, and whether educational efforts aimed at prevention and control of HIV infection will have a dramatic impact on slowing the spread of HIV. There are also concerns as to whether the epidemiologic features of HIV witnessed over the past several years will change and what effect these changes may have on the overall distribution of AIDS cases. For example, there is some evidence that the HIV epidemic has slowed among homosexual men either due to saturation of a susceptible population, or because of adherence to preventive measures such as "safe sex" recommendations. Ninety percent of a cohort of 125 homosexual men followed at the San Francisco City Clinic between 1978 and 1985 had reduced the reported number of nonsteady partners from a median of 16 to a median of 1.

With nearly a decade of experience with HIV infection, it is possible to examine the available epidemiologic data within some countries and to be able to make some valid projections regarding trends of the epidemic for at least the next several years. Obviously, the epidemic of HIV infection and AIDS is a composite of many individual, overlapping, smaller epidemics each with its own dynamics and time course, and thus it is impossible to give exact figures of infected individuals. Seroprevalence studies are incomplete and fragmented. The number of enrolled individuals in the seroprevalence studies are often inadequate for projections, and the methodologies for enrollment are frequently not uniform for comparison among individual countries. Similarly, surveillance for AIDS within some developing countries are often limited, and the total number of reported cases frequently underestimates the true frequency of AIDS.

From several studies examining the natural history of HIV infection the mean incubation period from time of infection to time of developing AIDS has been estimated to be 7.8 to 8.2 years. It is therefore likely that the number of cases of AIDS within this Region will continue to increase from the pool of 2.5 million infected people for a minimum of 8 years and possibly longer. Even if we were 100% successful in preventing further transmission today for which

there is no evidence, the number of cases of AIDS would continue to rise in the Americas on an annual basis from the currently estimated 2.5 million HIV infected people. At a recent meeting of the US Public Health Service, the number of AIDS cases were projected for the USA by year from 1988-1992. Two mathematical approaches were utilized in these projections. In the first method, referred to as the extrapolation approach, an empirical model was statistically fitted to past trends and then projected into the future. This approach is reasonable because of the long and variable incubation time distribution which tends to smooth trends in AIDS incidence, even though the underlying trends in HIV infection may be changing. The total number of cumulative cases through 1992 using the extrapolation method was 310,000 cases. The second approach referred to as back-calculation estimates the historical trends in HIV infection from AIDS incidence data and from the knowledge of the incubation time distribution by assuming that those infected continue to develop AIDS according to that distribution. Although the method as originally proposed does not account for new infections such as within the next 2-3 years, it gives reasonable near term projections over the next 3 years because of the long incubation time of HIV. Utilizing the back calculation method, a cumulative total of 380,000 cases were estimated through 1992 for the USA.

Each of these methods has its limitations. The extrapolation model is purely empirical and assumes trends in diagnosis and reporting remain unchanged. The model does not depend upon or use quantitative data about the natural history of HIV infection. Despite these limitations during the past three years, the model has performed well in projecting AIDS within the short term such as 2 years forward. The back calculation method requires accurate information on the incubation time distribution and additional follow-up of selected cohorts are continually needed to more precisely estimate the shape of the distribution. Additional adjustments to account for new infections are also required. While these have relatively small effect on near term projections, they become increasingly important over time with both models. As this disease penetrates the poor, less well educated, and less advantaged populations in the developing countries of the Americas, the potential exists for a massive epidemic propagated mostly by heterosexual transmission. If this does occur, the situation of AIDS in the Americas may rapidly parallel the situation in the African Region.

Estimates of the economic cost of HIV infection in the Americas are unknown and are urgently

needed. Determining the level of funds that should be allocated to AIDS as opposed to other important health problems is an unresolved issue since the effectiveness of ongoing and planned interventions for AIDS is unknown.

Prevention and Control

Since the problem of HIV infection and AIDS is common to all nations, only with a united international effort can we hope to control this disease and prevent further transmission. The basic trends of control, including professional and public education, risk behaviour reduction in high risk groups, and screening of blood supplies are obtainable, but the obstacles to complete control continue to be pervasive in our society. The World Health Organization and its Regional Office the Pan American Health Organization had set three primary objectives in the control of AIDS: 1) to prevent HIV transmission, 2) to reduce morbidity and mortality associated with HIV infection, and 3) to unify national and international efforts to control and prevent AIDS. The goals of specific AIDS control programs in most countries are to: 1) establish a national AIDS committee, 2) assess the current rate of infection, 3) establish HIV and AIDS surveillance, 4) ensure adequate laboratory support, 5) educate health workers at all levels, 6) develop, implement, and evaluate prevention programs, and 7) establish programs to reduce the impact of HIV associated infection on individuals and the community. The success of these control programs will be totally dependent upon a unifying international political and societal commitment. International health agencies will be required to play an increasing role in this coor-

inated international effort by providing financial, scientific, educational, and technical support for those countries requesting cooperation. Integration of these control programs into existing health and educational programs will require the full support by appropriate governmental agencies. Without immediate action in these areas, it is likely that the AIDS epidemic will continue to spread with alarming speed throughout all countries. Additional information on the magnitude of HIV infection, incidence rates within selected populations, and updating the mathematical models for projections of infections, disease, and mortality should help convince political, medical authorities, as well as the public, about the overall impact of this disease on our society for the years to come.

Note: The original article has 254 bibliographic references, available from the AIDS Program, Health Situation and Trend Assessment, Pan American Health Organization, 525 Twenty-third Street, N.W., Washington, D.C. 20037, USA.

This article was to be published in two issues of the *Epidemiological Bulletin*. However, due to the increased number of requests received by HST regarding this subject, we have decided to print the whole article at once, even though it has required some changes in the regular format of the publication.

(Source: Adapted from "AIDS and HIV Infection in the Americas: A Regional Perspective" by Thomas C. Quinn, NIAID, Bethesda, USA; and Ronald K. St. John and Fernando R. Zacarías, PAHO, Washington, D.C., USA.)

Alcoholism and Substance Abuse, Colombia 1987

Alcoholism and drug abuse have emerged as priority public health problems within the current epidemiological profile of Colombia. Thus, the purpose of the present study was to make a diagnosis of the situation and to gain knowledge of the frequen-

cy and distribution of these phenomena according to the main variables of time, place and person, as well as to explore some hypotheses on causal associations, which might serve as a basis for orienting and evaluating prevention programs and reporting to decision-

makers for the formulation of policies in this delicate area, with its profound effect on the well-being of both individuals and society.

The study examined a sample of 2,800 individuals representing the urban population of the country, and included persons between the ages of 15 and 64 years old. The selection method was by random stratification. The sample did not include any institutional populations, such as army personnel, prison inmates, or hospitalized persons, nor were there any homeless people who could not be located through a residential address. A prevalence survey was utilized, with descriptive analysis accompanied by an exploration of certain associations. The strength of the association was measured by the prevalence rate and supplemented with tests of statistical significance.

As variables of place examined were the level of urbanization and the four ecological regions whose axis was one of four principal cities: Barranquilla, Bogotá, Cali, and Medellín. The variables of person included age, sex, marital status, educational level, working status, and current living situation. The variables of time were internally linked to the indicators of use, such as the proportion of prevalence of use and index of former use, and the proportion of prevalence of both users and former users.

Data Collection Instrument

The data collection instrument was prepared by the investigators, following a planning stage during which a review was made of several models used in the United States, those used for surveys carried out in Medellín and those currently being applied in clinical settings in different institutions in the country, based on the adaptation by the interinstitutional group. The final decision was to use a precoded instrument and to administer it to the respondents in two stages.

During the first stage, the interviewer himself would conduct an interview which would involve general questions, and the use of tranquilizers and cigarettes. The second part would be more personal, containing questions related to the use of legally or socially unacceptable substances, and would be answered in secret by the interviewee.

To avoid information biases, given the research topic, the "secret envelope" method was used. The instrument incorporated complete versions of the CAGE questionnaire for the diagnosis of alcoholism and the self-administered Zung scale for the evaluation of clinical depression. The other questions

covered the variables discussed above. The validity of the answers in self-administered questionnaires has been widely recognized and, in the case of this study, this validity was reinforced by having the interviewer give a thorough explanation of the way to answer the questions.

Results

Incidence of use, prevalence of use during the last month and the last year, and the prevalence of both users and former users were the indicators analyzed. The last mentioned indicator attempts to be a measure of the proportion of people having been users at any point during their lifetime.

Table 1 shows substance abuse in 1987. Alcohol exhibits the highest proportion of consumption in both sexes; on average, 560 of every thousand persons studied consume alcoholic beverages. Cigarettes occupy second place, with 297 per thousand; the higher frequency is among males, with a figure of 373 for current consumption. Tranquilizers complete the trio of substances whose use is socially accepted.

Except for tranquilizers, all the substances are used by more men than women, with highly significant differences (Figure 1).

Results of this study are consistent with those in many other studies worldwide, which have found women to use tranquilizers with a greater frequency. In this case, the figure was 74 per thousand, as compared with 46 per thousand among men.

As can be seen in Table 1, crack has a prevalence rate of male to female of 3.3, which represents an excess risk for male users. For every thousand men who live in the urban areas of Colombia, within the age range studied, ten use crack, while only three women do so (Figure 2).

The use of crack has displaced cocaine, which shows half the average frequency of use in both sexes, or 3 per thousand persons as compared with 6 for

Table 1. Substance abuse prevalence per thousand, by sex, Colombia 1987.

Substance	Men	Women	Both sexes
Alcohol	705	416	560
Cigarettes	373	222	297
Tranquilizers	46	74	60
Crack	10	3	6
Cocaine	4	1	3
Marijuana	19	3	11

Figure 1. Use of alcohol, cigarettes and tranquilizers. Prevalence per thousand, Colombia 1987

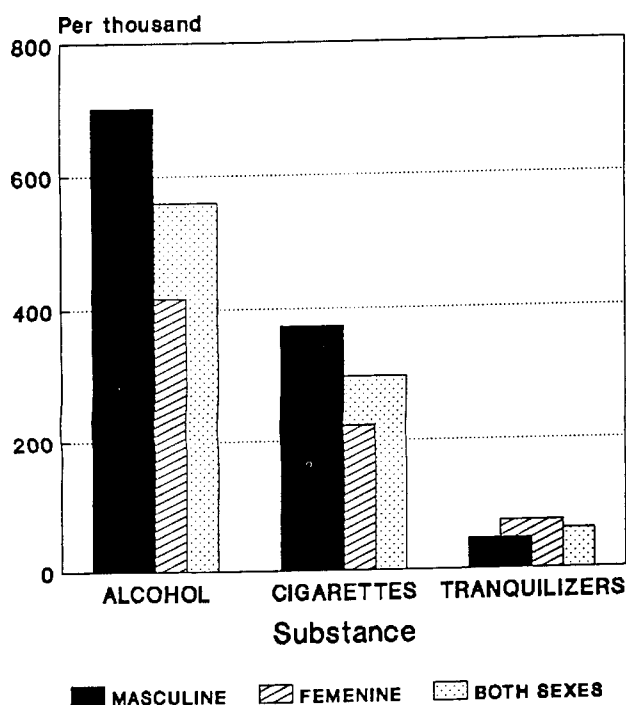


Figure 2. Use of crack, cocaine and marijuana. Prevalence per thousand, by sex, Colombia 1987.

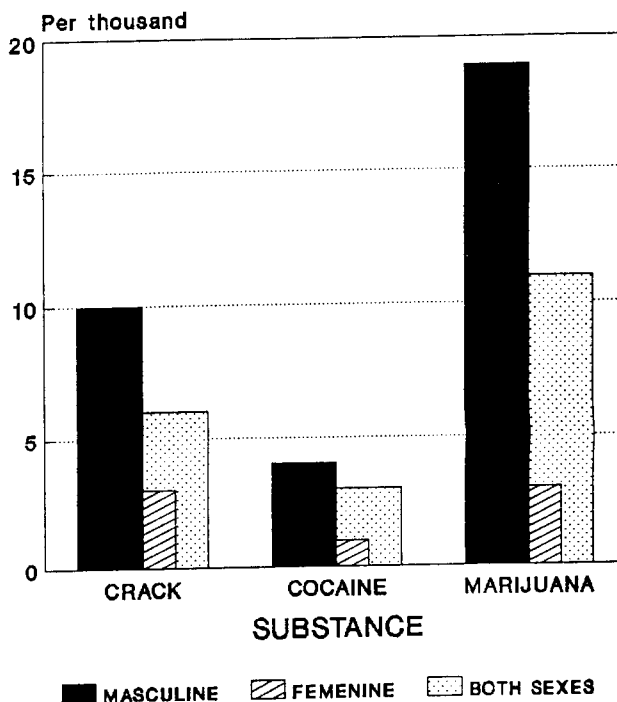


Table 2. Substance abuse prevalence per thousand, by age group, Colombia 1987.

Substance	Age Group						
	(12-15)	(16-19)	(20-24)	(25-29)	(30-37)	(38-49)	(50-64)
Alcohol	291	608	693	697	653	549	431
Cigarettes	46	249	362	428	394	337	266
Tranquilizers	23	45	55	60	63	75	112
Crack	0	12	13	8	10	3	0
Cocaine	0	2	5	5	5	0	0
Marijuana	5	12	25	20	15	5	0

crack. The excess risk for male users is 3 and the prevalence rate by sex is 4, which means that there are four male users to every female user (Figure 2).

When marijuana use is analyzed by the indicator of prevalence of use, it continues to occupy first place among illegal substances; it is used by 19 of every thousand men, and by 3 of every thousand women (Table 1), showing a prevalence rate of male to female use greater than six (Figure 2).

Users by Age Group

Table 2 shows the prevalence of substance abuse, per thousand, by age group, in Colombia in 1987. The use of *tranquilizers* shows a continuous positive gradient, beginning with a frequency of use of 23 per thousand at ages as early as 12 to 15 years. This situation is consistent with studies carried out among secondary school students nationwide.

The prevalence of *crack* use shows a distribution by age group beginning among those from 16 to 19 years of age, with 12 users per thousand persons, considered a very high figure from the public health standpoint, given the great harm this substance poses to the user, as well as the short latency period. In the 20 to 24 years old age group, the frequency is of 11 per thousand, and among 38 to 49-year olds is of 3, which means it is four times lower than in the groups already analyzed. In the 50 to 64 years old age group, no use was found for this indicator in the year studied, yet it is important to mention that the indicators of former use reveal a very different earlier behavior. Of all substances studied, this is the only one to show greater use among men, in all age groups. The 20 to 24 year old age group is at highest risk with a prevalence of 25 per thousand, whereas among women it is the 16 to 19 year old age group with a prevalence of 10 per thousand.

In only four of the seven age groups studied prevalence of *cocaine* use was found: in the 16 to 19 years old age group two of every thousand persons had used cocaine during the last year, and in the three subsequent age groups, the prevalence was of five persons per thousand. The prevalence of cocaine use during the last year is only shown for male users ages 20 to 37 years and for female users ages 16 to 19 years.

The curve of *marijuana* use is very symmetrical, the highest points showing in the 20 to 24 and 25 to 29 years old age groups, with prevalences of 25 and 20 per thousand, respectively. In the groups at the two extremes the rate is 5 per thousand. The 50 to 64 years old age group is the only age group for which no use is given.

Among male users of marijuana, the age group with the highest level of current use is that from 20 to 24 years old and among female users it is from 16 to 19 years old. Among men, the highest prevalence of both users and former users was observed in the 25 to 29 years old age group and in the 30 to 37 years old age group with 176 per thousand. The first of these groups also reveals greater prevalence of both users and former users of cocaine for both sexes. The fact that this substance has been displaced among 30 to 37 year olds could be interpreted as the result of the exposure of these cohorts to different substances as is the case of male users of marijuana, where the prevalence of both users and former users is higher among the 25 to 29-year olds and the 30 to 37-year olds, for cocaine, it is higher among users from 25 to 29 years of age in both sexes, and for male crack users, it is higher among 20 to 24-year olds.

The uneven age distribution when compared to female users might be explained by the fact that the high-risk groups are found among younger women.

This analysis reflects what has been known through the demand for specialized care services, and of the social history of use in the country, which shows that marijuana use comes first, followed by cocaine use, and, finally by the use of crack. It is interesting to point out an analysis of the tendencies of use distribution by age can reflect these population phenomena, although this is a prevalence study.

Other Findings

In an examination of certain associations, higher prevalence was found in the following groups:

- In relation to marital status, males who lived in free union showed an excess risk of 5.3 when compared to married males. The highest level of female use was found among single women.
- The upper socioeconomic class has the greatest frequencies of cocaine and marijuana male users. For crack, the highest level of use is in the lower class.
- Among females, those shown to be at greatest risk for crack and marijuana use belong to the disadvantaged class. All the substances studied had the highest prevalence of use among the unemployed.

A statistically significant difference was found when the association between attempted suicide and substance use for all ages was examined (Figure 3). The substances showing a greater excess risk are crack and marijuana, especially for females.

Finally, for the four large cities and regions studied, the frequency of use was found to present profiles different of those described for the study as a whole.

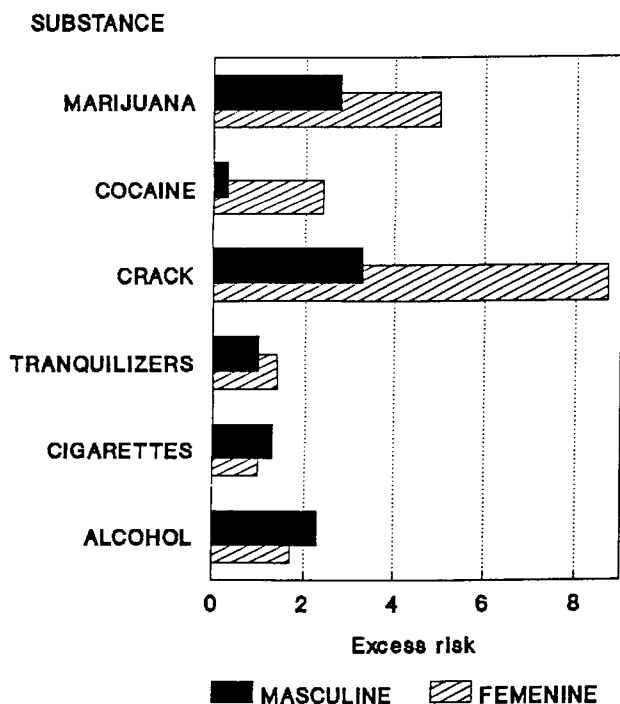
Table 3 includes the findings on incidence and prevalence of use during the last year, as well as other indicators.

The highest incidence was for marijuana. It is important to emphasize that in previous studies crack occupied this position, a change which can be interpreted as the result of mass campaigns to prevent crack use, since for each new crack user there are three new marijuana users.

Table 3. Substance abuse global indicators for the country, by sex. Colombia, 1987.

Substance	Incidence last year	Prevalence last month	Prevalence last year	Prevalence former use	Prevalence use and former use
Males					
Alcohol	27	600	705	119	824
Tranquilizers	19	39	46	63	109
Crack	2	10	10	51	61
Cocaine	2	4	4	29	33
Marijuana	4	19	19	84	103
Females					
Alcohol	45	259	416	102	518
Tranquilizers	32	69	74	103	177
Crack	1	2	3	11	14
Cocaine	0	1	1	9	10
Marijuana	2	3	3	25	28
Both sexes					
Alcohol	36	430	560	110	671
Tranquilizers	25	54	60	83	143
Crack	1	6	6	31	37
Cocaine	1	2	3	19	21
Marijuana	3	11	11	55	65

Figure 3. Excess of risk of attempted suicide by substance and sex, Colombia 1987.



For the three illegal substances, crack, cocaine and marijuana, the prevalence for last month shows no difference from the prevalence during the last year, which may be an indicator of the addictive power of these substances. The other indicators have already been discussed.

In conclusion, the use of the substances studied is a serious health problem, especially if the young population is revealed as a high-risk group, since this will have a negative impact on the present and future development of the country.

An attempt will be made to repeat these studies every three to four years, using the same methodology to evaluate the trends and population impact of the programs that are currently being implemented at different levels of prevention.

(Source: Adapted from "Estudio nacional sobre alcoholismo y consumo de sustancias que producen dependencia - Colombia 1987". Yolanda Torres de Gálvis, National School of Public Health, University of Antioquia, Colombia, and Lenn Murrelle, Center for Alcohol Studies, University of North Carolina, USA.)

Diseases Subject to the International Health Regulations

**Total cholera, yellow fever, and plague cases and deaths reported
in the Region of the Americas as of 31 December 1988.**

Country and administrative subdivision	Cholera cases	Yellow fever		Plague cases
		Cases	Deaths	
BOLIVIA	-	12	11	2
Cochabamba	-	1	1	-
La Paz	-	11	10	2
BRAZIL	-	21	14	10
Amazonas	-	2	1	-
Bahía	-	-	-	10
Goiás	-	2	2	-
Mato Grosso	-	1	1	-
Minas Gerais	-	13	7	-
Pará	-	3	3	-
CANADA	1 ^a	-	-	-
British Columbia	1 ^a	-	-	-
COLOMBIA	-	9	9	-
Boyacá	-	1	1	-
Casanare	-	1	1	-
Chocó	-	1	1	-
Meta	-	1	1	-
Norte Santander	-	2	2	-
Santander	-	2	2	-
Vichada	-	1	1	-
PERU	-	196	167	10
Ayacucho	-	1	1	-
Cuzco	-	23	20	-
Huánuco	-	35	27	-
Junín	-	36	31	-
Madre de Dios	-	29	26	-
Pasco	-	1	1	-
Piura	-	-	-	10
Puno	-	28	28	-
San Martín	-	38	29	-
Ucayali	-	6	5	-
UNITED STATES OF AMERICA	9	-	-	15
Arizona	-	-	-	1
California	1	-	-	2
Colorado	1	-	-	4
Guam	1 ^a	-	-	-
Kansas	1	-	-	-
Louisiana	1	-	-	-
Maryland	1	-	-	-
Nevada	1	-	-	-
New Mexico	-	-	-	7
South Carolina	1	-	-	-
Texas	1	-	-	1

^aImported case.

