

## Sexually transmitted diseases in Latin America and the Caribbean

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Sexually transmitted diseases (STDs) have long been known for their great impact on health. In 1995, there were an estimated 333 million new cases of curable STDs among adults around the world (1). The prevalence of STDs in many developing countries, including those of Latin American and the Caribbean (LAC), is extremely high. In the AIDS era there is an urgent need to adequately control and manage these diseases.

A delay in diagnosing and treating STDs can lead to chronic complications and irreversible sequelae. Women and children suffer the main consequences. In women, the most serious consequences are acute and chronic pelvic inflammatory diseases, infertility, ectopic pregnancy, and cervical cancer. Infection during pregnancy may cause spontaneous abortion, stillbirth, prematurity, low birthweight, congenital syphilis, and ophthalmia neonatorum (2).

Controlling STDs is also important because of their relationship with HIV transmission. Several studies have shown that both ulcerative and nonulcerative STDs facilitate HIV transmission (3–16). STD prevention can be an important tool in controlling the spread of HIV. For example, in a community-based, randomized trial in the Mwanza administrative region of Tanzania, improved STD treatment and control resulted in a 42% reduction in HIV incidence (17).

LAC countries need to have more data regarding the magnitude of STDs. Syphilis prevalence among pregnant women provides a good basis to extrapolate to the general population. Syphilis, however, is the least prevalent of the classical STDs and so is an indicator of minimum (lower limit) STD prevalence. Even given that, the serious magnitude of STDs in Latin American and the Caribbean can be seen from syphilis prevalence among pregnant women, which in 1991 ranged from 1.3% in Honduras to 6.3% in Paraguay (1).

A variety of ecological and behavioral determinants influence the emergence and spread of STDs (18). The rate of spread is directly determined by the average risk of infection per exposure, or efficiency of transmission; the average rate of sexual-partner change within a population; and the average duration of the infectious period for individuals with STDs (19). Among other factors contributing to the high incidence and prevalence of STDs in Latin American and the Caribbean are a lack of knowledge of STDs, the structure of health services

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in the LAC countries, self-medication, and antimicrobial resistance.

Demographically, the LAC countries are characterized by a recent change in the pyramid of age distribution (21). While birth rates have remained high, child mortality has been declining progressively due to the success of immunization programs, the use of oral rehydration solutions to treat diarrhea, and improved care for acute respiratory infections (18, 21, 22). These trends have led to increases in the number of teenagers and young adults, among whom STDs are concentrated. High rates of urbanization and migration increase the male population in large cities. The rate of change of sex partners is higher for men than for women, and men are more likely than women to engage in casual or commercial sex (18).

Other factors have greatly extended the duration of time during which premarital intercourse can occur. Traditional religious and moral codes in Latin America and the Caribbean encouraged early marriage, monogamy, and multiple births. However, these norms are no longer absolute. Menarche is occurring earlier in urban areas than in rural areas, sexual maturation is happening at an earlier age, and more young people are postponing marriage to a later point in life (18).

STD data are scarce and problematic in Latin American and the Caribbean, and wide variations in socioeconomic, cultural, and behavioral factors make comparisons difficult from country to country.

Most of the LAC countries have passive STD surveillance systems. Such systems, however, yield unreliable information since their estimates depend on the extent to which patients seek health care, the intensity of diagnosis, and the quality of reporting. STD surveillance is further complicated by the diseases' natural history. A large number of asymptomatic infections occur with STDs. Only part of the symptomatic population seek health care and even a smaller number of cases are reported (2).

A better alternative for assessing prevalence is etiologic (laboratory) diagnosis on a screened population without STD symptoms, such as pregnant women attending antenatal care, new military recruits, or blood donors. There are limitations with any of these populations, and extrapolations to the general population may lead to errors. However, so far, pregnant women have been the single most important source of information on groups with a low risk for STDs, including HIV.

Assessing incidence is even more difficult. As will be discussed later, an approximation can be calculated by dividing prevalence by the duration of disease. In addition, some indication of incidence trends can come from the reporting from sentinel

sites of such acute and self-limited STD syndromes as urethral discharge and genital ulcers.

Another key strategy for STD surveillance is the evaluation of such high-risk groups as sex workers, men who have sex with men, and intravenous drug users. These estimates can provide early-warning signals for the general population.

There is an urgent need to improve STD surveillance and prevention in the LAC nations. This paper intends to help in that effort by reviewing relevant STD prevalence and incidence data and by estimating the 1996 prevalence and incidence of gonorrhea, syphilis, chlamydia, and trichomoniasis in Latin America and the Caribbean.

## METHOD

Data for this paper were collected by searching in a number of sources, including:

- The MEDLINE and LILACS computerized bibliographic databases, to obtain articles published in English, French, Spanish, and Portuguese from 1982 through October 1997 concerning the prevalence and incidence of syphilis, gonorrhea, trichomoniasis, chancroid, and chlamydial infection
- Abstracts and posters from 1982 through 1995 at the worldwide International Conference on AIDS (ICAIDS) meetings, the ICAIDS in Africa conferences, the ICAIDS in Asia and the Pacific meetings, and the international meetings of the International Society for STD Research
- Abstracts and posters presented during the International Congress of Sexually Transmitted Diseases, held in Seville, Spain, 19–22 October 1997
- World Health Organization (WHO) country files for AIDS and STDs, which contain unpublished documents, confidential information, and travel reports from WHO staff members

For the STD prevalence estimates, prevalence studies of different population groups were considered. When possible, data from pregnant women were utilized since such information provides the best approximations to the general population. Prevalence for 1996 was calculated using mid-year population estimates of persons from 15 to 49 years old.

We estimated the duration of symptomatic and asymptomatic STDs among persons who are treated and those who remain untreated, by sex, as well as the percentage of asymptomatic STDs, by sex (1).

Basing our work on health assessments for the LAC countries and discussions with representatives from the various nations, we estimated rates

of treatment, by sex, for symptomatic and asymptomatic infections. We then estimated the weighted average duration of infection, by sex and by disease. We did this by multiplying the estimated duration of infection by the percentage of symptomatic and asymptomatic persons and by the rates of treatment and nontreatment. We then added these weighted averages of duration of infection for the four different groups (syphilis, gonorrhea, chlamydia, and trichomoniasis) to enable us to calculate incidence rates by sex. This was done by dividing the adult prevalence estimate for the LAC region by the estimated regional weighted average duration of infection. We then calculated the total number of new cases, per year, using the 1996 midyear LAC regional population estimates for adults (15–49 years).

## THE MAGNITUDE OF STDs IN LATIN AMERICA AND THE CARIBBEAN

### Syphilis

Despite its decrease in developed countries, syphilis is still an important STD in developing countries because of its complications and its high rates of infection. Further, syphilis is a disease that can be successfully controlled by relatively easy public health measures.

For the LAC region as a whole, however, it is difficult to make broad generalizations about syphilis. There are many socioeconomic disparities among the various nations and within different regions of the same country, even though the coun-

tries in Latin America and the Caribbean share many cultural and demographic characteristics.

The following subsections look at data for various populations within the LAC region, as well as trends over time in several nations.

#### *Pregnant women*

In recent surveys, syphilis prevalence among pregnant women has ranged widely, as can be seen in Figure 1.

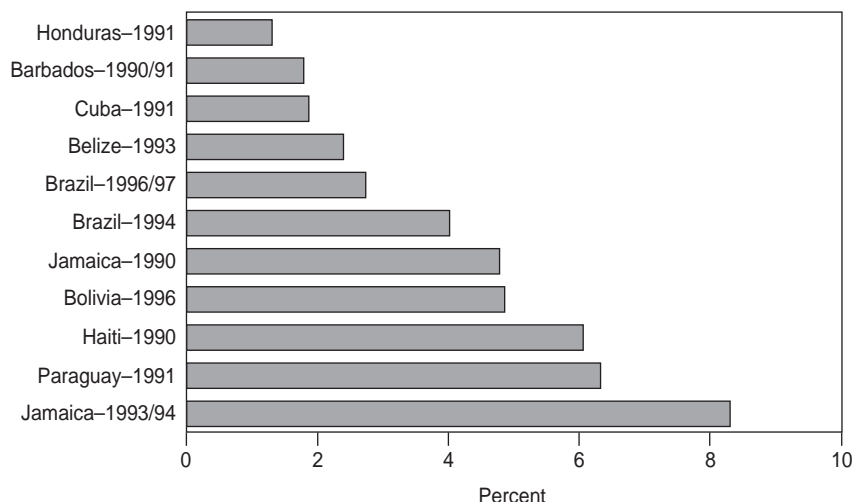
Evidence for some of the general trends relating to STDs in Latin America and the Caribbean, such as the higher prevalence rates in urban areas, can be seen with the syphilis data for pregnant women (23–26). In Paraguay, for example, a 1991 study of 1 000 rural and urban pregnant women found a 6.0% positive rate among the urban women and a 2.5% rate among rural women (27).

#### *High-risk population groups*

In some high-risk population groups, such as sex workers and prison inmates, prevalence rates are often much higher than with pregnant women. With male prison inmates, for example, seropositivity values of 18.4% were found in Brazil and of 5% in the Dominican Republic (29, 30). Also in the Dominican Republic, serologic evidence of syphilis was found in 7.3% of the men who have sex with men (30). Among injecting drug users in the city of Santos, Brazil, there was a 34% syphilis prevalence rate (31).

Studies of sex workers in the LAC countries have found various prevalence rates for syphilis. They have included: 7% in Panama (1987) (32), 17% in Honduras in (1991) (33), 17.9% in Bolivia (1992)

FIGURE 1. Prevalence of syphilis in pregnant women, Latin America and the Caribbean, 1990–1997



(34), 19.6% in the Dominican Republic (1992) (35), and 29% in Santos, Brazil (1990) (36).

Those differences also exist within individual countries. For example, data from Sergipe, a state in the northeast of Brazil, differ greatly from those for Santos, a major port city in the southeast of Brazil. While a syphilis prevalence rate of 29% is seen among sex workers in Santos, a 47.5% rate is present in Sergipe (37). These two areas represent distinctive socioeconomic patterns within Brazil. Sergipe is a poor state with late diagnosis and treatment of syphilis, factors which increase the duration of infectiousness and spread of the disease. In contrast, in the Santos region, better primary health care and better education on STDs over the last decade have improved health seeking and accessibility and possibly contributed to the lower prevalence rate.

A second Brazilian study again points out the possible impact of socioeconomic differences. In the state of São Paulo, screening of 600 female sex workers in the cities of São Paulo, Santos, and Campinas found an overall 45% prevalence rate for syphilis. Those with a lower socioeconomic status were more likely than those with a higher socioeconomic status to be infected, 66% versus 24% (38).

Mexico is another country where studies among sex workers have found varying syphilis prevalence levels. In 1990, 23.7% of 1 386 sex workers in four Mexican states had a reactive syphilis test (39). In 1993, testing of 826 sex workers in Mexico City showed a prevalence rate of 6.4% (40). Among 3 100 female sex workers who were tested for syphilis at an AIDS clinic during 1992 and 1993, an 8.2% prevalence rate was found (41). Different patterns of sex work are associated with different risks of STD infection. That study of 826 sex workers in Mexico City found syphilis prevalence rates

of 1.3% for massage parlor workers, 4.4% for bar girls, and 9.6% for streetwalkers.

#### Blood donors

Recent studies have found syphilis prevalence among blood donors varying from 0.93% in Argentina (42) to 5.2% in Jamaica (43). Studies in Honduras (44), Haiti (45), and in Brazil (46) during the 1980s and the 1990s have found decreasing syphilis prevalence rates among blood donors (Figure 2). These declines may be due to a variety of factors, including stricter preselection of donors through interviews and the rejection of potential donors considered to have high-risk sexual behavior.

#### Trends over time

Apparent changes in prevalence rates over time may or may not be real, as can be seen from the cases of Jamaica and Chile. In Jamaica, reported cases of congenital syphilis, in absolute numbers, rose steadily, with 5 cases in 1985, 15 in 1986, 36 in 1987, 46 in 1988, and 51 in 1989 (43). Prevalence among blood donors increased from 1985 to 1987, declined slightly in 1988, and again increased in 1989. These trends may represent a real increase in syphilis incidence and prevalence in the country. In Chile, reported cases fell from 1986 to 1987, but then generally rose over the next five years (Figure 3) (47). The increase between 1987 and 1992 may have been an apparent one due to more-adequate reporting, or it may have been a real one caused by certain demographic, sociopolitical, and economical factors.

#### Gonorrhea

Despite its being a common disease, few LAC countries have regular screening programs for gon-

FIGURE 2. Syphilis prevalence trends among blood donors in Brazil, Haiti, and Honduras, 1986–1993

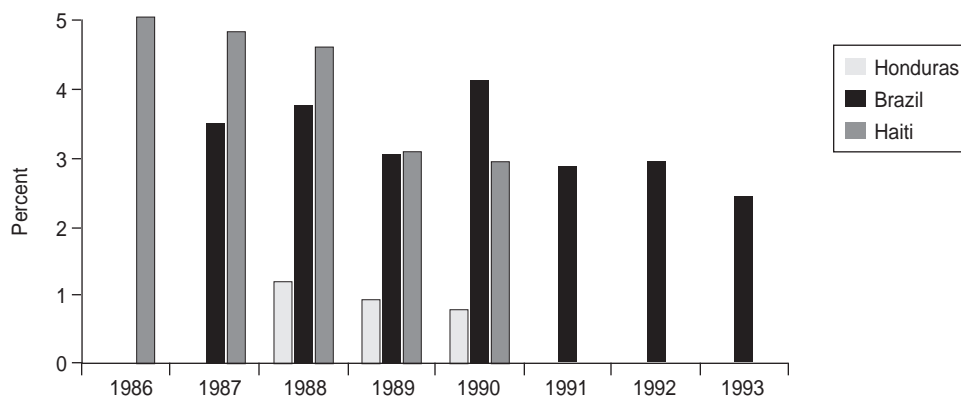
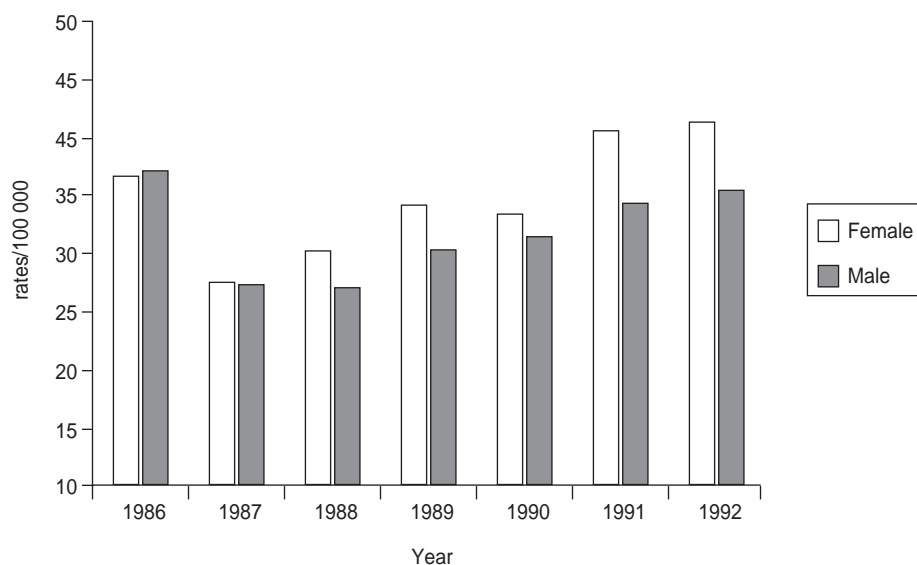


FIGURE 3. Reported incidence of syphilis, Chile 1986–1992



orrhoea, and reporting usually does not reflect the true epidemiological situation in a country. The fact that chlamydial and gonococcal infections frequently coexist (48) makes this circumstance even more serious.

As with other STDs, a wide range of gonorrhoea prevalence rates have been found in recent years in the LAC countries. Antenatal care attendants in Nicaragua presented a gonorrhoea prevalence rate of 1.3% in 1993 (49). In 1988 the prevalence of gonorrhoea among adolescent pregnant women in Chile was 1.0% (51). In Barbados in 1995 gonorrhoea prevalence among pregnant women attending antenatal care was of 0% (52). In Niterói, Brazil, 5% of the women attending the STD section of a hospital for the first time tested positive for gonorrhoea (53, 54).

Rates tend to be high among sex workers in the LAC region, with recent studies finding prevalence rates ranging from 7.2% in Nicaragua (49) to 25% in Honduras (50). In Mexico in 1990, an 11.5% gonorrhoea prevalence was found among 1 386 sex workers (40). In a 1993 study that included 826 sex workers, 3.7% tested positive for gonorrhoea (41).

As was described earlier with syphilis, studies in various countries have found that rates of gonococcal infection can vary for different patterns of sex work. In Panama, for example, streetwalkers had a 31% prevalence rate, while cabaret entertainers had a 3% rate (58). A similar pattern has been observed in Mexican studies (39). In 1994, testing of 662 sex workers showed a gonorrhoea prevalence of 0% for massage parlor workers, 0% for bar sex workers, and 5.9% for streetwalkers. These results

are likely related to the fact that streetwalkers belong to a lower socioeconomic class. Given that in many developing countries, STD control programs are dominated by clinically oriented approaches and there are few primary prevention activities, these streetwalkers are less likely to seek and obtain quality medical assistance and to buy condoms, and they tend to have a greater number of sexual partners in order to increase their income.

#### *Trends over time*

Some LAC countries have had apparent declines in gonorrhoea rates, while others have shown increases. For example, in Costa Rica the reported incidence of gonorrhoea showed steady declines between 1986 and 1991, among both men and women (59), and similar decreases were observed in Chile between 1986 and 1992 (60).

In contrast, in Jamaica rates of reported gonorrhoea had been going down but then experienced a sharp increase. Incidence fell from 475 per 100 000 in 1987 to 350–360 per 100 000 for 1988–1989 but climbed back up to 500 per 100 000 in 1991 (61). This seeming trend should be viewed with caution since it could be due to better surveillance and reporting systems rather than being a real increase.

#### **Trichomoniasis**

Limited epidemiological data is available on trichomoniasis even though it is one of the most common STDs and diagnosis is simple and treatment is effective.

Prevalence studies with pregnant women show diverse rates, ranging from 2.1% in Brazil in 1991–1993 (53) and 3.6% in Barbados (52) to 8% in Nicaragua in 1993 (49) and 27.5% among pregnant rural Chilean women in 1989 (55).

In Barbados, symptomatic women showed a trichomoniasis prevalence of 11.4% (52).

In Cuernavaca, Mexico, 405 sexually active women attending a hospital for a regular gynecological consultation had a 1.7% positive rate for *Trichomonas vaginalis* infection (56). In another Mexican study, screening of 800 women with an active sexual life attending a cervical and uterine cancer detection service found a 3.13% trichomoniasis prevalence rate (57).

## Chlamydia

Chlamydial infection is a common STD. Among the most common risk factors for it are being young, having more than one sex partner, having a new partner, being single, being heterosexual, using hormonal contraception, not using barrier contraception, and having gonorrhea, a previous chlamydial infection, or cervical ectopy (1).

Chlamydial infections have high asymptomatic rates in women and men, making clinical diagnosis difficult. Diagnostic methods are costly, and the most sensitive tests are generally not available in the LAC countries.

There are numerous prevalence studies of chlamydial infection in different population groups in the LAC countries, with the majority of the studies using serological diagnostic tests. However, the results of these surveys need to be carefully analyzed since most serological tests are not specific enough for epidemiological purposes (62). For example, in Barbados, a discrepancy between serology and enzyme immunoassay (EIA) was demonstrated both in pregnant women and in a group of women attending an STD service (52). The former group had a positive rate of 74.5% with serology, compared with 23.6% with EIA. The second group had a 60% positive serological rate against 14% with EIA.

Below we present data from a number of countries, obtained by testing methods that included culture, "Microtrak" direct fluorescent antibody (DFA) testing, direct immunofluorescence (DIF), and immunoenzymatic assay.

A prevalence study of chlamydial infection among pregnant women in Brazil, using DIF, showed rates of 21.5% for women 20 years and older, while adolescents (14–19 years) had a prevalence rate of 41.5% (63). These results illustrate the association of young age with chlamydial infection. Another study in Brazil, among low-income women attending urban public health centers in Rio de Janeiro from 1993 to 1995, showed a chlamydial infection prevalence of 22.8%, using the Microtrak diagnostic method (65).

In Mexico chlamydia prevalence among sexually active women, diagnosed by culture, was approximately 4% (66). In a study of men who have sex with men, a 4.3% prevalence was found, using immunofluorescence detection with urethral exudate samples (67).

In Nicaragua, prevalence of cervical chlamydia infection, based on positive DFA and/or polymerase chain reaction, varied from 2% among routine clinic attendees aged 35 or older to 8% among adolescent clinic attendees (68).

In Peru, using a microimmunofluorescent assay, rates of 2.8% for men and 14.1% for women were found among persons seeking preemployment or routine annual worker health certification (20).

Asymptomatic sexually active patients attending health service in Uruguay had urine samples tested with ligase chain reaction for *Chlamydia trachomatis*. The female population had a prevalence rate of 3.4%, compared to 2.4% for men (64).

## 1996 ESTIMATES

As described earlier, the data gathered in this review were analyzed in order to provide estimates of prevalence and incidence for the main bacterial STDs in Latin America and the Caribbean. Those estimates are summarized in Tables 1, 2, and 3.

**TABLE 1. Estimated STD prevalence (%), persons 15–49 years old, Latin America and the Caribbean, 1996**

Syphilis		Gonorrhea		Chlamydia		Trichomoniasis	
Men <sup>a</sup>	Women <sup>b</sup>	Men <sup>a</sup>	Women <sup>b</sup>	Men <sup>a</sup>	Women <sup>b</sup>	Men <sup>a</sup>	Women <sup>b</sup>
5.80	7.20	6.30	10.80	25.20	42.00	8.40	84.00

<sup>a</sup> For men the average duration (years) of the STDs is: syphilis, 1.27; gonorrhea, 0.23; chlamydia, 0.63; and trichomoniasis, 0.12.

<sup>b</sup> For women the average duration (years) of the STDs is: syphilis, 1.27; gonorrhea, 0.37; chlamydia, 1.03; and trichomoniasis, 1.21.

**TABLE 2. Estimated yearly incidence rates per 1 000 for STDs among population 15–49 years old, Latin America and the Caribbean, 1996**

STD			
Syphilis	Gonorrhoea	Chlamydia	Trichomoniasis
5.07	28.44	40.18	70.85

**TABLE 3. Estimated new STD cases (in thousands) among persons 15–49 years old, Latin America and the Caribbean, 1996**

Country/subregion	STD				Total
	Syphilis	Gonorrhoea	Chlamydia	Trichomoniasis	
Andean	263	1 478	2 088	3 682	7 511
Southern Cone	145	812	1 147	2 022	4 124
Brazil	439	2 464	3 481	6 139	12 524
Central America	79	443	626	1 104	2 252
Mexico	242	1 359	1 920	3 386	6 908
Latin Caribbean	79	443	626	1 104	2 252
English Caribbean	20	115	162	286	584
Total LAC	1 268	7 114	10 051	17 722	36 155

The strategy to limit STD infections and therefore reduce the incidence of HIV infection should include efforts to change sexual behavior, encourage persons to seek health care, and provide early prognosis and treatment facilities for STD patients and their partners. It is hoped that this paper helps in those efforts by providing new information on STD prevalence and incidence in Latin America and the Caribbean.

#### SINOPSIS

#### Enfermedades de transmisión sexual en América Latina y el Caribe

Las enfermedades de transmisión sexual (ETS) constituyen un problema de salud pública con importantes consecuencias y secuelas que incluyen la enfermedad inflamatoria pélvica, la infertilidad, el carcinoma cervical y los desenlaces

adversos del embarazo. En la última década, la estrecha asociación entre la presencia de ETS y el aumento del riesgo de transmisión sexual del virus de la inmunodeficiencia humana ha renovado el interés por la prevención y control de las ETS. Sin embargo, en América Latina y el Caribe, la información epidemiológica sobre la magnitud del problema de las ETS es escasa y, en general, está limitada a un pequeño número de estudios y a datos oficiales incompletos de los países de la zona. Tras una cuidadosa revisión de la literatura y un análisis de los datos que posee la Organización Mundial de la Salud sobre cada país, hemos estimado la prevalencia e incidencia en América Latina y el Caribe de cuatro ETS curables (sífilis, gonorrea, infección por clamidias y tricomoniasis) en hombres y mujeres de 15 a 49 años de edad. Para ello se utilizaron parámetros tales como la duración de la infección, la estimación de los pacientes tratados frente a los no tratados y los datos de población. En 1996, el número estimado de casos en América Latina y el Caribe fue de 1,3 millones para la sífilis, de 7,1 millones para la gonorrea, de 10,0 millones para las infecciones clamidiales y de 17,7 millones para la tricomoniasis. Con una cifra estimada total que, en el mejor de los casos, es superior a 36 millones de casos anuales, las ETS tratables parecen constituir un importante problema de salud pública en la zona.

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