

# Epidemiological Bulletin

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## AIDS in Latin America and the Caribbean: Current Situation

Recent estimates indicate that at least one million people worldwide have become infected with the human immunodeficiency virus since April 1991, and that at least 9 to 11 million adults and 1 million children have been infected with HIV since the pandemic began.<sup>1</sup>

According to conservative estimates, in the Region of the Americas more than two million people are infected with HIV, one million of these in North America. In Latin America and the Caribbean the largest number are in Brazil, with an estimated 750,000 people infected, followed by the countries of the Latin Caribbean with 120,800, the Andean Area with 91,250, Mexico with 80,000, the Southern Cone with 41,400, the Central American Isthmus with 30,800, and finally the Caribbean with 8,300.

Since 1978, when the first AIDS case in the Region was identified retrospectively in the United States of America, 260,698 AIDS cases and 168,890 deaths have been reported (see table 1). It is thought, however, that there is considerable underreporting of AIDS cases, with approximately 50% of cases reported in Latin America, and the actual number of cases in the Region of the Americas is estimated to be half a million.

The AIDS/HIV epidemic first affected the countries of North America and the Caribbean. Haiti and the Dominican Republic reported the largest numbers during the early years of the epidemic, after the United States of America and Canada. In addition, some of the countries of the English-speaking Caribbean had higher annual incidence rates than most other countries of the Region, although in territories with very small

populations such rates do not represent large numbers of cases. At present all the countries of the Region have been affected by the epidemic; however, the magnitude and distribution of AIDS/HIV in the population varies from subregion to subregion and from country to country within each subregion.

Of the total of 48,767 cases reported in Latin America and the Caribbean as of 31 December 1991, the percentage distribution by subregion was as follows: Brazil, 46.3%; Mexico, 18.6%; Latin Caribbean, 9.8%; Andean Area, 8.4%; Caribbean, 7.0%; Central American Isthmus, 5.7%, and Southern Cone, 4.3%.

For many countries the information for 1991 is still incomplete, and thus the data for that year should only be used in a qualified manner.

The total number of cases reported in Latin America and the Caribbean during 1990 was 12,584, indicating an increase of 32.1% with respect to cases reported in 1989. When these data are analyzed by subregion, the Southern Cone shows the greatest increase (155%), followed by the Central American Isthmus (82%), Mexico (60%), the Andean Area (40%), and Brazil (25%). The Latin Caribbean, the Caribbean, and North America showed a decrease in incidence ranging from 0.3% in North America to 9.7% in the Latin Caribbean. The apparent decline in the number of reported cases in these subregions is probably due more to delayed reporting than to a real reduction in incidence, at least in Latin America and the Caribbean.

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**Table 1. Number of AIDS cases by year, and cumulative number of AIDS cases and deaths by country and subregion, as of 28 February 1992.**

SUBREGION Country	Number of cases						Cumulative Cases (a)	Total deaths	Date of last report
	Through 1986	1987	1988	1989	1990	1991			
<b>REGIONAL TOTAL</b>	<b>45,298</b>	<b>33,340</b>	<b>42,133</b>	<b>48,847</b>	<b>51,787</b>	<b>39,074</b>	<b>260,698</b>	<b>158,189</b>	
<b>LATIN AMERICA b)</b>	<b>3,172</b>	<b>4,504</b>	<b>7,008</b>	<b>8,804</b>	<b>11,885</b>	<b>9,783</b>	<b>45,384</b>	<b>19,594</b>	
<b>ANDEAN AREA</b>	<b>184</b>	<b>409</b>	<b>683</b>	<b>852</b>	<b>1,195</b>	<b>753</b>	<b>4,076</b>	<b>1,888</b>	
Bolivia	3	3	10	2	7	16	41	34	31/Dec/91
Colombia	63	187	290	354	616	498	2,008	791	30/Sep/91
Ecuador	13	22	26	21	42	31	155	109	30/Sep/91
Peru	12	60	68	117	141	95	493	188	30/Sep/91
Venezuela	93	137	289	358	389	113	1,379	766	30/Sep/91
<b>SOUTHERN CONE</b>	<b>118</b>	<b>133</b>	<b>204</b>	<b>231</b>	<b>588</b>	<b>616</b>	<b>2,079</b>	<b>748</b>	
Argentina	72	71	103	108	383	373	1,298	401	31/Dec/91
Chile	36	48	69	82	117	147	500	196	31/Dec/91
Paraguay	2	5	4	3	12	10	36	30	31/Dec/91
Uruguay	8	9	28	38	76	86	245	121	31/Dec/91
<b>BRAZIL</b>	<b>1,614</b>	<b>2,234</b>	<b>3,700</b>	<b>4,775</b>	<b>5,966</b>	<b>4,294</b>	<b>22,583</b>	<b>10,926</b>	<b>31/Dec/91</b>
<b>CENTRAL AMERICAN ISTHMUS</b>	<b>89</b>	<b>189</b>	<b>347</b>	<b>475</b>	<b>863</b>	<b>817</b>	<b>2,798</b>	<b>1,114</b>	
Belize	1	6	4	0	1	...	12	8	31/Mar/90
Costa Rica	20	23	52	56	81	83	315	208	31/Dec/91
El Salvador	7	16	34	72	54	109	292	85	31/Dec/91
Guatemala	16	12	18	18	78	94	236	97	31/Dec/91
Honduras	17	103	189	247	569	453	1,595	491	31/Dec/91
Nicaragua	0	0	2	2	7	8	20	17	30/Sep/91
Panama	28	29	48	80	73	70	328	208	31/Dec/91
<b>MEXICO</b>	<b>245</b>	<b>804</b>	<b>964</b>	<b>1,499</b>	<b>2,395</b>	<b>3,166</b>	<b>9,073</b>	<b>4,377</b>	<b>31/Dec/91</b>
<b>LATIN CARIBBEAN c)</b>	<b>922</b>	<b>735</b>	<b>1,111</b>	<b>972</b>	<b>878</b>	<b>137</b>	<b>4,755</b>	<b>541</b>	
Cuba	3	24	24	12	10	22	95	54	30/Sep/91
Dominican Republic	124	234	356	507	238	115	1,574	190	31/Dec/91
Haiti	795	477	731	453	630	...	3,086	297	31/Dec/90
<b>CARIBBEAN b)</b>	<b>465</b>	<b>374</b>	<b>489</b>	<b>725</b>	<b>699</b>	<b>639</b>	<b>3,403</b>	<b>2,032</b>	
Anguilla	0	0	1	2	1	0	4	3	30/Jun/91
Antigua	2	1	0	0	3	...	6	5	31/Dec/90
Bahamas	86	90	93	168	162	235	834	498	31/Dec/91
Barbados	32	24	15	40	61	78	250	174	31/Dec/91
Cayman Islands	2	1	1	1	2	3	10	8	31/Mar/91
Dominica	0	5	2	3	2	0	12	11	31/Dec/91
French Guiana	78	25	34	54	41	...	232	144	30/Sep/90
Grenada	3	5	3	8	5	5	29	17	30/Sep/91
Guadeloupe	47	41	47	47	...	...	182	85	31/Dec/89
Guyana	0	10	34	40	61	60	205	68	30/Sep/91
Jamaica	11	32	30	66	62	34	235	154	30/Jun/91
Martinique	25	23	30	51	42	10	181	109	30/Jun/91
Montserrat	0	0	0	1	0	0	1	0	30/Sep/91
Netherlands Antilles	9	12	9	16	31	...	77	16	31/Dec/90
Saint Lucia	4	4	2	8	3	7	40	19	31/Dec/91
St. Christopher-Nevis	6	4	9	5	8	1	33	19	30/Sep/91
St. Vincent and the Grenadines	2	5	8	6	4	10	35	21	30/Sep/91
Suriname	4	5	4	35	35	16	99	75	31/Dec/91
Trinidad and Tobago	151	85	160	167	173	177	913	587	30/Sep/91
Turks and Caicos Islands	3	2	6	7	1	2	21	18	31/Dec/91
Virgin Islands (UK)	0	0	1	0	2	1	4	1	31/Dec/91
<b>NORTH AMERICA</b>	<b>41,661</b>	<b>28,482</b>	<b>34,835</b>	<b>39,318</b>	<b>39,203</b>	<b>28,652</b>	<b>211,931</b>	<b>136,563</b>	
Bermuda	51	21	28	35	33	23	191	138	31/Dec/91
Canada	1,194	883	1,017	1,129	890	235	5,348	3,192	30/Sep/91
United States of America c)	40,416	27,558	33,590	38,154	38,280	28,394	206,392	133,233	31/Dec/91

a) May include cases for year of diagnosis unknown.

b) French Guiana, Guyana, and Suriname included in the Caribbean.

c) Puerto Rico and the U.S. Virgin Islands included in the United States of America.

A more detailed description of the status of the epidemic is presented below for each subregion of Latin America and the Caribbean.

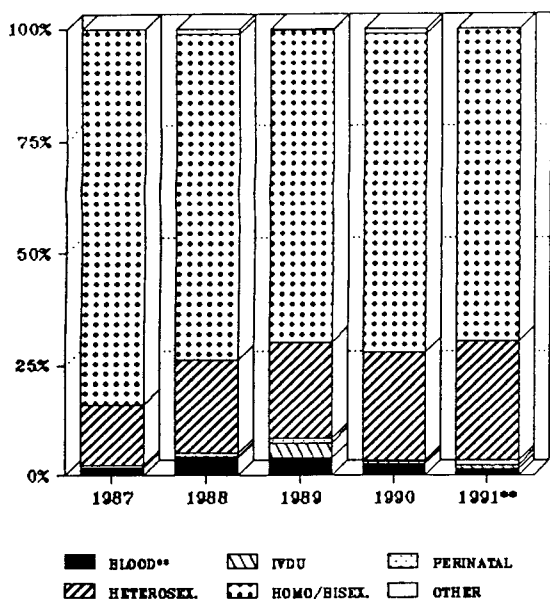
### Andean Area

This subregion presents some of the characteristics of areas where the epidemic was introduced belatedly, which is reflected in its relatively low rates of incidence, albeit with an upward trend. In 1990 incidence for the subregion was 9.1 per million population, ranging from 1.0 per million in Bolivia to 14.1 per million in Colombia.

Except for Peru, AIDS in the Andean Area has occurred principally in men, with a male:female (m:f) ratio of about 10:1. In Peru, however, there was a major change from 1989 to 1990; during this period, the m:f ratio dropped from 7.9:1 to 1.8:1. While the number of cases reported in men remained stable over the two-year period, the annual incidence among women in the same period more than tripled (from 13 to 50 from 1989 to 1990).

The analysis of the categories of transmission (after eliminating cases with unknown factors) shows that there has been a gradual trend toward heterosexual transmission, despite the fact that homosexual and bisexual transmission is still predominant. In 1990, 68% of reported cases in the Andean Area were attributed to this latter behavioral risk factor, compared with 84% in 1987, 73% in 1988, and 70% in 1989. During the same years the proportion of cases attributable to heterosexual transmission increased from 14% (1987) to 25% (1990) (figure 1). In general, transmission due to intravenous drug use appears not to represent a serious problem in this subregion, although a total of 23 cases have been

Figure 1. Percent distribution of AIDS cases, by category of transmission, Andean Area, 1987-1991.



\* Data for 1991 are incomplete.

\*\* Includes transfusion and hemophilia.

reported that are attributable to this mode of transmission: 18 in Venezuela, 3 in Peru, 1 in Bolivia, and 1 in Ecuador.

In all the countries of the subregion the majority of cases reported are in the 25-34 year age group, without major variations over time. Given the characteristics of the epidemic in this subregion, it can be seen why the proportion of cases in persons under 15 years of age has remained below 0.5%. However, to the extent that transmission through heterosexual contact spreads, it is likely that the proportion of cases in the youngest age groups will increase due to perinatal transmission.

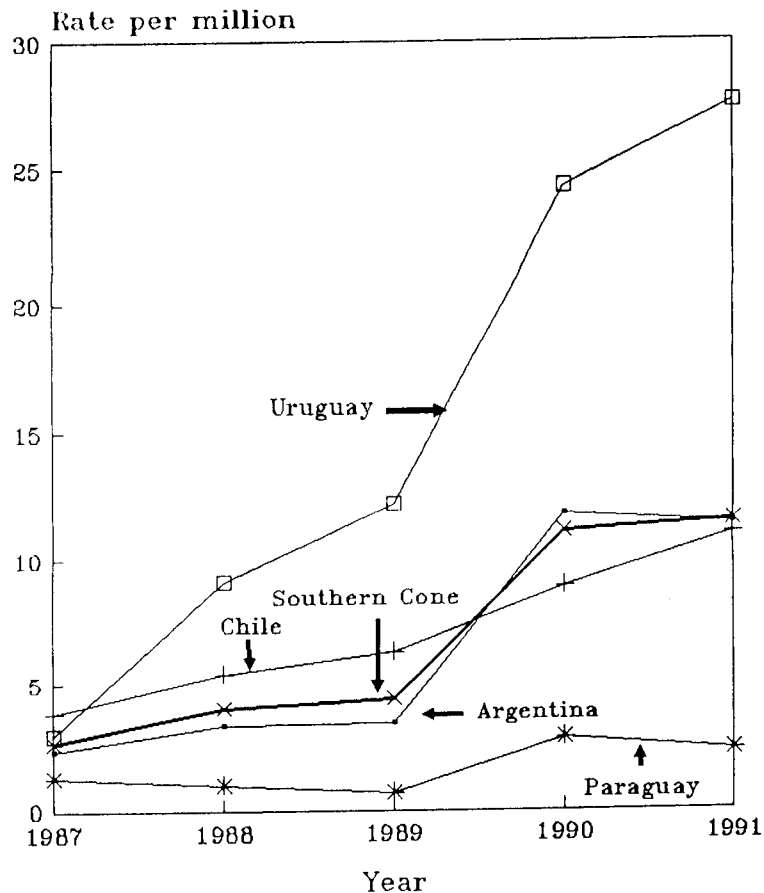
Data available on the prevalence of HIV infection are quite limited in the countries of this area. Peru has presented seroprevalences ranging from 0.1% in a sample of 24,237 blood donors, to 0.5% among 630 prostitutes in the area of Callao and 4.4% in a sample of 2,788 homosexuals (1988).

### Southern Cone

Although the Southern Cone presents a number of characteristics that are similar to the Andean Area, in other aspects there are notable differences. In this subregion the epidemic also appears to have been introduced later than in North America and the Caribbean, since as late as in 1987 the annual incidence rate in the Southern Cone was only 2.6 per million population, just over half the rate for the Andean Area (4.8). In 1990 the annual incidence was still low (11.1 per million inhabitants), but represented a considerable upswing; 588 new cases were reported, an increase of 155% over the cases reported in 1989. In 1991 there were 616 new cases, which, despite the delay in reporting, already represents an important increase over the previous year. The greatest contribution to this growth was in Argentina, which up through 1989 had a cumulative total of 354 cases, reported 383 new cases in 1990 alone, and by the end of 1991 had a cumulative total of 1,298 cases--i.e., more than 60% of the cases in the subregion. In Uruguay the number of reported cases doubled between 1989 and 1990, an increase proportionally similar to that of Argentina. The trends in Chile are gradually rising, with 3.8 per million population in 1987, 5.4 per million in 1988, 6.3 per million in 1989, 8.9 per million in 1990, and 11.0 per million in 1991. The increase in rates of annual incidence of AIDS cases in the Southern Cone is shown in figure 2.

One noteworthy change in the Southern Cone is the increase in the proportion of cases attributable to intravenous drug use: in 1987 only eight cases, or 6.8%, could be attributed to this category, but by 1991 this proportion had reached 33.3% of the total number of cases with known mode of transmission. At the same time, there has been a gradual increase in the proportion of cases in the youngest age groups, especially 15-24 year-olds. Nevertheless, the m:f ratio has remained high in the countries of the subregion because transmission is predominantly between homosexual/bisexual men. The lowest such ratio is in Uruguay (8.6:1 in 1991). With the increase in the number of cases among intravenous drug users, it is anticipated that there will be an increase in cases among women, either as a direct

Figure 2. AIDS annual incidence rate, Southern Cone countries, 1987-1991.



Data for 1991 are incomplete.

result of drug use or by heterosexual transmission, and consequently a rise in perinatal transmission.

Information available on the prevalence of HIV infection does not yet show any trends, although certain points of reference can be identified. In Argentina, which has the most information, a prevalence of 0.2% was found in blood donors in 1989, both in the city of Buenos Aires and in Rosario, in samples of 51,895 and 35,198 individuals, respectively. Other studies have found prevalences from 20% to 62.5% among intravenous drug users and from 1.5% to 20% among prostitutes. It is difficult to draw conclusions from this information, since little is known about the methodology of the studies, but the data point out the need for surveillance methods that will permit a better evaluation of the situation.

### Brazil

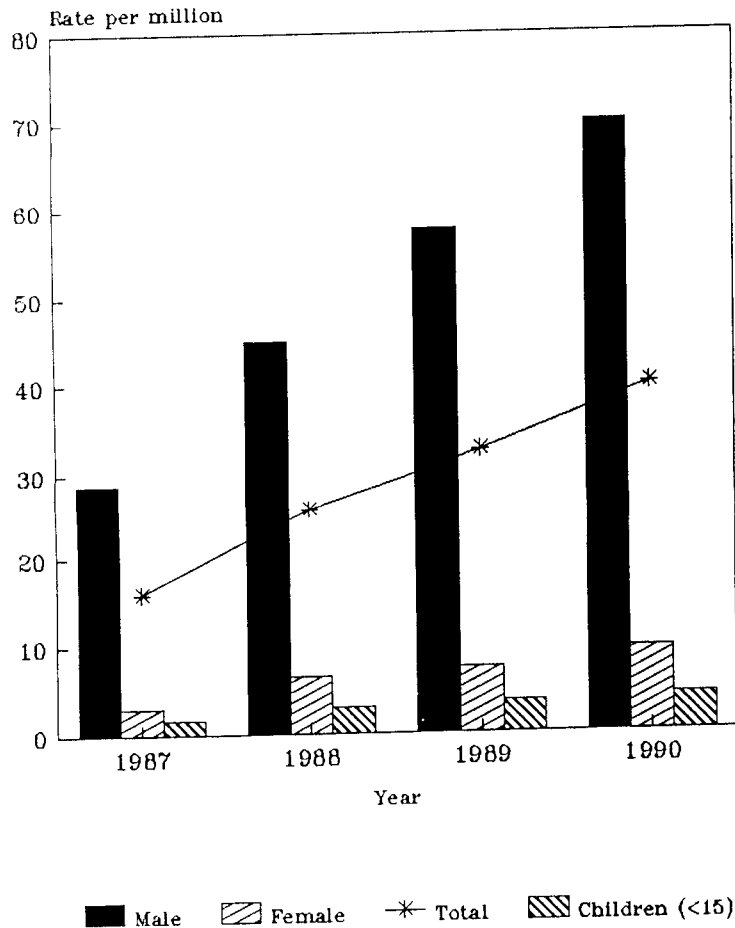
Brazil reports about half of all the cases from Latin America and the Caribbean annually. The latest information from this country covers up to early November 1991. As of that date, a total of 22,583 cases had been reported, 19,953 in men and 2,630 in women, yielding an m:f ratio of 7.6:1 for the cumulative total.

The rate per million population shows a rising trend from 15.8 in 1987 to 39.7 in 1990. Figure 3 shows the trends for the total population and for men, women, and persons under 15 years of age.

The relative weight of the modes of transmission has been shifting from year to year. In 1985, more than 80% of the cases were attributed to homosexual and bisexual behavior; in 1990 and 1991 this category accounted for close to 40%. The most notable increases in cases have been among intravenous drug users, from eight cases reported in 1985 (1.8% of the total) to 1,444 cases (27.5%) and 1,202 cases (30.5%) in 1990 and 1991, respectively. In addition, the proportion of cases attributable to heterosexual contact climbed to 22% in 1991. These changes in patterns of transmission have led to more cases among women as well as to an increase in cases due to perinatal transmission, with a cumulative total of 827 cases in 1991.

The epidemic has affected mainly the Southeast region of the country, which has reported 42% of all the cases. In this region, São Paulo is the state with the greatest number of cases, with 70% of all cases in 1991 and 62% of the cumulative total, followed by Rio de Janeiro, with 14% of the cumulative total. The state with

**Figure 3. Annual incidence rate of AIDS cases per million population, by sex, Brazil, 1987-1991.**



the third largest total is Rio Grande do Sul in the south, which accounts for 4.3% of all cases.<sup>2</sup>

With respect to the prevalence of HIV infection, the National AIDS Prevention and Control Program has estimated that 750,000 persons are infected with the virus. In addition, there have also been seroprevalence studies showing relatively high rates. For example, studies carried out in 1989 among women under prenatal care yielded a prevalence of 3.6% in Santos and 1% in Salvador. In two studies carried out (also in 1989) among intravenous drug users in the cities of Presidente Prudente and Santos, prevalences of 76% and 72%, respectively were found. As noted above, it is difficult to evaluate trends in the prevalence of HIV infection as well as the representativity of the data obtained from the studies that have been carried out. Sentinel surveillance of HIV infection has been initiated in Brazil, and it is expected that this will result in more adequate information about the trends of infection.

### Central American Isthmus

This subregion presents a heterogeneous situation with respect to the AIDS epidemic. Of the total of 2,798 reported cases since the disease began, 57% (1,595 cases) are from Honduras, 12% (328) from Panama, 11% (315) from Costa Rica, 10% (292) from El Salvador, 8% (236) from Guatemala, and less than 1% (20) from Nicaragua. Belize has reported a total of 12 cases, but its latest report is for March 1990, which means that the cumulative total by the end of 1991 will be greater. Rates per million population are shown in table 2, which illustrates the magnitude of the differences between, for example, Nicaragua, with 1.8 cases per million, and Honduras, with 110.7 per million--i.e. more than a 60-fold difference (1990).

Heterosexual contact is the most common mode of transmission in the Central American Isthmus. In this subregion, almost 60% of all reported cases are due to heterosexual transmission; this percentage increased

**Table 2. AIDS annual incidence rate, per million population, by country and year, Central American Isthmus, 1987-1991.**

Country	RATE PER MILLION				
	1987	1988	1989	1990	1991*
CENTRAL AMERICAN ISTHMUS	7.1	12.6	16.8	29.7	27.3
Belize	35.3	23.0	0.0	5.5	0.0
Costa Rica	8.2	18.1	19.0	26.9	26.9
El Salvador	3.2	6.8	14.0	10.3	20.3
Guatemala	1.4	2.1	2.0	8.5	9.9
Honduras	22.0	39.1	49.6	110.7	85.5
Nicaragua	0.0	0.6	0.5	1.8	3.3
Panama	12.8	20.7	33.7	30.2	28.4

\* Data for 1991 are incomplete due to delayed reporting.

from 40% in 1987 to 70% in 1991. The proportion of cases attributed to homosexual and bisexual transmission was 51% in 1987 and 22% in 1991. Intravenous drug use does not appear to have the same importance as sexual transmission; it was the responsible factor for 40 of the total 2,624 reported cases in which the risk factors are known. Transmission by blood transfusion and perinatal transmission accounted for 2.0% and 4.6% of the reported cases in 1990, respectively.

The distribution by risk factors is not uniform in the countries of Central America. Thus, in Costa Rica the proportion of cases attributable to homosexual and bisexual transmission has remained stable at around 75% of the total. Heterosexual transmission reached 11% in 1991, and blood-borne transmission accounted for 7% of the cases in the same year. In Honduras the situation is very different: from the beginning, the epidemic affected individuals of both sexes, and the m:f ratio has always been around 2:1. Thus the vast majority of the cases are attributable to heterosexual transmission (approximately 80% since 1988). Homosexual transmission represents about 16% of all reported cases, and blood-borne transmission less than 2%. The number of cases due to perinatal transmission has risen from 2 in 1987 to 28 in 1991, when it accounted for more than 5% of all cases. Generally speaking, in El Salvador and Guatemala the epidemic is progressively taking on the same characteristics as in Honduras.

The age group most affected by AIDS in the Central American Isthmus, as in the rest of Latin America and the Caribbean, is persons 25-34 years old. In general, proportional distribution by age has remained stable, albeit with an upward trend among persons under 15 years of age, who accounted for 4.6% of all cases of known age in 1991.

### Mexico

To date Mexico has reported one-fifth of all the AIDS cases in Latin America and the Caribbean; in recent years there has been a significant rise in incidence, from

11.4 per million population in 1988 to 17.3 in 1989, 27.0 in 1990, and 35.0 in 1991.

The m:f ratio has remained stable at approximately 6:1. It is expected, however, that in coming years the proportion of cases in women will surpass 20%.<sup>3</sup>

Homosexual and bisexual transmission continues to be the most significant cause of reported cases, with more than 50% of the total cases and 70% of the cases in men being attributed to this mode of transmission. Transmission by heterosexual contact has come to account for a larger share, climbing from 11.6% of all cases among both sexes in 1987 to almost 20% (34% for women) in 1991. The cases attributable to blood transfusion are a substantial proportion of the total cases reported, accounting for 6.7% of those in adult men (417) and 62.6% of those in women.<sup>3</sup> Distribution of the disease by age is similar for both sexes: around 60% of the reported cases are in persons aged 25-44.

As in other countries, the geographical distribution of AIDS is not uniform. Most of the cases are in urban areas. The highest rates of AIDS have been registered in the Federal District, followed by the states of Mexico, Jalisco, and Puebla.

In seroprevalence studies of first-time blood donors in Mexico, HIV prevalence ranged from 0.1% in a study of 625,000 samples taken nationally to 0.8% in a study of 1,660 samples in the Federal District. Other studies have indicated infection rates of: 29.1% among intravenous drug users (527 samples, Mexico City); 9.5% to 35% among homosexual and bisexual men; and 0.2% to 2.2% among prostitutes. As in other subregions, these are cross-sectional studies and are in a sense isolated, so that they do not provide information about trends of infection. Some sentinel surveillance studies have been initiated which it is hoped will yield further information on the evolution of the HIV epidemic.

### Latin Caribbean

This subregion includes Cuba, the Dominican Republic, and Haiti. In the most recent years there has been a significant reduction in the number of cases

**Table 3. AIDS cases annual incidence rate, per million population, by country and year. Caribbean countries with more than 100,000 inhabitants, 1987-1991.**

Country	RATE PER MILLION				
	1987	1988	1989	1990	1991*
Bahamas	361.4	367.5	653.7	623.1	903.8
Barbados	93.8	58.4	154.6	233.7	305.9
Grenada	51.0	30.0	79.2	48.5	48.5 (a)
Guadeloupe	121.7	139.0	138.6	0.0	0.0
Guyana	10.1	33.8	39.1	58.6	75.0 (a)
Jamaica	13.3	12.3	26.6	24.6	13.7 (b)
Martinique	70.0	90.9	154.3	126.9	29.2
Netherlands Antilles	64.5	47.9	83.7	160.6	0.0
Saint Lucia	30.5	15.0	59.3	22.1	51.5
St. Vincent and the Grenadines	47.2	74.1	55.0	36.0	90.1 (a)
Suriname	13.0	10.2	87.9	86.8	37.3
Trinidad and Tobago	69.5	128.7	132.2	134.8	180.6

\* Data for 1991 are incomplete due to delayed reporting.

(a) Through 30 September 1991.

(b) Through 30 June 1991.

reported in this group of countries. However, it is believed that this trend is due more to growing problems of reporting and registration than to having achieved real control of the epidemic. For example, PAHO received no reports from Haiti for 1991.

Despite the scarcity of information, in this subregion AIDS clearly follows the pattern of heterosexual transmission; 77% of the cases reported to date have been attributed to this factor. The m:f ratio is low in these three countries in comparison with the other subregions: 2:1 in Cuba and the Dominican Republic (1991), and 1:5 in Haiti (1990).

Available data on the prevalence of HIV infection indicate that it has remained low in Cuba, where a sample of 558,476 women in prenatal care yielded a prevalence of less than 0.1%. By contrast in the Dominican Republic, in 1989, a sample of 200 pregnant women had a seroprevalence of 3.5%, and in Haiti 1,156 prenatal samples yielded 8.0% HIV sero-positivity in 1990. Other studies of blood donors yielded the following HIV prevalences: 0% in Cuba, 6% in men and 4.3% in women in Haiti, and between 0% and 0.5% in the Dominican Republic. Once again it should be pointed out that it is difficult to draw conclusions from this information. One could deduce, however, that, given the prevalences found, especially among pregnant women, it appears unlikely that there is a trend toward reduced incidence of AIDS in the short term, at least in Haiti and the Dominican Republic.

### Caribbean

Table 3 shows the rates of annual incidence of AIDS cases for the countries of the subregion that have populations of over 100,000. Data on the number of reported cases for all the countries of the subregion are presented in table 1.

As previously mentioned, the Caribbean was one of the first areas to be affected by the epidemic: the first

cases were reported in Jamaica in 1982 and in Trinidad and Tobago in 1983.<sup>4</sup>

Currently, a total of 3,403 AIDS cases have been reported, or 7% of all the cases reported by the countries of Latin America and the Caribbean, despite the fact that the Caribbean has only 1.6% of the Region's population. The m:f ratios are the lowest in the Region. In most of the countries this ratio is 2:1, except in Barbados where in 1991 it was 4.6:1. Given these ratios, a large percentage of the cases reported have been attributed to heterosexual transmission; this proportion gradually increased from 53% in 1977 to 77% in 1991. Homosexual and bisexual transmission is of lesser relative importance; 26% of the cumulative total of cases are attributable to this mode of transmission. In 1991, 12.9% of the cases were attributed to homosexual or bisexual contact, as compared with almost 30% in 1987. In the last two years no cases have been reported from blood transfusion, which reflects the fact that in this subregion practically all blood is screened. Since 1987, only 4 cases have been due to intravenous drug use. In 1990 there were 31 cases (7.2%) due to perinatal transmission, and 33 such cases in 1991 (6.8%).

Seroprevalence studies in blood donors carried out in several of the countries have yielded HIV prevalences of 0.06% to 1.1%. Seroprevalences have also been low in women receiving prenatal care (0.2% to 0.7%). In the groups considered to be at high risk, however, prevalences have been found ranging from 1.7% to 25% among female sexual workers and from 4.7% to 13% among patients with sexually transmitted diseases (STD). Table 4 shows in more detail some of the information available on the prevalence of infection. This information is difficult to compare, given the differences already mentioned as to the methodology of each survey, the year in which the surveys were conducted, the criteria for selecting the population, etc. However, they can still be useful, because the data

**Table 4. Seroprevalence rates of HIV infection, selected countries of the Caribbean.**

POPULATION GROUP COUNTRY	YEAR	NUMBER TESTED	PERCENT POSITIVE
<b>BLOOD DONORS</b>			
Barbados	1990	2,792	0.2
Trinidad and Tobago	1990	13,373	1.1
Suriname	1990	3,247	0.3
Jamaica	1990	24,190	0.2
Guyana	1990	2,259	1.2
Saint Lucia	1988-91	3,464	0.06
<b>PRENATAL CARE PATIENTS</b>			
Bermuda	1989	1,114	0.2
Cayman Islands	1989	500	0.2
Jamaica	1989	1,600	0.1
Jamaica	1990	140	0.7
Trinidad and Tobago	1985	203	0.0
<b>HOMOSEXUAL/BISEXUAL MALES</b>			
Jamaica	1986	125	15.0
Trinidad and Tobago	1983	100	40.0
<b>FEMALE SEX WORKERS</b>			
Antigua	1988	1,170	1.7
Guyana	1990	71	25.0
Suriname	1990	157	2.5
Trinidad and Tobago	1988	223	13.0
Jamaica	1990	110	10.0
<b>STD PATIENTS</b>			
Barbados	1988	184	4.7
Jamaica, male	1989	175	5.7
Jamaica, female	1990	176	5.0
Saint Lucia	1991	916	3.0
Trinidad and Tobago	1989	1581	13.0

Source: CAREC and PAHO data.

clearly point to the population groups that are most affected by acquired immunodeficiency syndrome and HIV infection.

In summary, despite the limitations of available information it may be seen that the epidemiological situation of AIDS and HIV infection in the Region of the Americas is highly variable. It is important to identify the groups that are most affected and most vulnerable in each country so that interventions may be targeted at these groups. Improved epidemiological surveillance will be essential to monitor more accurately the trends of the epidemic.

## References

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- <sup>2</sup>Ministry of Health, STD/AIDS Division. *Boletín Epidemiológico AIDS*. Data from epidemiological week no. 44, ended 4 November 1991.
- <sup>3</sup>Instituto Nacional de Diagnóstico y Referencia Epidemiológicos (INDRE). *Boletín Mensual de SIDA/ETS (Mexico)* 5(9):2004, September 1991.
- <sup>4</sup>Quinn, TC, Narain, JP, Zacarías, F. AIDS in the Americas: A public health priority for the Region. *JAIDS* 4:709-724, 1990.

(Source: STD/HIV, Health Situation and Trend Assessment Program, PAHO.)



# Dengue and Dengue Haemorrhagic Fever in the Americas: An Overview of the Problem

## Background

Dengue-like illness has been reported in the Americas for over 200 years. Most dengue outbreaks occurred at intervals of one or more decades, until the 1960's, but thereafter the intervals have become shorter.

The first laboratory documented epidemic of classic dengue fever in the Americas was associated with dengue-3 serotype, and affected the Caribbean Basin and Venezuela in 1963-64. Prior to that only dengue-2 virus had been isolated in the Region, in Trinidad in 1953-54, in a non-epidemic situation. In 1968-69, another epidemic affected several Caribbean islands, during which both dengue serotypes 2 and 3 were isolated.

During the early and mid 1970's, Colombia was affected by extensive outbreaks associated with serotypes 2 and 3; during this period these serotypes became endemic in the Caribbean. In 1977 dengue serotype 1 was introduced into the Americas and after its initial detection in Jamaica, subsequently spread to most Caribbean islands causing explosive outbreaks. Similar outbreaks were observed in northern South America (Colombia, Venezuela, Guyana, Suriname and French Guiana), Central America (Belize, Honduras, El Salvador, Guatemala) and Mexico. Indigenous transmission of dengue-1 was also documented in the state of Texas, United States of America, during the second half of 1980. About 702,000 cases of dengue were reported by the affected countries during the period 1977-80 in which dengue-1 was practically the only serotype circulating in the Americas. It is likely, however, that during this period, millions of persons were infected with the virus, since in Cuba alone about 42% of its 10 million inhabitants were infected with dengue-1.

## Magnitude of the Dengue Problem in the 1980's

During the 1980's, there was a considerable increase in the magnitude of the dengue problem in the Americas which was characterized by a marked geographic spread of dengue activity in the Region. In 1982, an epidemic caused by serotypes 1 and 4 occurred in northern Brazil. In 1986, a major outbreak due to dengue-1 affected Rio de Janeiro and subsequently the virus propagated to several other Brazilian states. Four other countries, with no previous history of dengue or absence of the disease for several decades suffered extensive epidemics due to dengue-1: Bolivia (1987), Paraguay (1988), Ecuador (1988) and Peru (1990). During the Peruvian outbreak, dengue-4 was also isolated. Serologic studies suggested that several million persons were affected during these outbreaks although only about 240,000 dengue cases were reported by the five countries during the period 1986-90. On the other hand, there was a marked increase in the occurrence of dengue haemorrhagic fever/dengue shock syndrome (DHF/DSS).

## DHF/DSS in the Americas

To date the outbreak of DHF/DSS that affected Cuba in 1981 was the most important event in the history of dengue in the Americas. During this epidemic associated with dengue-2 virus, a total of 344,203 cases of dengue were reported which included 10,312 classified as severely ill (WHO grades II-IV) and 158 deaths (of which 101 were children). A total of 116,143 persons were hospitalized, the majority of them during a three-month period. The Cuban government quickly implemented an effective *Aedes aegypti* control program which resulted in the elimination of dengue, and almost eradicated the vector. The second American outbreak of DHF/DSS took place in Venezuela. The outbreak started in October 1989, peaked in January 1990, then showed a marked decline and apparently ended in April; however, cases of DHF continued to be notified in Venezuela throughout 1990. A total of 5,990 DHF cases (2,665 in 1989 and 3,325 in 1990) including 70 deaths\* (18 in 1989 and 52 in 1990) were reported. Approximately two-thirds of these cases and fatalities were among children under 14 years of age. Isolations of serotypes 1, 2 and 4 were obtained during the outbreak.

Prior to the Cuban outbreak, only sporadic suspected cases of DHF were reported in the Americas. These reports originated from Curaçao and Venezuela in the 1960's, and from Honduras, Jamaica and Puerto Rico in the 1970's. Only a few cases were laboratory confirmed. However, from 1981 through 1991 with the exception of 1983, confirmed cases of DHF which meet the WHO case definition have been reported annually. Countries reporting DHF or cases of severe haemorrhagic disease included Suriname, Mexico, Dominican Republic, Aruba, Nicaragua, Colombia, Puerto Rico, St. Lucia, the U.S. Virgin Islands, Brazil, El Salvador, and Honduras, in addition to Cuba and Venezuela. Most countries have reported fewer than 10 cases, but others such as Brazil, El Salvador, Colombia, and Puerto Rico, have each had over 40 cases. Puerto Rico has reported laboratory confirmed cases of DHF/DSS every year from 1985 through 1990 and the disease is considered to be endemic on the island. Brazil reported a few sporadic cases associated with dengue-1 infection during 1986-87. Following the introduction of dengue-2 in 1990, an outbreak of DHF was reported in Rio de Janeiro in the latter part of 1990 with 274 cases and 3 deaths, and an additional 161 cases were reported in 1991 (provisional figure through November 1991). In 1991 dengue-2 virus spread to two other Brazilian states, one of which was previously infected with dengue-1, but to date no haemorrhagic disease has been reported from these states. El Salvador reported 153

\*The Ministry of Health and Social Welfare of Venezuela had notified 73 deaths for the period October 1989 to April 1990. (*Epidemiological Bulletin*, Vol. 11, No. 2, 1990.)

cases (7 fatal) of DHF in 1987-88, and 1 in 1991, but only a few were laboratory confirmed. Colombia reported 40 confirmed DHF cases in 1990 and an additional 95 cases in 1991 (provisional figure through 21 December 1991). The fact that Venezuela reported 1,980 cases of DHF (26 deaths) in 1991 suggests that DHF is becoming endemic in that country. It should be noted that several cases did not meet WHO's DHF case definition (e.g. Curaçao, 1968; Jamaica, 1977; Aruba, 1985; Brazil in 1986) or the clinical information was insufficient or absent to determine if they fulfilled such definition (e.g. Venezuela, 1968, Honduras, 1978, Nicaragua, 1985, El Salvador 1987-1988).

Thus it appears that DHF/DSS is gradually becoming endemic in several countries of the Americas, consequently mimicking the situation observed in Asia. The marked increase of DHF/DSS incidence observed in several Asian countries during the past 10 years compared to the preceding years illustrates the potential threat that American countries face in the future.

### Reports of Dengue Cases

Information on the number of reported cases of dengue by country in the Americas for the period 1980-90, and circulating dengue serotypes are reported periodically to PAHO. With the exception of 1981, when there were about 388,000 cases, numbers for the other years range from about 39,000 (1984) to about 134,000 (1987). The marked underreporting of dengue cases is illustrated in Ecuador, where only 25 cases were reported in 1988, while a serological survey in Guayaquil estimated that 422,000 of its inhabitants were infected. In 1986-87 a similar situation was observed in Brazil which reported 136,764 cases; however serological surveys estimated that over one million infections occurred in Rio de Janeiro during this biennium. With the exception of 1981, when Cuba reported 344,203 cases, most dengue fever case reports during 1980-84 came from Mexico. In 1985 Aruba and Nicaragua reported more cases than any other country; in 1986-87 and in 1990 most came from Brazil, whereas Colombia in 1988 and Paraguay in 1989 reported the highest number of cases.

### Dengue Virus

Dengue virus belongs to the family *Flaviviridae*. Four serotypes can be distinguished by serologic methods, designated dengue-1, dengue-2, dengue-3 and dengue-4. The infection in man by one serotype produces only temporary and partial protection against other serotypes. All serotypes have been isolated from autochthonous cases in the Americas; during the period 1978-1991 however, only dengue serotypes 1, 2 and 4 have been circulating; dengue-3 was last isolated in Colombia and Puerto Rico in 1977. Although dengue-2 was associated with the major outbreak of dengue and DHF/DSS in Cuba in 1981, dengue-1 and dengue-4 were the predominant circulating serotypes during the 1980's. In addition to the outbreaks in five South American countries discussed above, dengue-1 also caused important outbreaks in Aruba, Mexico and Nicaragua. The introduction of dengue-4 in the

Americas in 1981 was followed by epidemics of dengue fever in the Caribbean, Central America, Mexico and northern South America during 1981-83, and subsequently caused major epidemics associated with cases of DHF in Mexico (1984), Puerto Rico (1986) and El Salvador (1987). Dengue-4 virus is now endemic in the Region. Simultaneous circulation of serotypes 1, 2 and 4 over a period of several years has been observed in several countries, creating a hyperendemic situation that puts these countries at high risk for epidemic DHF.

Molecular studies on the nucleotide sequences of dengue virus genomes allow classification of the agent into genotypes. One genotypic group of dengue-1 virus and two of dengue-2 virus are known to be circulating in the Americas. Another dengue-1 genotype was isolated only in Mexico in 1980. The clinical significance of the infection due to these genotypes in man is presently unknown, but they are useful for the understanding of the epidemiology of dengue viruses.

### Dengue Virus Transmission

In the Americas, dengue virus persists in nature through a man - *Aedes aegypti* - man transmission cycle. Following an infective blood meal, the mosquito can transmit the agent after a period of 8-12 days of extrinsic incubation. Transmission may also occur when feeding is interrupted and the mosquito immediately feeds on a nearby susceptible host. *Aedes albopictus*, now present in the Americas, is a maintenance vector of dengue in Asia, but so far it has not been associated with dengue transmission in the Americas. The epidemiologic significance of transovarial transmission of dengue virus in *Ae. aegypti* and other vectors in the Americas is presently unknown.

### Cost and Economic Impact

Few studies have been conducted to estimate the economic impact of dengue and DHF/DSS in the Americas. A study done in Puerto Rico during the 1977 dengue epidemic estimated that the costs in medical services and loss of work was between US\$6 and US\$16 million; according to recent studies the cost of epidemics of the disease in Puerto Rico since 1977 is estimated to be between US\$150 and US\$200 million.

The cost of the DHF/DSS Cuban epidemic was estimated at about US\$103 million including control measures and medical care. Of this total US\$41 million was for medical care, US\$5 million for salaries paid to adult patients, US\$14 million for lost production and US\$43 million for the direct initial cost of the *Ae. aegypti* control program. It should be mentioned that the cost of this epidemic would be considerably higher today due to inflation.

It is conceivable that the disease has caused significant impact on tourism, particularly during epidemics. However, no estimates are available on the costs due to such impact.

(Source: Communicable Diseases Program, PAHO, based on country reports.)

# Cholera Situation in the Americas

## Update

Fourteen months after it was first recognized in Peru, the cholera epidemic has spread extensively in the Region of the Americas. Nineteen countries have been affected. The countries most recently added to the list of infected areas were Belize, Argentina and Suriname. Additionally, Costa Rica and French Guiana reported isolated, imported cholera cases in their territories. In 1992, as of 20 March, a total of 89,333 cases had been reported in the Region this year; 44,542 of these patients had been hospitalized and 561 had died.

In the Andean Area, Bolivia, Colombia, Ecuador, Peru and Venezuela have experienced a marked increase in the number of reported cases during the first two months of 1992. In Peru, the transmission is still active in all departments, and a resurgence of the disease struck specific areas, such as Arequipa, Ayacucho, Huánuco, Callao and Lima, as evidenced by comparison of the average number of cases by week in late 1991 with that of the early weeks in 1992. The number of reported cases more than doubled for the first four areas mentioned, and for Lima, where 250 weekly cases were being reported in 1991, 3,700 were registered weekly during the first six weeks of 1992.

The same pattern was observed in Ecuador, where the coastal provinces, as well as Cotopaxi and Pichincha, in the mountains, experienced an increase in the number of reported cases.

In Colombia, three areas are showing signs of more intense transmission in 1992: Antioquia, Chocó (Turbo) and Islas San Andrés.

After its introduction to Bolivia in August, cholera spread very slowly around the La Paz area; in 1992 however, it emerged almost simultaneously in Cochabamba, Santa Cruz, Tarija, Chuquisaca and Potosí. The case-fatality ratio for the last eight weeks reported was 3.8% (108 deaths).

Venezuela had initially reported 13 cholera cases in Zulia, in December of 1991, most of them imported. Since then active transmission of the disease has been confirmed in Aragua, Carabobo, Miranda, Táchira and the Distrito Federal (which includes Caracas).

The trend of the cholera epidemic in Brazil, where the disease was detected on 10 April 1991, shows that 53% of the cholera cases reported were concentrated in the five-week period between 16 December 1991 and 18 January 1992. The extension of the infected area is demonstrated by the fact that 16 municipalities were affected by late November in 2 states, as compared to more than 120 municipalities in 8 states by late January. More than 65% of the reported cases are from Amazonas and Pará states. Among the 2,191 cholera cases reported in 1992, 30 died.

Eight months after it had reported the last cholera case, in May 1991, Chile experienced the resurgence of

the disease during the last week of January. This time the affected area was Arica near the border with Peru, but additional cases were later reported from Iquique and Santiago. Forty-one cases have been reported to date in 1992, with one death.

In the Central American subregion, El Salvador and Guatemala registered an increase in the number of cholera cases reported in 1992. In the former, an explosive outbreak occurred in the San Salvador area with around 500 cases being seen in three days during the first week of 1992. In Guatemala, Escuintla and Sololá reported 66% of the country's cholera cases during January and February of 1992. Even though two additional autochthonous cases have been reported in Honduras in Marcovia, Choluteca Department, where 11 cases were reported in 1991, it is intriguing how limited the transmission of the disease has been in that country. Nicaragua, which reported one isolated cholera case in 1991 in Managua, has reported two isolated cases in La Paz, León and in Managua, with no secondary transmission or a source of infection identified so far. The infected areas in Panama remain confined to Darién and Panamá provinces and Comarca San Blas. More recently, isolated cases were reported in the metropolitan area, Calidonia, Tocumen and San Miguelito. Costa Rica reported one imported case from Ecuador on 3 January 1992; no secondary spread or additional cases have been reported since that date.

Since 9 January 1992, Belize has reported three cases of cholera, all in the southern coastal district of Toledo. None of the cases had traveled out of the city in the 5 days before onset of illness. *V.cholerae* 01 El Tor Inaba was isolated from all cases.

France has reported three imported cholera cases in French Guiana, one in 1991 and two in 1992; no secondary transmission was observed.

Tamaulipas and Guanajuato, which were the only two states in Mexico that did not report cholera in 1991, did so in 1992. Campeche, Chiapas, Guerrero, Oaxaca, Nuevo León, Tabasco, Veracruz and Yucatán have been the other states reporting in 1992.

On 6 March cholera was confirmed in Suriname with the report of three cases confirmed by laboratory, including one death, and seven suspected cases. This outbreak was confined to the village of Cottica in Sipaliwini district.

In Argentina, cholera cases were first reported on 5 February in the northern province of Salta; from that date until 29 February, 191 cases have been reported in that area with 11 deaths. Other provinces reporting cases during the same period were: Jujuy (2), Formosa (9), Córdoba (1), Buenos Aires (1) and Capital Federal (1).

The United States of America reported on 19 February that *Vibrio cholerae* 01 had been isolated from

stool cultures of five persons with diarrhea who became ill after traveling on the same international airline flight; one person died. The flight arrived in Los Angeles on 14 February, with 336 passengers and 20 crew members; it originated in Buenos Aires, Argentina, and had a stop in Lima, Peru. As of 3 March, 48 persons on the flight had either culture-confirmed *V.cholerae* or vibriocidal antibodies with a titer greater than 1:640, or

both. Studies to determine the mode of transmission and to characterize the strains were in progress when this *Bulletin* was printed.

(Source: Information from country reports consolidated by the Health Situation and Trend Assessment Program, PAHO.)

## Follow-up on cholera vaccine evaluation

Experts attending the first meeting on cholera vaccine evaluation convened by PAHO on 3 and 4 May 1991, in Washington, D.C., updated and analyzed the status of cholera vaccine development. The Final Report of this meeting was published in the *Epidemiological Bulletin* 12(2), 1991.

At the meeting, data were presented on efficacy trials of an oral vaccine conducted in Bangladesh. This vaccine consisted of whole killed cells of the bacterium *Vibrio cholerae* and the B subunit of the cholera toxin (WC/BS). The trial showed a protection of up to 85% after two doses, in all ages, during the first 6 months after the vaccine was administered, and declined to 50% after three years. Studies are under way in Bangladesh to determine the economic feasibility of vaccine production for routine use in the cholera control program. It was recommended that phase II and III field trials be carried out prior to using the vaccine for cholera control in the Region, due to differences between Bangladesh and the Latin American countries with respect to the cholera epidemiological situation, to considerations related to the different genetic character of the population of the Americas and their lack of previous exposure to *V. cholerae*, and to the use of newly developed recombinant B subunit, instead of classically purified B toxin, in the formulation of the vaccine.

### Phase II - Immunogenicity and Reactogenicity Field Trial of WC/rBS Vaccine

A special meeting of epidemiologists, statisticians, and experts in cholera was convened at PAHO headquarters, from 17 to 18 October 1991, to discuss vaccine trial development. Special attention was given to the comparability of trial results, such as the standardization of methodologies, reagents and procedures.

Brazil, Colombia and Mexico expressed willingness to organize and undertake field trials, and have prepared protocols for phase II and III trials. All three protocols are designed as double blind, randomized and placebo-controlled studies and adhere to established ethical standards, which include informed consent by subjects or their parents/legal guardians, review by national ethics committees and the PAHO Ethical

Review Committee. The vaccines will be supplied by the Swedish Bacteriology Laboratory (SBL) through the World Health Organization and the Swedish Agency for International Cooperation (SIDA).

Brazil will start a phase II trial in the next few months, probably in the city of Fortaleza, located in Northeastern Brazil, with an estimated 1.7 million population. The whole Northeast Region has about 40 million inhabitants and is characterized by low income, high infant mortality, high prevalence of malnutrition, and poor environmental sanitation.

In Colombia, the phase II field trial was completed in Barranquilla, the most populated city in the Colombian Atlantic Coast, located near the Magdalena River. Of its approximately 1.2 million inhabitants, 60% have no sewer system and 76% no running water. Final analysis of the trial results is pending.

Mexico will conduct its phase II trial in a rural population where most of the cholera cases have been reported. The localities to be selected will have more than 500 but less than 5,000 inhabitants, no documented cases of *V. cholerae*, and characteristics similar to those places where the disease is occurring. It will probably be in the state of Chiapas or Tlaxcala.

### Phase III - Efficacy Trial of WC/rBS Vaccine

Field trials of vaccine efficacy are being organized in Colombia and Brazil, and will begin immediately after the immunogenicity (phase II) studies. The protocols for the phase III field trials prepared by Brazilian and Colombian experts have undergone thorough technical review and both adhere strictly to established ethical standards and include informed consent forms for all participants. They have already been reviewed and approved by national institutions responsible for conducting the trials. The final step will be the review of the protocols by WHO External Scientific and Technical reviewers.

### Live Oral Vaccine, CVD-103 HgR

This candidate vaccine consists of live *V. cholerae* that has been genetically manipulated to delete the gene encoding A subunit of cholera toxin. A mercury-resistant marker has also been inserted into the bacterium in order to differentiate it readily from the

other vibrio strains. The vaccine has been tested for safety in USA volunteers, and phase I and II trials are underway in Thai and Indonesian volunteers. These trials have shown that the seroconversion for the vibriocidal antibody was much better in university students (63-92%) than military recruits (20-39%). In Indonesian children aged 5 to 9 years, it was only 16% following a dose of  $5 \times 10^8$  cfu (colony forming units), but increased to 79 to 86% with doses of  $5 \times 10^9$  or  $1 \times 10^{10}$  cfu.

There was no significant difference in the rate of adverse reactions between placebo and vaccine recipients.

Phase II trials are underway in both adults and children in Chile, Costa Rica and Peru. The trial in Chile is being financed by WHO.

## Other Vaccines

Other vaccines under development include a conjugate of cholera lipopolysaccharide with the B subunit of cholera toxin designed for parenteral administration, attenuated live strains with accessory cholera toxins deleted to reduce reactogenicity, El Tor based vaccines and strains expressing adherence factors and various immunogenic outer membrane proteins. These vaccines are under active testing in animal models but are still to be evaluated in humans.

(Source: Research Coordination Program, PAHO.)

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## Epidemiology Activities in the Countries

### Meeting on the Teaching of Epidemiology in Medical and Nursing Curricula in Argentina

A meeting on the teaching of epidemiology in medical and nursing curricula in Argentina was held in the city of Mendoza 4-5 November 1991. The event was organized jointly by the Association of Schools of Medical Sciences of the Argentine Republic and the Association of University Schools of Nursing of the Argentine Republic, under the auspices of the Secretariat of Health of the Ministry of Health and Social Action, and the Pan American Health Organization.

The aim of the meeting was to make a critical analysis of the situation of training in epidemiology in both curricula, and to identify the principal theoretical-methodological, pedagogical, and organizational problems of training in this field in the current Argentine context with a view to adopting measures to overcome the deficiencies detected.

As a general frame of reference the need was pointed out for promoting an epidemiological approach capable of contributing theoretical and practical elements (educational and care) in order to reorient the satisfaction of health needs from the perspective of the population and not exclusively from that of the medical services.

The significance of the meeting held in Buenos Aires in 1983 on *Uses of and Prospects for Epidemiology*, in reorienting the role of epidemiology in the health services and health programs was highlighted. In addition, the need was pointed out for continuing to strengthen the following areas: identification of groups at risk and priority areas in the health programs; diagnosis and assessment of current and future health needs; new approaches for the planning, execution, and evaluation of services and programs; promotion of mechanisms to facilitate the coordination of scattered

activities and resources in order to organize intervention packages that can have greater impact on the priority groups through more efficient use of resources; promotion of health services research; and epidemiological training for clinicians and administrators in close collaboration with the training institutions.

Both groups--medicine and nursing--directed their efforts toward defining the targets to be attained in the educational process in developing epidemiological thought.

The group from schools of medicine defined critical contents and proposals for thematic units and areas of practice whose general objectives serve to "provide the students with an instrument to be utilized for constructing an alternative model that transcends clinical practice and is focused on a paradigm conceptually based on the health of the population and not solely on medical care."

Among the contents proposed, emphasis was placed on knowledge and critical analysis of present-day health-disease trends and paradigms; the interrelationship with other disciplines and the new uses of the discipline, directed toward a comprehensive analysis of the health situation of the population, identification of risk factors and comprehensive management of services and health programs; and the importance for the training process to be carried out within the whole network of services integrated into the community, at all levels and sectors. A particularly salient point was the essential role of research in developing epidemiologic judgment and for approaching and solving problems. Research has thus been identified as an end (one of the uses of epidemiology) and as a means for development of epidemiologic discernment.

The group from schools of nursing identified concrete proposals in the educational process, arguing that it is there that students identify and opt for a specific practice. Accordingly, a proposal was made to promote care programs based on multidisciplinary integration of teaching and service, assisted by community participation.

### **Third Brazilian Congress on Collective Health and First Southern Cone Meeting on Collective Health**

The Third Brazilian Congress on Collective Health/First Southern Cone Meeting on Collective Health will take place 16-20 May 1992 at the Federal University of Rio Grande do Sul, Porto Alegre, State of Rio Grande do Sul, Brazil.

The event is being organized by the Brazilian Association of Graduate Studies in Public Health (ABRASCO), the Municipal Health Secretariat of Porto Alegre, and the Extension Course Program of the Federal University of Rio Grande do Sul. The meeting will be sponsored by the Secretariats of Science and Technology, Health, and the Environment of Rio Grande do Sul; the Pan American Health Organization; the Ministry of Health; the National Council for Scientific and Technological Development; the Studies and Projects Investment Corporation; the FIOCRUZ National Public Health School; the Federal University of Santa Maria, the Federal University of Pelotas; the University of Ijuí; the Regional Council of Psychology of Rio Grande do Sul; and the Latin American Association of Social Medicine. The main subject of discussion will be health as the right to life.

Further information may be obtained from: Secretaria dos III Congresso Brasileiro de Saúde Coletiva e I Encontro de Saúde Coletiva do Cone Sul, Av. Oswaldo Aranha, 1423, Sala 102, 90210 Porto Alegre, RS, Brazil.

### **Second Brazilian Congress of Epidemiology**

The Second Brazilian Congress of Epidemiology will be held 13-17 July 1992 in the School of Medicine of the Federal University of Minas Gerais and in the Minascentro, Belo Horizonte, State of Minas Gerais. The meeting is being promoted by the Brazilian Association of Graduate Studies in Public Health (ABRASCO), the Department of Preventive and Social Medicine and the Core Studies Program in Public Health and Nutrition of the Federal University of Minas Gerais, and the Ministries of Health, Science, Technology, and Environment of the Government of the State of Minas Gerais. Support is being provided by the Pan American Health Organization, the Ministry of Health, the National Council for Scientific and Technological Development, the Studies and Projects Finance Corporation, the Ministry of Sports, Tourism, and Recreation of Minas Gerais, the FIOCRUZ National Public Health School, and the Municipal Health Secretariat of Belo Horizonte.

The success of the first Congress, held in Campinas in 1990, as shown by the approximately 1,500 participants and the number and quality of the papers presented demonstrated, on the one hand, the growth of epidemiology in Brazil and, on the other, the great

demand that exists for knowledge and experiences in this area.

The core subject of the second Congress will be the quality of life and the historical commitment of epidemiology. The event will take place in two stages: the pre-congress stage, during the first two days, will consist of workshops and courses; and the congress per se during the following days will consist of conferences, seminars, round tables, coordinated communications, and the presentation of posters based on the core subject.

Further information may be obtained from: Secretaria do II Congresso Brasileiro de Epidemiologia, Av. Alfredo Balena 190, 10<sup>o</sup> andar, 30130 Belo Horizonte, Minas Gerais, Brazil.

### **Group on Health Surveillance and Planning in Costa Rica**

Within the framework of the integration agreement recently reached by the Ministry of Health and the Costa Rican Social Security Fund, a working group has been formed made up of a planner and an epidemiologist from each of these institutions to develop a project to promote analysis of the health situation at the local, regional, and national levels and ensure the development of decentralized surveillance and health planning systems.

The agreement stipulates that both institutions should provide comprehensive health care for the population. For this purpose it is considered essential to determine what the health problems and needs are and what differences exist with regard to these problems and needs among the various population groups. At the same time, the foundations should be laid for the organization of common systems, such as health surveillance and joint local programming, that will make it possible to control, monitor, and evaluate health actions in all local health systems, in the regions and at the national level.

To facilitate development of the above-mentioned project on surveillance and planning, a personnel training program has begun which will lead the process of strengthening epidemiology in the nine health regions. An official in charge of epidemiology has been designated in each region and will be the focal point, but training is provided to the entire team in the region.

Training courses will not require physical attendance and will be based on the problems prevalent in the regions during development of the project. They are scheduled for mid-1992 under the coordination of the Public Health Department, School of Medicine, University of Costa Rica, with the support of PAHO's Health Situation and Trend Assessment, and Health Training for Central America and Panama Programs.

### **System of Health Surveillance and Living Conditions in Cuba**

As a result of the workshop on the health situation, carried out in the context of the research plan devised by the National Academy of Sciences in mid-1991, a multidisciplinary and multi-institutional working group was formed to formulate a project for the development of a National System for Surveillance of the Health Situation and Living Conditions.

This group is made up of epidemiologists, statisticians, geographers, economists, sociologists, and

health administrators from the School of Public Health, from other faculties of the Havana University, from the Offices of the Deputy Ministries of Epidemiology, Health Services, and Economy, Ministry of Public Health, and from the Institute for the Study of Internal Demand.

In accordance with the design of the project, analytical reports will be prepared every three months on the performance of indicators of ill health and of living conditions of a national sample of families stratified according to living conditions variables. The offices of family medicine physicians are used as sampling units for this project.

In addition to this basic and permanent module of indicators, the design of the project allows the inclusion of occasional modules for the evaluation of specific problems.

The first stage of the project envisions a field test scheduled for the first of April. The initial preliminary results will probably be available in mid-1992.

It is expected that this field test will make it possible not only to work out the operational details, but also, if necessary, to adjust the selection of indicators and of the families included in the sample. It will also make it possible to evaluate the usefulness of the system for decision-making at the national level with regard to health and welfare actions. At a later stage, the design could be adjusted for use at the provincial and local levels.

### **Mortality and Living Conditions in Venezuela**

Investigators from the Department of Preventive Medicine of the Central University of Venezuela are

carrying out an exploratory study on mortality profiles in various population groups, classified according to living conditions.

The study uses the mortality information registered by the Ministry of Health and the results of a study on the extent and distribution of poverty carried out by the Ministry of the Family and seeks to validate the accessibility of information sources and the methodological proposal (see *Surveillance of Living Conditions and the Health Situation, Epidemiological Bulletin*, 12(3), 1991). It is expected that the preliminary results will be available during the first four months of 1992 and will serve as a basis for the design of a research proposal on mortality profiles and living conditions in the 1980's and of a National Surveillance System.

### **The 1992 Surgeon General's Report on Smoking and Health**

The 1992 report of the Surgeon General, Public Health Service, USA, reviews in depth the problems of smoking and health in the Americas. The report was produced in collaboration with the Pan American Health Organization, and looks at historical, social, economic, and regulatory aspects of smoking.

An executive summary of the report is available in English and Spanish, from the Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control, 1600 Clifton Road, NE, Atlanta, GA 30333, USA. Copies of the full report (English and Spanish editions) are available for \$12.00 each from the Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 USA.

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## Calendar of Courses

### **Summer Courses in Epidemiology in the United States**

*The Johns Hopkins University School of Hygiene and Public Health* is sponsoring the Tenth Annual Graduate Summer Program in Epidemiology, to be conducted from 15 June to 3 July 1992. The program includes: applications of the case-control method; applied multivariate statistics; design and conduct of clinical trials; epidemiologic methods for evaluating health services; epidemiology of AIDS; epidemiology of mental disorders, alcohol and drug problems, infectious disease epidemiology; introduction to biostatistics; introduction to survival analysis; methods in epidemiology; methods of health risk assessment; nutritional epidemiology; principles of epidemiology;

use of microcomputers in epidemiology. Proficiency in the English language is required.

Further information is available from Helen Walters, Program Coordinator, Graduate Summer Program in Epidemiology. The Johns Hopkins University, School of Hygiene and Public Health, 615 North Wolfe Street, Baltimore, Maryland 21205.

*Tufts University at Medford, Massachusetts, The New England Epidemiology Institute and the Post-graduate Medical Institute* are sponsoring the 12th Annual New England Epidemiology Summer Program, to be conducted from 12 to 31 July, 1992. Courses will be offered on the theory and practice of epidemiology, level I and level II; biostatistics for epidemiologists; regression and categorical data methods; logistic regression and survival analysis; conducting



epidemiologic research; causal inference; the biology and epidemiology of cancer; clinical epidemiology; concepts of infectious disease epidemiology; nutritional epidemiology; perinatal epidemiology; environmental epidemiology; epidemiology in public health practice. Proficiency in English is essential.

For more information contact The New England Epidemiology Institute, 826 Boylston Street, Chestnut Hill, Massachusetts 02167.

*The University of Michigan School of Public Health* announces the 27th International Graduate Summer Session in Epidemiology to be conducted from 12 to 31 July 1992. Three- and one-week courses will be offered. Three-week courses include: applied epidemiology for health practitioners; fundamentals of epidemiology; fundamentals of biostatistics; microcomputer applications in epidemiology; regression methods. One-week courses include: basic concepts of clinical epidemiology; clinical trials design and conduct; analytic methods for clinical trials; pharmacology; substance abuse; sexually transmitted diseases and HIV; environmental exposure assessment; environmental epidemiology; occupational epidemiology. Proficiency in the English language is needed.

For further information write to Jody Gray, Administrative Coordinator, Graduate Summer Session in Epidemiology, The University of Michigan, School of Public Health, 109 Observatory Street, Ann Arbor, Michigan 48109-2029.

#### **International Course on Health and Disaster Preparedness**

The Fourth International Course on Health and Disaster Preparedness will be held from 27 July to 7

August, 1992 in Brussels, Belgium. Jointly sponsored by the World Health Organization and the Government of Belgium, the course will focus on public health risks, information systems, management of preparedness and planning, and assessment of needs within the specific context of Health Preparedness and Relief. This two-week course will be preceded by a one-week optional computer course.

Inquiries are welcome and should be addressed to the Course Co-ordinator, Fourth International Course, Centre for Research on the Epidemiology of Disasters, School of Public Health, Catholic University of Louvain, 30 Clos Chapelle-aux-Champs, 1200 Brussels, Belgium.

#### **Second Summer Session in Epidemiology in Puerto Rico**

The University of Puerto Rico, Medical Sciences Campus, Faculty of Biosocial Sciences and Graduate School of Public Health, announces its second summer session in epidemiology, from 27 July to 14 August 1992.

The courses being offered are: intermediate methods in epidemiology, statistics applied to epidemiology and the use of software packages, the use of epidemiology in the programming and evaluation of health services, cancer epidemiology, epidemiological approach to reproductive health, and occupational epidemiology.

For more information and application, write to: Department of Biostatistics and Epidemiology, Graduate School of Public Health, Medical Sciences Campus, University of Puerto Rico, G.P.O. Box 365067, San Juan, Puerto Rico 00936-5067, or to the Communicable Diseases Program, Pan American Health Organization, 525 Twenty-Third Street, N.W., Washington, D.C. 20037, USA.

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