

THE PROBLEM OF VENEREAL DISEASES IN THE AMERICAS¹

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The rise in venereal diseases in the Americas, as confirmed by surveys of both WHO (1961) and PAHO (1969), is studied from the viewpoint of incidence, prevalence, morbidity, and mortality in the various countries. Causative factors are discussed and measures for curbing the problem in the future are recommended.

INTRODUCTION

After the decrease in venereal disease incidence observed in the years following World War II, the recrudescence that commenced toward the end of 1950 in all regions of the world again focused the attention of public health authorities in most countries on the health problems posed by syphilis and gonorrhea.

Reflecting this general concern, in October 1965 the Pan American Health Organization, in cooperation with the United States Public Health Service, organized a seminar for 40 experts from 25 countries and territories of the Hemisphere, most of them directors and chiefs of departments in the health ministries. The purpose was to exchange ideas and experience in regard to the venereal disease problem, to discuss methods of control, and to direct the attention of Governments to the prevailing situation and the need to develop control programs.

Since that time the countries' interest in the problem has grown, as evidenced by their requests for PAHO assistance in the form of fellowships for study of laboratory techniques and control methods abroad, national courses and projects at the country level, and advisory services and program evaluation.

Another indication of the renewed interest is the increasing number of countries participating in the evaluation of the proficiency of laboratory tests which is conducted each year by the WHO International Reference Center for the Serology of Treponematoses, at the U.S. Center for Disease Control in Atlanta, Georgia. Seven countries participated in 1963, while 18 took part in 1969.

The selection of the topic "Venereal Diseases as a National and International Health Problem" for the Technical Discussions at the XVIII Pan American Sanitary Conference clearly reflects the Governments' great concern over the problem and their desire to ascertain the facts and to find solutions.

Venereal diseases are widespread in all countries of the world, and while it is generally recognized that they constitute a major problem, their true magnitude is not known. The various attempts made to study them in different regions point up the gaps in our knowledge of their extent and importance.

The main difficulties stem from incomplete and deficient case-reporting and lack of uniformity in the reporting and registration systems in the different countries and even within the same country.

The obtaining of comparable statistical data on incidence and prevalence is thus a problem in itself, and authorities have been obliged to resort to estimates to gain an idea of the situation.

Guthe and Hume, in 1948, estimated that each year there were at least 2 million new cases of syphilis acquired by venereal contact, and that the annual prevalence was as high as

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20 million in the world population over 15 years of age.

Taking into account population growth since 1948, the changes in factors influencing the spread of the disease, and the pattern of increasing incidence observed in all parts of the world since the late 1950's, the annual incidence of new cases of syphilis in the 1960's can be estimated at not less than 3 million, and the prevalence at 30 million cases.

Using the same type of calculation, it can conservatively be estimated that we are entering the 1970's with an annual incidence of 4 million cases of early syphilis, of which 370,000 will occur in the Americas.

Annual gonorrhea incidence can be calculated by using as a basis the world incidence of syphilis and the ratio of cases of syphilis and gonorrhea that seek medical treatment, which shows that for each case of syphilis there are four of gonorrhea. Accordingly, the annual incidence of gonorrhea would have been 12 million in the 1960's, and we can expect 16 million at the beginning of the present decade, with 1.5 million cases in the Americas.

A study of the problem based on reported cases of venereal disease since 1950 shows that infectious syphilis has increased in many countries, has remained at about the same level in others, and diminished in some.

The increase in gonorrhea has been much more widespread, with the disease reaching epidemic proportions in some countries.

Chancroid, lymphogranuloma venereum, and granuloma inguinale appear to be less important, while nongonococcal urethritis, in those countries in which it is distinguished from gonorrhea, is more prevalent.

A world survey made by WHO in 1962 showed that 76 of the 106 countries (72 per cent) reported a steady increase in the incidence of early syphilis. Of the 106 countries, 21 were in the Western Hemisphere and 15 of them reported an increase.

The situation revealed by this survey has continued; and even though around the mid-1960's some countries (France, Italy, the United Kingdom, and the United States of

America) reported a new decrease, this trend did not continue in most of them and the curve has tended to level off.

In the Americas, nine out of 12 countries responding to a PAHO questionnaire in early 1970 reported either an increase or no significant change for the period from 1960 to 1967, 1968, or 1969.

Gonorrhea has increased even more markedly than early syphilis. A similar survey conducted by WHO in 1961 showed that 53 out of 111 countries (48 per cent) reported a steady increase from 1950 to 1960. In the Americas, in 11 out of the 21 countries (52 per cent) the same trend was observed and it has not been reversed since then.

In the 1970 survey, 13 of 24 countries in the Americas reported an increase.

There can be no doubt that we are witnessing an upswing of syphilis and gonorrhea in an important number of the countries that have adequate reporting systems, and it can be assumed that the same is occurring in countries where the reporting is deficient.

THE VENEREAL DISEASE PROBLEM IN THE AMERICAS

In order to gain an over-all picture of the venereal disease problem in the Hemisphere, all countries and territories were asked to complete a questionnaire. The information obtained formed the basis for the present study. In some cases, however, it was necessary to complete this information with data derived from the countries' regular reports to the PAHO/WHO, or to estimate rates using population estimates of the United Nations.

All countries and some territories replied to the questionnaire, but since the data from most of the latter were incomplete, the study is limited to the 26 countries.

There are, of course, gaps in the information provided; it is not always comparable; and in some cases the questionnaire replies do not agree with data previously reported to PAHO.

Because of these deficiencies in the basic information, the over-all description must be

viewed with caution and no definitive conclusions can be drawn. Despite these inadequacies, however, the data collected can be used to give a general idea of the situation.

Information from Brazil for the period 1965-1969, appearing in Table 1, is only for municipalities of state capitals.

Recorded Morbidity for Syphilis—All Stages

Tables 2 and 3 show cases of syphilis, all stages, and the rates per 100,000 population in 25 countries, for 1950 and 1960 to 1969.

The rates for all stages of syphilis are in general much higher than those for early syphilis, and in many countries the great difference results from the fact that many of the reported cases are discovered and diagnosed through serologic tests.

In 1969 the over-all rate for syphilis per 100,000 population was 11.0 in Canada and 45.4 in the United States of America; in Middle America, the highest rate was 242.2 in El Salvador, and lowest, 13.7 in Panama. The Dominican Republic had the highest rate (330.3) for both the Caribbean islands and the Hemisphere, and Cuba had the lowest (7.2). In South America the rate varied from 98.8 in Venezuela to 8.0 in Bolivia.

Data are available for 1950 from 18 out of 25 countries (Bolivia, Canada, Colombia, Dominican Republic, El Salvador, Guatemala,

Guyana, Haiti, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, United States of America, Uruguay, and Venezuela), and from 16 countries for the period 1950-1960. The drop in the rates ranged from 97 per cent in Panama to 20 per cent in Haiti. Only those for Trinidad and Tobago and Uruguay rose, by 203 per cent and 12 per cent, respectively, in that period.

Although the downward trend continued between 1960 and 1969, it was not so generalized. Of the 25 countries, 17 (Argentina, Barbados, Canada, Chile, Costa Rica, Cuba, Dominican Republic, El Salvador, Haiti, Honduras, Jamaica, Mexico, Panama, Paraguay, Peru, United States of America, and Venezuela) reported lower rates. The greatest decrease was in Jamaica (80 per cent) and the smallest in Venezuela (6 per cent). In eight countries (Bolivia, Colombia, Ecuador, Guyana, Guatemala, Nicaragua, Trinidad and Tobago, and Uruguay) there was an increase, varying from 1 per cent in Nicaragua to 82 per cent in Uruguay. In Costa Rica, where data are available only from 1962, a decrease of 16 per cent was recorded between that year and 1969.

The foregoing data—with all their limitations as to reliability and the variations in efficiency of case-finding and detection of early cases—would indicate that even though the decline observed between 1950 and 1960 continued

TABLE 1—Brazil: Cases of venereal disease in the municipalities of state capitals, reported to the health authorities, 1965-1969.

Disease	Year				
	1965	1966	1967	1968	1969
Syphilis, all forms	11,718	8,603	...	6,759	...
Syphilis, primary and secondary	2,123	2,847	2,469	2,798	1,881
Syphilis, early latent	804	284	250	691	197
Syphilis, late	1,344	909	751	1,062	461
Syphilis, congenital	283	181	82	556	55
Gonorrhea	13,337	13,254	9,707	13,849	6,176
Chancroid	2,811	2,856	2,409	3,483	2,119
Lymphogranuloma venereum	793	624	606	590	483
Granuloma inguinale	190	128	25	32	14

... Data not available.

TABLE 2—Cases of syphilis, all stages, by country, 1950, 1960-1969.*

Country	1950	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Argentina		7,310	4,397	5,143		6,195	4,113	5,711	7,456	5,719	4,814 ^a
Barbados		1,523	926	966	702	572	555	358	322	463	357
Bolivia	2,786	215	117	80	85	124	202	82	103	586	382
Canada	6,098	2,168	2,311	2,432	2,785	2,771	2,560	1,969	2,385	2,233	2,327
Chile		3,374 ^a	3,705	3,106 ^a	3,046	3,502	4,479	3,603	3,990	4,300	3,193
Colombia	14,289	7,214	12,746	13,868	11,250	13,004	17,749	18,658	17,901	15,037	12,264
Costa Rica				1,033	776	913	634	639	1,142	677	1,090
Cuba		566	508	1,131	1,691	1,863	2,322	2,049	1,055	543	59
Dominican Republic	27,502	14,116	12,040 ^a	10,494	8,595	12,839	10,559	9,540	8,555	12,362	13,787
Ecuador		674	928	820	1,012	1,203	1,287	1,482	1,290	1,266	997
El Salvador	14,088	6,359	5,984	6,600	7,862	8,634	9,192	8,675	7,118	9,152	8,209
Guatemala	2,148 ^a	855	1,273	1,197	840	1,186	1,852	1,755	1,429	1,429	1,174
Guyana	814 ^b	467	438	920	800	1,809	1,730	954	251		
Haiti	4,849	4,944	5,201	3,759	3,481	2,907	3,272	2,710	2,591	1,898	1,455 ^a
Honduras		1,728	2,561	2,263	1,578	2,003	2,158	2,588	2,844	2,024	2,015
Jamaica	9,049 ^a	4,341	1,914	2,776	2,298	1,774	1,875	2,048	1,505	1,066	
Mexico	29,178	23,817	20,456	19,443	20,066	17,697	16,323	12,907	14,717	14,322	9,782 ^a
Nicaragua	1,414 ^a	1,019 ^a	1,514 ^a	1,537 ^a	3,100 ^a	1,029 ^a	2,309 ^a	1,745	1,911	1,717	1,399
Panama	3,737 ^c	168	151	310	200	239	351	308	163	179 ^a	194 ^a
Paraguay	7,657 ^a	1,844	1,722	1,835	1,616	2,008	1,951	1,836	2,078	1,644	1,833
Peru	5,654	3,804	3,620	3,953	3,938	3,397	3,744	3,235	3,386	2,202	2,439
Trinidad and Tobago	1,479	589	408	327	385	367	382	598	601	722	782
U.S.A.	217,558	122,538	124,658	126,245	124,137	114,325	112,842	105,159	102,581	96,271	92,162
Uruguay	1,280 ^a	1,515	1,525	1,711	1,787	2,674	2,683	3,356	3,526	3,495	3,135
Venezuela	17,149	7,745	7,131	7,013	7,448	7,786	7,569	9,045	8,881	8,836	9,915

*Data from questionnaire prepared specially for this study.

^aOfficial country reports to PAHO.

^b1953.

^cAverage for 1948-1952.

TABLE 3—Morbidity rates for syphilis, all stages, per 100,000 population, by country, 1950, 1960-1969.*

Country	1950	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Argentina		35.0	20.7	23.9	...	27.9	18.2	24.9	32.1	24.2	20.1 ^a
Barbados		653.6	397.4	412.8	296.2	237.3	227.4	144.9	129.3	183.0	140.6
Bolivia	92.3	5.6	3.0	2.0	2.1	2.9	4.7	1.8	2.3	12.5	8.0
Canada	44.5	12.1	12.6	13.1	14.7	14.4	13.1	9.8	11.7	10.8	11.0
Chile		43.9 ^a	47.0	38.4 ^a	36.7	41.2	51.4	40.4	43.7	46.0	33.4
Colombia	126.1	46.9	80.2	84.6	66.5	74.5	98.5	100.3	93.3	75.8	59.9
Costa Rica				76.9	55.8	63.4	42.6	41.5	71.8	41.4	64.3
Cuba		8.3 ^a	7.3 ^a	16.0 ^a	23.4 ^a	25.1 ^a	30.4 ^a	26.3 ^a	13.3 ^a	6.7 ^a	7.2 ^a
Dominican Republic	1,290.6	465.0	382.7 ^a	322.0	254.6	367.0	291.4	254.1	220.0	306.8	330.3
Ecuador		15.5	20.6	17.6	21.0	24.2	25.0	27.8	23.4	22.2	16.9
El Salvador	754.2	259.1	236.8	251.2	288.9	305.7	313.9	285.6	225.9	280.2	242.2
Guatemala	76.6 ^a	22.4	32.4	29.5	20.1	27.5	41.7	38.4	30.3	29.4	23.4
Guyana	177.3	82.7	75.1	153.1	129.2	284.0	265.5	140.9	36.0		
Haiti	155.8	123.9	127.9	90.7	82.4	67.4	74.4	60.4	56.6	40.6	30.5 ^a
Honduras		93.5	134.1	114.7	77.4	95.0	98.9	114.7	121.9	83.9	80.8
Jamaica	645.0 ^a	266.5	116.3	167.1	135.3	101.8	104.7	111.4	80.2	55.7	
Mexico	113.0	66.1	54.9	50.4	50.3	42.9	38.2	29.2	32.2	30.3	20.0 ^a
Nicaragua	133.4 ^a	72.2 ^a	104.2 ^a	102.7 ^a	201.2 ^a	64.4 ^a	139.5 ^a	101.5	107.2	93.2	73.1
Panama	468.9	15.8	13.8	27.4	17.1	19.8	28.1	23.9	12.3	13.0 ^a	13.7 ^a
Paraguay	548.1 ^a	105.3	95.6	99.2	84.6	102.0	96.1	87.7	96.2	73.7	79.6
Peru	66.4	37.9	35.1	37.2	35.9	30.1	32.1	26.9	27.3	17.2	18.5
Trinidad and Tobago	234.0	70.9	47.0	36.3	41.7	38.6	39.2	60.1	59.5	70.7	75.2
United States of America	142.9	67.8	67.8	67.6	65.5	59.5	58.0	53.4	51.5	47.9	45.4
Uruguay	53.2 ^a	59.6	59.2	65.5	67.5	99.7	98.8	122.1	126.7	124.0	109.9
Venezuela	344.8	105.4	93.7	89.1	91.4	92.4	86.8	100.2	95.0	91.2	98.8

* Data from questionnaire prepared specially for this study.

^aOfficial country reports to PAHO.

over the next decade, it was not as general or as marked.

Recorded Morbidity for Early Syphilis

Early syphilis (primary and secondary), in addition to representing the infectious stages of the disease, also constitutes recently acquired syphilis. Hence the rate for early syphilis is the best indicator of incidence, even though it is subject to the effects of variations in number of cases diagnosed and reported.

Seventeen countries had data available for 1968 or 1969 (Table 4). In Northern America the rate per 100,000 population was 4.4 in Canada and 9.4 in the United States of America. In Middle America, the highest rate (70.2) was recorded in El Salvador and the lowest (3.5) in Guatemala. In the Caribbean area, Jamaica and Trinidad and Tobago had similar rates (29.4 and 31.8, respectively) and Cuba recorded 2.7. In South America the rates ranged from 2.1 in Argentina to 72.5 in Uruguay.

Figures for 1950 were available from only seven countries (Canada, Colombia, Guyana, Mexico, Trinidad and Tobago, United States of America, and Venezuela). From 1950 to 1960, all showed a decrease, ranging from 43 per cent in the United States to 98 per cent in Guyana.

In contrast, in the 13 countries for which the rates for 1960 and 1969 can be compared, the decrease was not generalized. Eight countries (Canada, Colombia, Ecuador, Guyana, Trinidad and Tobago, United States of America, Uruguay, and Venezuela) recorded marked increases ranging from 28.8 per cent in Trinidad and Tobago to 5 per cent in Colombia. In the five countries in which there was a decrease (Argentina, El Salvador, Jamaica, Mexico and Peru), the sharpest drop was in Argentina (90 per cent) and the smallest in Jamaica (3 per cent), as is illustrated in Figure 1.

The change in the trend for early syphilis from 1950 to 1960, and from 1960 to 1969, and the predominance of countries in which the rates showed an increase, support the assump-

tion that we are witnessing a recrudescence of the syphilis problem, due to a rise in incidence.

Despite the increase shown in a comparison of rates for 1960 and 1969 in the United States of America, the upward trend that began in 1959 reversed direction in 1965. In 1969 the reversal continued, the rate for that year being 7.4 per cent under that for 1968. No other country in the Hemisphere shows this phenomenon so clearly, and it could be attributed to the renewal or intensification of the control programs in that country.

Recorded Morbidity for Early Latent Syphilis

The rates for early latent syphilis in 1968 or 1969 varied from 0.8 in Cuba to 84.2 in El Salvador (Table 4).

In five countries (Colombia, Guyana, Mexico, United States of America, and Venezuela) the information for 1950 and 1960 reveals a decrease in the rates, ranging from 74 per cent in the United States to 34 per cent in Guyana, while between 1960 and 1969 only Jamaica, Mexico, and the United States had a decrease, amounting to 55, 87, and 24 per cent, respectively. All other countries with data for those years (Colombia, Ecuador, El Salvador, Trinidad and Tobago, and Venezuela) showed increases, ranging from 8 per cent in Venezuela to 166 per cent in Colombia. This change in the trend in the two periods seems to confirm the increase in recently acquired syphilis.

Identification of early latent syphilis is made almost entirely as a result of serologic tests, and the rate therefore depends on the tests that are made. Despite this fact, the trend in the rates of early latent syphilis is an indicator of the prevalence of the first period of latency of the disease, which is the result of the incidence of two to four years earlier. For this reason, it also reflects failure to detect cases in the early stages.

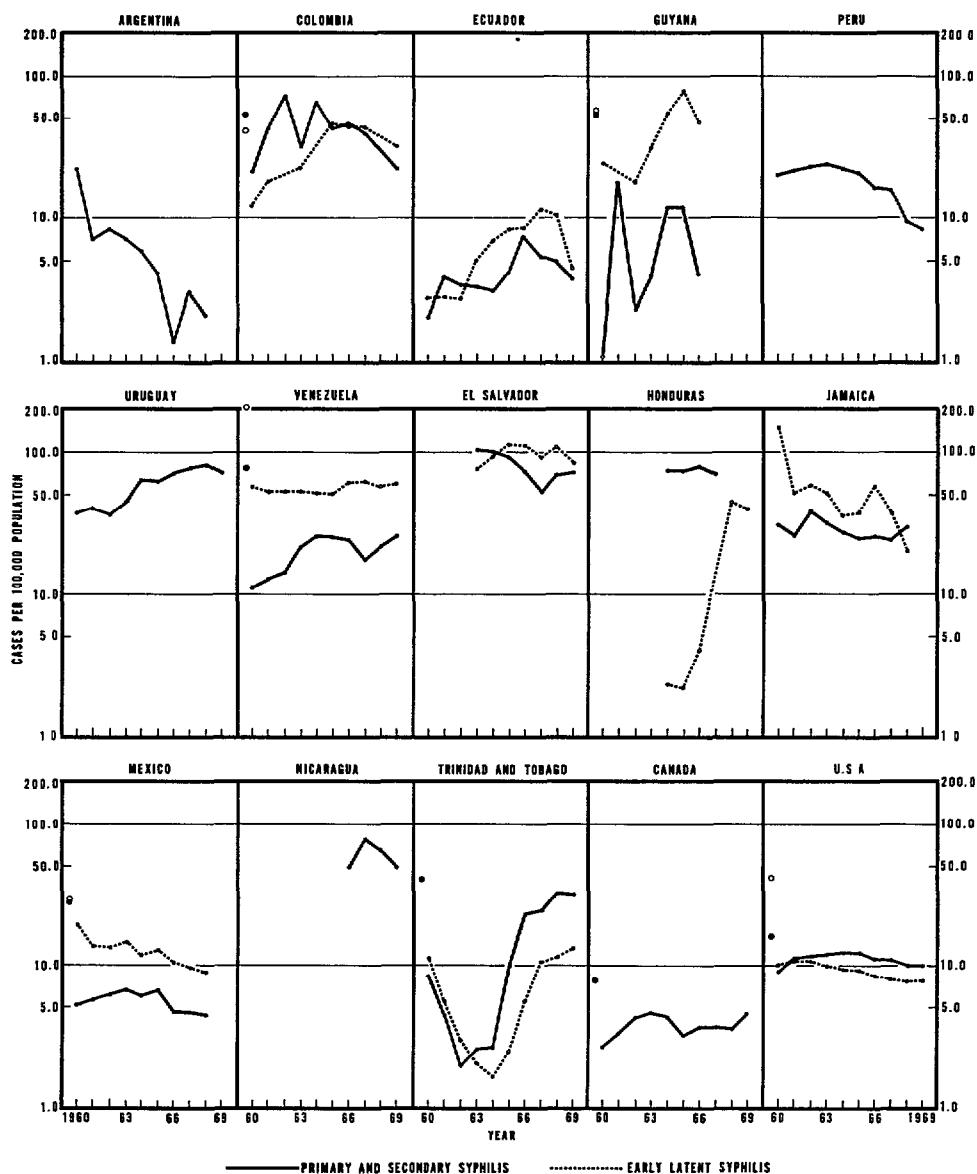
The ratio between early syphilis and early latent syphilis, expressed in terms of the average number of early syphilis cases for each case of latent syphilis, constitutes an index of efficiency in the detection of infectious cases.

TABLE 4—Morbidity rates for venereal diseases, per 100,000 population, by country, 1968 or 1969.*

Country	Syphilis all stages	Early syphilis	Early latent syphilis	Late syphilis and late latent syphilis	Congenital syphilis	Gonorrhea	Chancroid
<i>Northern America</i>							
Canada	11.0	4.4			0.2	128.6	—
U.S.A.	45.4	9.4	7.6	26.9	1.0	263.2	0.5
<i>Middle America</i>							
Costa Rica	64.3					199.2	3.1
El Salvador	242.2	70.2	84.2	59.3	1.6	148.4	45.4
Guatemala	23.4	3.5	1.3	10.0	0.2	94.8	12.0
Honduras	80.8	69.6	39.2	41.4	0.1	180.9	75.1
Mexico	20.0	4.3	8.9		0.1	20.2	0.8
Nicaragua	73.1	49.7	3.5	29.4	0.2	171.4	6.8
Panama	13.7				1.5	32.7	
<i>Caribbean Islands</i>							
Barbados	140.6					845.3	
Cuba	7.2	2.7	0.8	1.3	0.2	2.9	0.1
Dominican Republic	330.3					403.2	42.5
Haiti	30.5					58.1	7.3
Jamaica	55.7	29.4	20.1	5.7	0.5	2,147.2	2.4
Trinidad and Tobago	75.2	31.8	12.9	30.2	0.3	840.5	3.8
<i>South America</i>							
Argentina	20.1	2.1			0.0	33.6	0.6
Bolivia	8.0					5.0	0.1
Chile	33.4						
Colombia	59.9	22.1	31.9	5.1	0.8	215.8	8.3
Ecuador	16.9	3.8	4.4	8.4	0.3	31.7	0.2
Guyana							7.9
Paraguay	79.6	17.2	27.4	11.7	2.0	33.1	2.3
Peru	18.5	8.3		9.4		50.8	7.0
Uruguay	109.9	72.5			1.4	156.2	0.1
Venezuela	98.8	25.6	60.5	11.0	1.6	269.5	12.6

*Data from questionnaire prepared specially for this study.

FIGURE 1—Reported cases of primary and secondary and of early latent syphilis per 100,000 population, by country, 1960-1969.



NOTE: ● Level of rate in 1950 for primary and secondary.
○ Level of rate in 1950 for early latent.

Recorded Morbidity for Late Syphilis and Late Latent Syphilis

The rate per 100,000 population for late and late latent syphilis is an indicator of the prevalence resulting from infections occurring five to 20 years earlier; and in general, because of the lack of notification of symptomatic late syphilis, the majority of the cases included are due to late latency and, accordingly, are much affected by the number of serologic examinations carried out.

Data are available for 1968 or 1969 for 13 countries (Table 4). The highest rate was recorded by El Salvador (59.3) and the lowest by Cuba (1.3).

From 1950 to 1960 the rates dropped in all countries for which data are available (Colombia, Guyana, Mexico, Trinidad and Tobago, United States of America, and Venezuela), with the sharpest decrease in Trinidad and Tobago (69 per cent) and the smallest in Guyana (12 per cent).

From 1960 to 1969 the rates rose in Ecuador (180 per cent) and declined in Colombia (50 per cent), Mexico (58 per cent), Trinidad and Tobago (40 per cent), United States of America (41 per cent), and Venezuela (68 per cent) (Table 5).

Recorded Morbidity for Congenital Syphilis

In Northern America the rates for congenital syphilis per 100,000 population were 0.2 in Canada and 1.0 in the United States of America (Table 4).

In the Caribbean area, the rates were 0.2 for Cuba and 0.5 and 0.3, respectively, for Jamaica and Trinidad and Tobago.

In Middle America the highest rate was recorded in El Salvador (1.6) and the lowest in Honduras and Mexico (0.1).

In South America, the rate in Argentina was less than 0.1; in Ecuador it was 0.3; in Colombia, 0.8; in Uruguay, 1.4; in Venezuela, 1.6; and the highest was in Paraguay, 2.0.

Five countries (Canada, Colombia, Trinidad and Tobago, United States of America, and Venezuela) submitted data permitting com-

parison of the 1960 rates with those in 1950, and all recorded decreases, ranging from 87.0 per cent in Canada to 39 per cent in Venezuela.

The decrease in congenital syphilis rates appeared to be continuing between 1960 and 1968 or 1969, even though the prevalence remained relatively high in some countries, especially taking into account the fact that the reported cases most probably reflect only a part of the problem.

Five countries furnished age-specific morbidity rates for congenital syphilis (Colombia, El Salvador, Jamaica, United States of America, and Venezuela). Colombia's rate for the age group under one year decreased from 8.8 to 7.0 from 1963 to 1967; while in the United States it rose from 5.0 to 8.8, even though in both countries the rate for all age groups decreased. The increase may be attributed to improved diagnosis, or to an increase of the disease in pregnant women or deficiencies in the maternal and child health programs.

The rates for the age groups 10 years and over dropped 55.2 per cent in the United States of America over the period 1960 to 1968 or 1969, and since cases in persons over one year of age reflect incidence 10 or more years earlier, the observed decrease is an indicator of the changes in the situation before 1950 and from 1950 to 1960.

Syphilis Mortality

Death rates from syphilis depend on the prevalence of the disease, the promptness of treatment of early cases, and the diagnosis of syphilis as the cause of death. Table 6 shows the death rates for 1950 and for 1960-1969.

Mortality figures are not available for Guyana, Haiti, and Panama, and comparable data for 1950 are lacking for Cuba, Honduras, and Peru.

A comparison of the rates for the most recent year (1967, 1968, or 1969) for which mortality data are available shows that in Northern America, Canada reported a rate of 0.4 and the United States of America, 1.2. In Middle America, Mexico and El Salvador

TABLE 5—Morbidity rates for late syphilis and late latent syphilis per 100,000 population, by country, 1950, 1960-1969.*

Country	1950	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Colombia	24.8	10.2	16.4	8.7	9.9	7.2	8.1	7.0	7.4		5.1
Ecuador		3.0	12.9	10.2	10.7	11.6	10.5	11.1	5.2	6.0	8.4
El Salvador					79.6	85.3	79.1	65.6	60.7	62.4	59.3
Guyana	64.9	57.0	57.3	132.8	94.3	212.2	172.4	88.6			
Honduras						16.7	23.1	31.9	51.7	38.7	41.4
Jamaica		79.8	31.1	67.1	49.8	37.8	41.5	28.4	19.1	5.7	
Mexico	51.4	38.5	32.6	28.8	27.5	23.8	18.3	13.8	17.1	16.1	
Peru		17.9	14.0	14.2	12.2	7.9	11.5	10.6	11.6	6.8	9.4
Trinidad and Tobago	160.9	50.4	36.4	31.0	37.0	34.0	26.8	32.2	24.6	26.3	30.2
U.S.A.	74.6	45.3	43.2	42.6	41.2	35.7	34.6	32.3	31.1	29.1	26.9
Venezuela	61.7	34.4	26.4	19.5	15.1	14.3	9.9	13.4	13.2	10.4	11.0

*Data from questionnaire prepared specially for this study.

TABLE 6—Death rates for syphilis, all stages, per 100,000 population, by country, 1950, 1960-1969.*

Country	1950	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Argentina ^a	2.6 ^b	1.3	1.4	1.6	1.4	1.6	1.4	1.6	1.5		
Barbados ^c	61.0	10.3	10.7	12.5	11.4	10.4	5.3	5.3	9.3	2.8	
Canada	2.7 ^b	1.0	0.9	0.7	0.6	0.5	0.5	0.4	0.3	0.4	
Chile	6.6 ^b	2.3 ^b	2.5 ^b	1.9 ^b	1.5	1.8	2.0	1.6	1.5	0.9	
Colombia	5.0 ^b	1.5 ^a	1.3 ^b	1.2	1.1	1.1	1.2	1.2	1.1		
Costa Rica	6.0 ^b	1.0	1.1	0.6	0.9	1.3	1.3	0.8	0.4	0.4	
Cuba		1.4	1.9	1.6	1.6	1.5	1.5		0.5 ^b		
Dominican Republic	6.8 ^a			1.1	1.3	0.5	1.2	1.6	2.6	2.4	2.0
Ecuador ^d	2.0 ^b	1.1	1.0	1.0	1.0	0.6	0.4	0.6	0.7		
El Salvador	16.5 ^b	3.0	3.0	3.0	0.8	0.8	0.5	0.2	0.6	0.4	0.5
Guatemala	1.8 ^b	0.1	0.2	0.1	0.1	0.4	0.2	0.2	0.1		
Guyana		1.8 ^b			0.2 ^b						
Haiti											
Honduras		0.2	0.2	0.3	0.4	0.2	0.1	0.3	0.4		
Jamaica	34.9 ^b	7.5	8.2	7.6	6.0	5.7	5.1	4.4	5.6	3.2	
Mexico	7.3 ^b	1.9	1.4	1.3	1.1	1.2	0.7	0.6	0.6	0.5	
Nicaragua ^e	0.2 ^b	0.1	0.4		0.3		0.1	0.1	0.1		
Panama ^a	3.9 ^b										
Paraguay	20.1 ^b	2.9	3.1	2.7	3.1	3.8	3.5	3.2	1.6	3.5	
Peru		0.5	0.4	0.3	0.5	0.4	0.3	0.3			
Trinidad and Tobago	7.8 ^b	5.2	5.0	4.6	4.3	4.2	3.3	2.5	2.3		
United States of America	5.0	1.6	1.6	1.5	1.4	1.4	1.3	1.1	1.2		
Uruguay	13.4 ^b		3.7 ^b		2.7 ^b	2.8 ^b	3.0 ^b	2.8 ^b	2.5 ^b	2.0 ^b	
Venezuela	14.8	2.6	2.0	2.3	1.8	1.6	1.6	1.3	1.1	0.9	

* Data from questionnaire prepared specially for this study.

^a1952.^bOfficial country reports to PAHO.^c1951.^d1954.^e1955.

reported the highest rates (0.5 in both) and Guatemala and Nicaragua, the lowest (0.1). In the Caribbean area, the rate varied from 3.2 in Jamaica to 0.5 in Cuba. In South America, Paraguay reported the highest rate (3.5) and Ecuador the lowest (0.7).

In most countries the decrease in syphilis mortality from 1950 to 1960 continued between 1960 and 1969.

Figure 2 shows the trend in death rates for the three regions of the Hemisphere, 1956-1967.

Infant Mortality from Syphilis

Mortality rates from syphilis per 100,000 live births, for 1969 or the most recent year for which data are available, show that Paraguay recorded the highest (97.0) in 1968. No infant

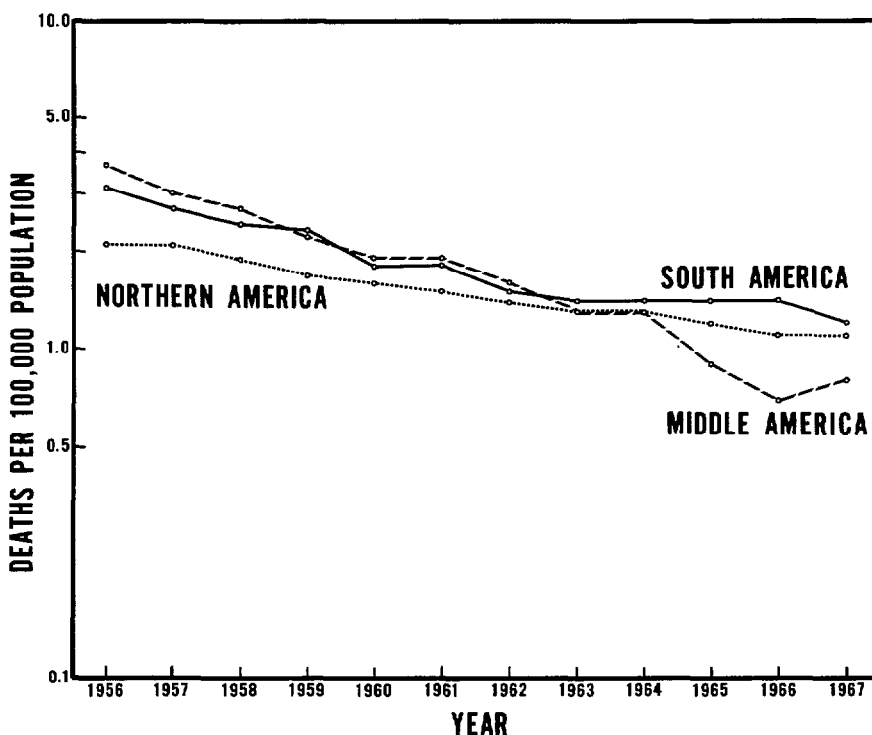
deaths from syphilis were reported in Barbados, Canada, Costa Rica, and Trinidad and Tobago in the last year for which data were reported.

Only Barbados and the United States of America presented data comparable for 1950 or 1951 and 1960. Both countries showed a decrease, 95 per cent in Barbados and 88 per cent in the United States.

For the period 1960-1969, five countries recorded a rise in infant mortality from syphilis, with the greatest increase recorded in the Dominican Republic (173 per cent) and the smallest in Colombia (66 per cent). The sharpest decline was in Mexico (70 per cent).

The foregoing data suggest that, despite the downward trend, infant mortality from syphilis continues to be a problem in many countries, reflecting the deficiencies in maternal and child care programs.

FIGURE 2—Deaths from syphilis per 100,000 population in the three regions of the Americas, 1956-1967.



Recorded Morbidity for Gonorrhea

Gonorrhea continues to increase in incidence, reaching epidemic proportions in some countries and constituting the principal venereal disease problem in many areas.

In 1969, or the most recent year reported, for each reported case of early syphilis there were 73 cases of gonorrhea in Jamaica, 29 in Canada, 23 in the United States of America, 16 in Argentina, 10 in Colombia and Mexico, 8 in Ecuador, 6 in Peru, 3 in Nicaragua, and 2 each in El Salvador, Honduras, and Uruguay.

The rates per 100,000 population in Northern America were 128.6 in Canada and 263.2 in the United States. In Middle America, they ranged from 199.2 in Costa Rica to 20.2 in Mexico. In the Caribbean area the highest rate (2,147.2) was recorded in Jamaica, and the lowest (2.9) in Cuba. In South America, the range was 269.5 in Venezuela to 5.0 in Bolivia (Tables 4 and 7, Figures 3 and 4).

The trend from 1950 to 1960 was downward in 10 countries (Bolivia, Canada, Costa Rica, El Salvador, Haiti, Mexico, Panama, Trinidad and Tobago, United States of America, and Venezuela). The sharpest decline was in Bolivia (94 per cent) and the smallest in Haiti (20 per cent). In five countries (Colombia, Dominican Republic, Guyana, Peru, and Uruguay) increases in the rates ranged from 161 per cent in the Dominican Republic to 16 per cent in Peru.

In 11 countries (Argentina, Barbados, Dominican Republic, Guyana, Haiti, Honduras, Jamaica, Mexico, Panama, Peru, and Uruguay), the rates for gonorrhea in 1969 were less than in 1960. The decrease ranged from 62 per cent in Mexico to 0.4 per cent in Uruguay.

In the same period, 12 countries (Bolivia, Canada, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Nicaragua, Paraguay, Trinidad and Tobago, United States of America, and Venezuela) recorded an increase. The greatest increase was observed in Ecuador and the lowest in El Salvador.

These figures indicate that the problem of

gonorrhea is out of control and that a concerted effort must be made to find solutions.

Other Venereal Diseases

Tables 8, 9, and 10 show the reported cases of granuloma inguinale, lymphogranuloma venereum, and chancroid in 1950 and 1960-1969.

Granuloma inguinale is relatively rare and in general is on the decrease. In 1969 the largest number of cases (168) was reported by Colombia.

The same trend is observed in regard to lymphogranuloma venereum, even though the total number of cases is somewhat higher. Reported cases were highest in the Dominican Republic (722).

Chancroid, on the other hand, still constitutes a problem. In 1969 the rates ranged from 75.1 in Honduras to 0.1 in Bolivia and Uruguay.

In 1969 the highest ratio of chancroid cases to each reported case of early syphilis (0.5) was recorded in Venezuela and in El Salvador. The ratio in Honduras in 1967 was 1.2.

CONTRIBUTORY FACTORS IN THE RECRUDESCENCE OF VENEREAL DISEASES

The worldwide recrudescence of venereal diseases has occurred despite the efficacy of modern control techniques and the availability of treatment that is both effective and easily administered.

It is essential to identify the causes of this apparent paradox so as to organize, or accelerate, national control programs based on the elimination or reduction of the factors responsible for or contributing to the incidence of venereal diseases. In view of the importance of these diseases as a health problem and their impact on society, such programs should be developed on a systematic and continuing basis.

The present paradox—involving an increase instead of a decrease in incidence, in spite of the effective treatment available—has come about in a changing environment characterized by:

TABLE 7—Morbidity rates for gonorrhea, per 100,000 population, by country, 1950, 1960-1969.*

Country	1950	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Argentina		72.4	36.5	43.6	47.1	49.8	23.6	26.5	36.4	30.3	33.6 ^a
Barbados		1,344.6	930.0	1,008.5	992.8	1,108.3	867.2	775.7	900.4	1,026.5	845.3
Bolivia	52.8	2.9	3.3	0.9	1.6	1.8	6.9	4.1	3.1	3.0	5.0
Canada	117.4	87.4	90.1	95.1	102.6	107.0	104.3	107.1	110.6	108.5	128.6
Chile			52.0	20.2	16.8 ^a	10.6 ^a					
Colombia	91.5	182.3	218.2	212.8	192.9	191.6	194.0	178.5	178.4	215.2	215.8
Costa Rica	267.9	107.2	156.5	156.4	150.2	160.9	120.0	116.9	150.9	153.0	199.2
Cuba		0.2	3.1	12.7	10.9	11.6	9.1	8.5	4.6	3.0	2.9
Dominican Republic	283.2	740.0	...	578.3	491.3	466.0	386.0	355.6	296.2	399.2	403.2
Ecuador		0.5	2.4	10.4	8.8	8.4	9.0	7.0	9.0	19.1	31.7
El Salvador	266.0	137.9	118.9	142.9	160.0	106.5	114.4	116.6	108.1	160.3	148.4
Guatemala		54.8	90.1	111.8	79.3	76.0	73.0	76.7	80.8	77.4	94.8
Guyana	276.7	518.8	408.6	995.1	954.8	1,136.9	1,163.2	1,208.1	333.1		
Haiti	155.8	124.5	124.7	92.8	94.7	84.5	87.3	68.2	79.0	58.1	
Honduras		245.2	277.4	233.8	153.8	383.0	233.3	225.4	214.6	198.4	180.9
Jamaica		2,436.0	2,384.0	2,125.6	1,830.5	1,756.5	1,826.5	1,871.4	2,088.0	2,147.2	
Mexico	89.0	53.0	52.4	51.5	47.1	44.5	38.7	25.8	29.5	25.9	20.2 ^a
Nicaragua		52.7 ^a	70.6 ^a	52.6 ^a	40.8 ^a	121.6 ^a	90.9 ^a	126.9	171.6	119.8	171.4
Panama	496.5	58.2	44.1	43.1	55.6	51.9	32.2	51.8	34.8	36.7 ^a	32.7 ^a
Paraguay			28.7	35.4	24.8	20.1	16.2	18.3	22.8	21.1	33.1
Peru	62.5	72.6	64.7	73.2	78.4	70.6	71.6	51.8	50.2	51.3	50.8
Trinidad and Tobago	959.8	561.0	573.2	692.2	863.4	834.1	873.2	735.5	842.6	854.1	840.5
United States of America	188.3	143.3	143.8	141.3	146.9	156.5	167.0	178.6	203.3	230.9	263.2
Uruguay	126.2 ^a	156.9	149.1	146.5	160.6	179.2	154.3	155.1	150.1	200.4	156.2
Venezuela	198.6	108.1	179.7	182.1	176.5	182.5	186.3	218.4	246.8	269.5	269.5

* Data from questionnaire prepared specially for this study.

^aOfficial country reports to PAHO.

FIGURE 3—Reported cases of gonorrhea per 100,000 population in South America and Northern America, by country, 1960-1969.

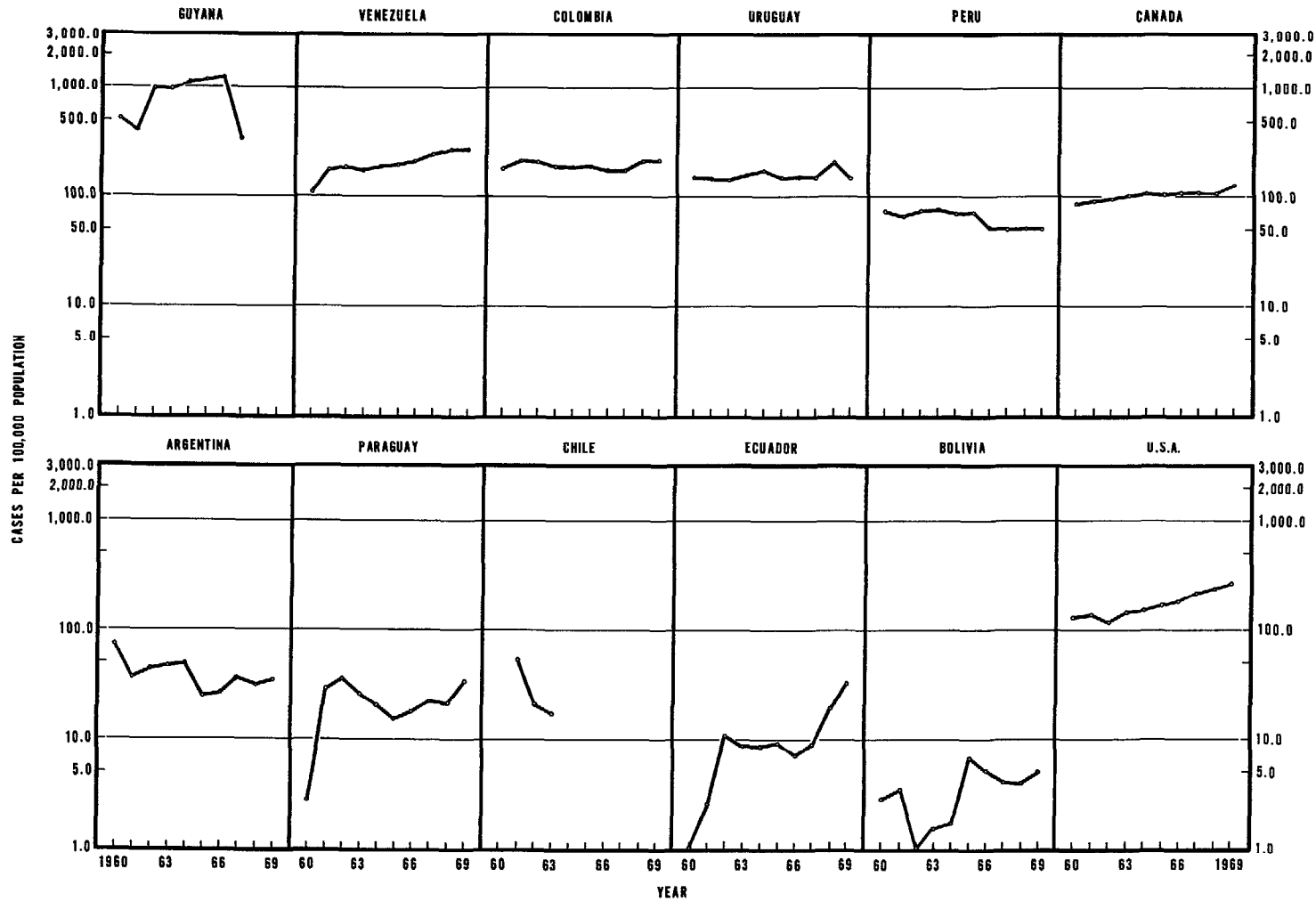


FIGURE 4—Reported cases of gonorrhea per 100,000 population in Middle America, by country, 1960-1969.

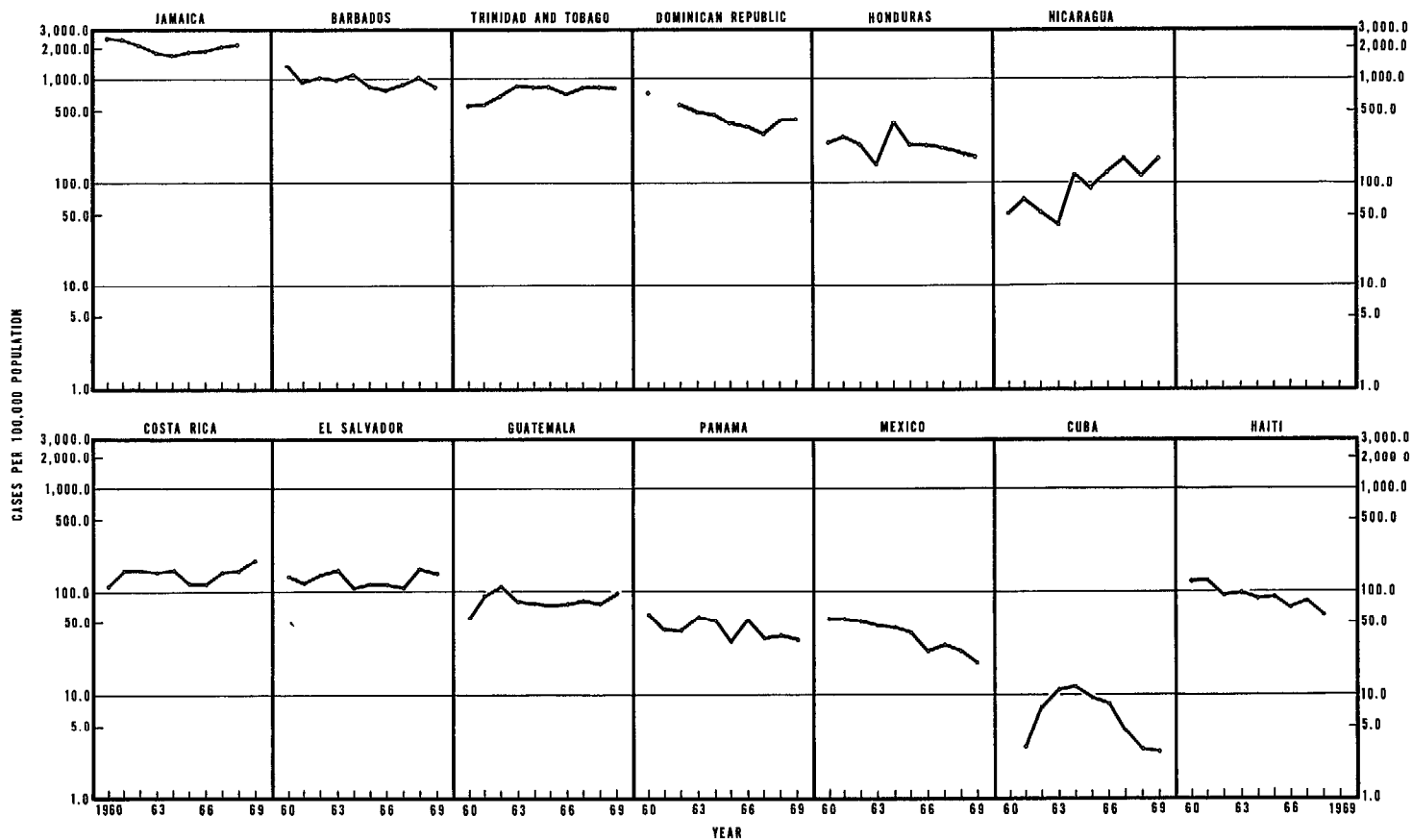


TABLE 8—Cases of granuloma inguinale, by country, 1950, 1960-1969.*

Country	1950	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Canada	0	0	0	0	0	0	0	0	1	0	0
Colombia	253	317	191	129	274	85	92	72	139	144	168
Costa Rica		0	0	0	0	0	0	0	0	0	0
Cuba										1	
Dominican Republic	0	0		0	0	0	0	0	0	0	0
Ecuador		0	0	0	0	0	0	0	0	0	0
El Salvador	0	0	0	9	32	126	0	0	0	0	0
Guatemala		2	0	0	0	3	9	4	2	24	10
Guyana	48	135	321	108	39	325	456	309	367		
Honduras		3	2	16	5	10	7	21	26	24	11
Jamaica		143	137	133	89	55	65	69	51	57	
Mexico		0	0	0	0	0	0	0	0	0	0
Nicaragua								13			22
Paraguay			1	3	1	2	2	5	3	0	0
Trinidad and Tobago	39	2	4	6	3	2	2	0	1	7	2
United States of America	1,783	296	241	207	173	135	155	148	154	156	154
Venezuela	84	72	55	42	29	31	30	31	45	22	26

* Data from questionnaire prepared specially for this study.

TABLE 9—Cases of lymphogranuloma venereum, by country, 1950, 1960-1969.*

Country	1950	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Argentina		59	37	29	51	56	60	107	212	91	
Bolivia		1		1	1	1	1	26			1
Canada	3	2	0	0	0	0	1	0	1	2	0
Colombia	722	837	571	749	743	762	863	731	764	653	544
Costa Rica		0	0	1	1	1	0	0	0	0	0
Cuba					1	3	1			1	
Dominican Republic	101	952		901	817	732	750	766	288	679	722
Ecuador		0	0	0	0	0	0	0	0	0	0
El Salvador		181	76	181	168	169	120	169	59	70	53
Guatemala		1	20	9	0	5	4	7	23	64	9
Guyana	3	36	59	15	1	47	51	19	30		
Honduras		60	23	34		34	19	33	45	45	29
Jamaica		481	435	531	376	251	164	48	67	68	
Mexico		19	24	19	17	11	15	16	6	9	
Nicaragua								13	82	23	25
Paraguay			6	4	9	11	0	2	5	6	5
Peru		186	294	306	275	175	669	314	190	172	153
Trinidad and Tobago	64	23	15	12	21	9	18	36	53	35	3
United States of America	1,427	835	787	590	586	732	878	308	371	485	520
Venezuela	253	481	348	288	258	261	210	226	118	118	102

*Data from questionnaire prepared specially for this study.

TABLE 10—Cases of chancroid, by country, 1950, 1960-1969.*

Country	1950	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Argentina		172	79	111	195	145	144	152	184	135	
Bolivia		5	15	5	7	10	58	9	4	4	4
Canada	13	3	3	4	3	2	2	6	1	1	4
Colombia	3,081	3,965	2,472	2,800	2,911	2,542	2,243	1,899	2,377	2,114	1,696
Cuba		20		76	27	6	7	5		2	5
Dominican Republic	1,248	4,484		3,480	2,400	3,446	3,200	3,112	2,385	2,518	1,773
Ecuador		4	21	200	278	165	90	48	105	117	10
El Salvador	1,227	770	1,093	1,425	1,961	2,070	1,899	2,069	1,740	1,865	1,538
Guatemala		1,536	1,980	1,760	1,651	886	1,154	1,245	914	1,052	603
Guyana	64	166		170	664	227	124	52	57		
Haiti		120	328	306	346	427	413	368	439	341	
Honduras		2,068	2,292	2,367	1,119	1,927	1,900	1,749	1,996	1,758	1,874
Jamaica		163	171	198	116	63	75	69	39	46	
Mexico	1,272	869	573	466	318	336	228	471	333	381	
Nicaragua		14 ^a						122	114	477	131
Paraguay			42	72	32	38	21	37	38	24	53
Peru		1,234	1,729	1,880	1,642	1,395	2,168	1,565	749	792	919
Trinidad and Tobago	95	66	29	35	81	51	100	79	59	65	39
United States of America	4,977	1,680	1,438	1,344	1,220	1,247	982	838	784	845	1,104
Uruguay	6 ^a	3	0	1	67	9	12	0	12	84	4
Venezuela	3,038	2,474	2,110	1,357	1,469	2,181	1,841	1,771	1,551	1,464	1,270

*Data from questionnaire prepared specially for this study.

^aOfficial country reports to PAHO.

- The growth and greater rapidity of communications both between and within countries, with more frequent travel for cultural, commercial, and tourist purposes, which has favored the spread of contacts and venereal diseases, these being no longer confined to limited areas;

- Increased urbanization and industrialization, in both the developed and the developing countries, with the consequent mobility of population groups attracted by urban life and new sources of employment within one country and between different countries;

- High birth rates with a great increase in the young population, this being limited in some countries by family planning and population control;

- High population density in certain areas, resulting in overcrowding and a process of homogenization of ideas and cultures, especially among the young, who change traditional ideas and values without fully replacing them, which in turn gives rise to the coexistence of different groups governed by different values and cultural standards within the same community.

In this changing scene, epidemiological and social factors favoring the spread of venereal diseases are intensified, while at the same time the effectiveness of medical action has lessened the fear of these diseases as well as reduced immunity to reinfection, thus further contributing to their spread.

On the other hand, the rise in incidence has brought about an increased demand for control services which is not being adequately met by the health authorities.

In this general framework, various factors influencing the present situation stand out. These may be grouped into behavioral factors and medical and public health factors.

1. Factors Related to Changing Behavior Patterns

Venereal diseases are typical of the so-called behavioral diseases; they continue to spread, despite the adequate control methods and treatment available, because they are rooted in individual and community behavior.

With human conduct playing a predominant role in these diseases, they are closely inter-

related with intellectual, emotional, economic, and sociocultural patterns. Although the effects of these influences on the disease incidence and spread have long been known, few studies have been made to pinpoint the relative importance of each of them, and even fewer to point out ways of controlling venereal diseases by bringing about modifications in behavior.

The changing environment that characterizes the present situation constitutes the ecological background to venereal diseases, in which one or more of the factors influences the balance that can inhibit or facilitate transmission.

The elements most frequently cited as contributing to changes in sexual behavior are increased promiscuity, varying sexual habits, increased sexual activity in the younger age groups, and increased sexual contacts resulting from the increased migration and interchange between population groups and areas.

Promiscuity

Promiscuity is not basically a sexual problem, but rather a manifestation of profound psychic changes. A study made by the U.S. Public Health Service on sexual life in urban and rural environments brought out clearly the common factors in promiscuity which cut across the boundaries of social, educational, and age groups, and those related to ignorance.

Changes in ethical, moral, and behavioral standards resulting from accelerated social, economic, and technological changes have been diffused with great rapidity and have, in turn, led to increased sexual activity. The transition from rural to urban life produces emotionally maladjusted adolescents and destroys basic social institutions, such as the family. It also encourages a promiscuous life among adolescents, subjecting them to an environment in which a large number and variety of social ills can flourish, thereby creating foci of venereal diseases in the large urban centers.

Traditionally, the problem of female promiscuity has been identified with prostitution. Even today, when the type of prostitution that originated in poverty and the need to make a

living has been made illegal or been abolished in principle by international action, it still plays a large part in the spread of venereal diseases, particularly gonorrhea, in many countries. In the region of the Western Pacific, a great many countries reported that more than 80 per cent of the infection in males can be traced to this source.

According to the questionnaire replies, prostitution in the Americas is regulated in five countries and two territories (Ecuador, Guatemala, Honduras, Panama, Uruguay, and the Bahamas and the Netherlands Antilles). It has been eradicated in Cuba, and in seven countries it is illegal (Canada, El Salvador, Guyana, Mexico, Paraguay, Trinidad and Tobago, and the United States of America). In the remainder it is tolerated, whatever may be its legal status. Nevertheless, of the seven countries that reported prostitution to be illegal, one (Guyana) commented that it exists in fact, while in Mexico there appears to be a provision under which the municipalities may tolerate it; and in Trinidad and Tobago, although it has been outlawed, it is reported to play a major role in the spread of venereal diseases.

Nine countries (Colombia, Costa Rica, Dominican Republic, El Salvador, Honduras, Nicaragua, Peru, Trinidad and Tobago, and Venezuela) consider prostitution to be an important factor in the spread of these diseases, and Costa Rica holds it responsible for 80 per cent of the problem.

Only Cuba, Jamaica, and the United States of America reported that prostitution plays little if any part in the venereal disease problem.

These data suggest that in general prostitution is in itself still a problem, as well as an important factor in the spread of venereal diseases, and that it is probably being overlaid with new aspects of clandestine sexual traffic within a changing social ecology.

Following the postwar period, prostitution reappeared in the developed countries, as well as in many of the developing ones, with changed characteristics attributable to improved social and economic conditions,

industrialization, and emancipation of women, and stimulated by the search for pleasure and the benefits and luxuries of a more prosperous society. Hence, this intensification of hidden sexual traffic is a reflection of higher income and an increasingly complacent attitude toward sexual freedom. It is stimulated by communications media and consumer-oriented advertising and has its roots in mental aberrations, hereditary factors, traits of ethnic and other minority groups, and family and educational background which give rise to social dislocations and impair the individual's ability to face the complexities of modern life.

Whether it is a question of commercialized promiscuity or of promiscuity stimulated by sexual behavior changes stemming from the other causes discussed, it has been suggested that the introduction and use of contraceptives—especially oral contraceptives—has contributed to increased sexual activity and the consequent spread of venereal diseases.

Few studies have been made to explore this problem, and most of the opinions offered are subjective. However, one study made in Upsala, Sweden, in 1967-1968 revealed that among gonorrhea patients and their contacts, 70 per cent of the female students and 51 per cent of the female non-students were using contraceptive pills, while the corresponding percentages in 1966 were 48 and 18, thus evidencing a considerable increase in use of the pill. What is even more significant, the average number of sexual partners was 36 per cent higher among the group using the pill than in the one not using it. Also, the average frequency of sexual contact in the first-named group was 47 per cent higher than in the second. After beginning to use oral contraceptives, 36 per cent of the women increased the frequency of sexual relations and 25 per cent increased the number of partners.

If the results of this study were generalized, we would have to accept the fact that the use of oral contraceptives has led to increased promiscuity and greater risk of contracting venereal disease, with the frequent change of partners multiplying the risk even further.

In the replies to the PAHO questionnaire, only two countries indicated that use of contraceptives might cause the promiscuous woman to expose herself more frequently. The lack of replies on this point indicates the scarcity of precise information that can be generally applied to factors relating to behavioral changes. In effect, 14 countries responded in one way or another to the question: What role is played in the dissemination of venereal diseases by changes in standards of conduct observed in the last decade? Not one country was able to describe such effects or to supply objective data.

Increased Sexual Activity and Venereal Diseases in Younger Age Groups

It is evident that the increase in sexual activity among younger groups and in the number of contacts is influenced by psychological, educational, and sociocultural factors that encourage greater promiscuity.

While in some countries there is still the belief that venereal diseases are not a problem among the young, in most regions of the world they appear to be increasing among adolescents and the under-20 age group, and in many instances this increase has been held responsible for the recrudescence of these diseases. Reports from the different countries do not agree in their conclusions. If we consider that the number of persons now seeking treatment has increased and that only the conduct of those who do seek treatment is known, it is difficult to affirm that the current situation is due to changes in the sexual behavior of the young.

Nevertheless, in countries where this increase in the under-20 age group has been observed, the contributing factors seem to be: early maturity; industrialization and urbanization—with young people attracted to the cities where they are free of family control, and live in crowded housing; youth's rebellion against the authoritarian ideas of their parents and teachers; and society's greater complacency toward sexual relations.

An increase in venereal diseases in the

under-20 age group has been observed in the United States of America, where rates for early syphilis in that group rose from 10.1 to 24.2 per 100,000 population between 1956 and 1965. Increases have also been recorded in Canada, the Federal Republic of Germany, France, Italy, and the Scandinavian countries.

Five countries of the Americas (Ecuador, Mexico, Peru, United States of America, and Venezuela) submitted comparable data for 1960 and 1968 or 1969 on early syphilis incidence in the age groups 10-19 and 15-19 years.

Comparing the percentage differences in the rates for these groups and those for all ages in the same years, we find that in Mexico, where the decrease was general, the rates for males and females in the 15-19 group declined less (9.3 and 18.7 per cent) than those for all ages (28.4 and 30.0 per cent).

In Peru the decrease in rates for all ages was 17.9 per cent, and in the 10-19 age group only 3.7 per cent.

In the United States of America, despite the aforementioned increase between 1956 and 1965, a comparison of the figures for 1960 and 1968 also shows that there was a decrease of 10.3 per cent in the 15-19 age group for males, while for females there was an increase of 5.7 per cent. The rates for all ages decreased 2.4 per cent in males and increased 27.2 per cent in females.

In Venezuela the increase for males in the 10-19 group was 53.1 per cent, while that for all ages was 10 per cent. In females, where an increase was also recorded, it was greater for all ages (351.7 per cent) than for the 10-19 group (192.3 per cent).

In Ecuador, in the same age group, there was an increase of 66.2 per cent in males and 61.2 per cent in females.

The foregoing data are not consistent, since in the countries where there was a decrease this was in general smaller among the young groups of both sexes, and in Venezuela, where there was a very marked increase in both sexes (and especially in women of all ages), the increase observed among the young was smaller.

Only two countries, the United States of America and Venezuela, can be used to study the trends of gonorrhea infection in the younger groups. In both countries the rates for both sexes and all age groups increased. The United States reported increases of 74.2 per cent for males and 35.1 per cent for females, while the corresponding figures for Venezuela were 160.8 and 161.8 per cent. But the increase in the 15-19 group in the United States was lower, 62.9 per cent in males and 26.7 per cent in females; while in Venezuela the increase of 160 per cent in males and 161 per cent in females for the 10-19 group is virtually the same as that observed for all age groups.

The available data, therefore, are not such as to permit general conclusions about the increase in sexual activity and venereal diseases among the younger age groups.

Influence of Homosexuality

In recent years male homosexuality has gained in importance in the transmission of infectious syphilis in many of the developed countries, where a large proportion of primary infections occur in this group. This is in contrast to the traditional belief, still prevalent in many of the developing countries, that homosexuality plays a very small part in the spread of venereal disease.

Data available from some studies made in European countries, the United States of America, Canada, and Ceylon indicate that different groups of patients who have contracted infectious syphilis identify male contacts in percentages ranging from 8.4 to 93.5. The average shown in these studies is around 20-25 per cent, and this includes the data from a survey conducted by the American Social Health Association in 1965-1966. There are no figures of this kind for other parts of the Americas, and the questionnaire replies indicate that no country in the Hemisphere could supply any objective information.

It is significant to note that homosexual prostitution results more from the desire for money and from immorality than from intersexuality, and that homosexuals also have

heterosexual contacts, and thus play a significant role in the spread of venereal disease to other groups.

Population Mobility

Increased population mobility—with the greater number and frequency of contacts between groups in different countries and in different areas of the same country—is another of the factors contributing to the venereal disease recrudescence.

The increase in business travel, tourism, workers' migration, and cultural exchange, as well as the attraction exerted by urban, industrialized centers, multiply human contacts and the opportunities for sexual contact, and thus play a significant role in the spread of venereal disease.

Indicative of the importance of the problem is the fact that in Sweden 24 per cent of recent syphilis cases acquired the infection abroad, while in the United Kingdom 40 per cent of infected males and 60 per cent of the seamen treated at English ports contracted the disease outside the country.

2. Medical and Public Health Factors

The introduction of penicillin in the treatment of venereal diseases, its widespread use, and the results initially obtained changed the public attitude toward this group of diseases. Fear of their consequences was replaced by a certain lack of concern on the part of the public, and led to a false sense of security among health authorities.

Government interest in control programs began to decline, and in almost every part of the world the majority of venereal disease patients came to be treated by private physicians. The simple, rapid treatment thereby passed out of the hands of trained venereologists to the general practitioners, and the idea was lost that the latter required any special preparation for the new task. Accordingly, their training for the new responsibility is largely deficient because the changing image of these

diseases was reflected in the medical schools, where instruction in this field either deteriorated or was neglected.

Nevertheless, the private physician's role in the diagnosis and treatment of venereal diseases is extremely important, and must continue to be so, if the work of investigating contacts and educating the patient and the community in prophylaxis is to be carried on.

The proportion of patients who resort to private physicians and receive treatment from them depends on social and economic conditions, the availability of public services, and the attitudes of the public.

The percentage treated by private physicians varies in the different countries according to the organization of the health services and the coverage they provide. In the United Kingdom, where there is a single health service, more than 75 per cent of the patients receive treatment in public clinics. In Scotland, 90 per cent of the gonorrhea patients are treated in public services.

In contrast, in the United States of America private physicians treat 10 times more cases than the number actually reported.

The availability and ease of administration of the treatment encourages self-medication as well as treatment by nonmedical people of all types (pharmacists, healers, amateurs, etc.). Unrestricted dispensing of antibiotics, which is the practice in many countries, contributes to this situation.

Antibiotics can be obtained without medical prescription in 15 countries of the Americas (Bolivia, Chile, Colombia, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela).

Although there is no evidence that the treponemicidal efficacy of penicillin has diminished, the maximum that may be expected from individual therapy seems to have been reached. At the same time, it is known that many strains of *Neisseria gonorrhoeae* in various parts of the world are showing increasing resistance to penicillin and other antibiotics, and for this reason its treatment is becoming

more complex, requiring specialized and up-to-date knowledge in the selection of drugs and treatment schedules.

Preventive effects that might have been derived from use and overuse of antibiotics in the first decade after their introduction—if in fact this was the case—seem to have disappeared. In the case of syphilis, the prescribed treatment eliminates relative immunity, leads to reinfection of individuals in highly exposed groups, and causes changes in the total number of susceptibles.

Eradication or control of yaws in countries where that disease was once prevalent may also have contributed to the increase in the susceptible population.

The initial optimism created by penicillin also led to a de-emphasis of the attention given to control programs. Measures earlier in effect were not continued, or at least new procedures were not developed, nor were adequate funds assigned to the work, since it was no longer viewed as requiring high priority.

With the present recrudescence of the diseases, however, many countries have introduced new programs and have renewed their interest in the control and study of the problem.

STATUS OF VENEREAL DISEASE CONTROL IN THE AMERICAS

Although the complex ecological forces affecting the spread of venereal diseases do not lie within the control of traditional public health measures, and behavioral factors play a central role that makes it essential to promote social and educational techniques based on multi-disciplinary studies, it is nevertheless a fact that venereal diseases continue to be communicable diseases to which the control procedures appropriate to their specific epidemiological behavior can and must be applied.

The methods for the control of gonorrhea and syphilis are well known and easily defined. They consist primarily in early detection and prompt treatment of cases.

In the absence of an immunizing agent, and because of the mode of transmission (venereal contact between infected and noninfected individuals), control depends on the prompt locating of infected persons, especially those in the infectious stages, and their treatment before they become foci of infection.

Control activities must therefore include diagnosis and treatment, case-finding, contact-tracing, and prophylactic measures. For this purpose, it is essential to have a well-organized and dynamic health service, working for the benefit of society.

The successful establishment and operation of control programs depend on a great many factors, and in particular on the attitude of the medical profession, of the authorities and workers in the health services, and of the general community toward those diseases—which will determine the priority accorded to the work and the funds made available for it.

1. Control Programs

Nineteen countries of the Americas (Bolivia, Brazil, Canada, Chile, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Jamaica, Mexico, Nicaragua, Paraguay, Peru, Trinidad and Tobago, United States of America, Uruguay, and Venezuela) report that they have officially organized control programs. Twelve of this group (Brazil, Canada, Chile, Costa Rica, Dominican Republic, Ecuador, Guatemala, Mexico, Nicaragua, Trinidad and Tobago, United States of America, and Venezuela) could identify all or a part of the financial resources allocated for venereal disease control activities. Two countries (Argentina and Honduras), although having no officially organized programs, were also able to report the funds assigned to combat these diseases.

Except for Cuba and Guatemala, all countries with venereal disease programs indicated they had programs for gonorrhea control, and three (Barbados, Guyana, and Honduras) had gonorrhea programs even though they did not report official venereal disease control programs.

All countries except Colombia and Panama reported that they furnished free treatment for syphilis and gonorrhea.

2. Venereal Disease Reporting

The increase in venereal diseases that can be observed in countries with the more highly developed data reporting systems seems to indicate that the problem is universal.

It has frequently been shown that syphilis and gonorrhea are more prevalent than is indicated by available statistics, even in countries having the best notification procedures. Apart from the fact that case notification from all possible sources should be obligatory, every effort should be made to promote timely and efficient reporting.

It is essential to encourage regular notification of all cases diagnosed and treated by private physicians and by private as well as public institutions, both for gonorrhea and for syphilis in each one of its stages.

The lack of information on venereal diseases derives from a series of factors. In many cases patients resort to self-treatment, or to the amateur practitioner, the healer, or to non-medical professionals who do not report the cases they treat. At the same time, the medical profession reports only a small proportion, if they do so at all, of the cases among their patients.

Furthermore, variations in the forms and standards used for classification of syphilis, even within the same country, often make it difficult to compare early syphilis cases reported by one country with the figures for another.

A national survey on venereal disease incidence in the United States of America in 1968 showed that private doctors reported to the health service only about 11 per cent of the infectious syphilis cases, 38 per cent of the cases in other stages, and 11 per cent of the gonorrhea cases. Nevertheless, four out of every five cases reported were treated by private physicians.

Because of the poor reporting, the data on

gonorrhea have little validity; and even though the data for syphilis are more reliable, notification of these cases is also very deficient. In the world survey conducted by WHO, out of 126 countries only 57.2 per cent reported that notification was obligatory.

Complete data on early syphilis since 1950 were available in only 12 countries, eight in Europe and four in the Americas (Canada, El Salvador, United States of America, and Venezuela).

In the replies to the PAHO questionnaire in 1970, 21 countries (Argentina, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Trinidad and Tobago, United States of America, Uruguay, and Venezuela) reported that case notification of venereal diseases to the health authorities is obligatory.

Moreover, notification of positive serologic reactions is obligatory in 11 countries (Argentina, Bolivia, Brazil, Canada, Cuba, Dominican Republic, Honduras, Mexico, Panama, United States of America (all but 12 states), and Venezuela).

Although this picture appears encouraging, examination of the data supplied reveals substantial deficiencies in both quantity and quality, which makes it difficult to describe and interpret the situation.

3. Serologic Examinations

Serologic tests are an important tool in the diagnosis of syphilis and in the search for cases by screening:

Screening procedures tend to lose their value and their cost increases as the incidence of the disease declines. At the same time, they are very useful in highly vulnerable population groups, and most public health authorities and workers consider that they should be used for premarital testing, for pregnant women, as a routine test in hospitals, in health examinations, and in any other groups particularly exposed to syphilis.

The serologic tests most often recommended and considered to be perfectly feasible in a well-organized program are: VDRL as a nontreponemal test for routine use, primarily as a screening technique; and a treponemal test which, being more specific, should be used whenever the diagnosis must be based on the serologic result. The VDRL test is already being employed as a nontreponemal test in all countries of the Hemisphere; Cuba reported that it is using the Kahn test, and Chile and Haiti use both VDRL and Kahn.

Ten countries (Canada, Colombia, Costa Rica, Ecuador, Jamaica, Mexico, Trinidad and Tobago, United States of America, Uruguay, and Venezuela) reported at least one laboratory in the country that performs serologic tests for treponema.

Eleven countries (Argentina, four provinces in Canada, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Panama, Paraguay, Peru, and all but five states in the United States of America) have laws or provisions requiring premarital serologic tests, and in five of the remaining countries (Cuba, Dominican Republic, Ecuador, Haiti, and Venezuela) it is customarily performed.

Serologic tests for pregnant women are required by law or regulation in 14 countries (Bolivia, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Haiti, Honduras, Mexico, Panama, Paraguay, Peru, United States of America, and Venezuela), and such testing is customary in 10 (Argentina, Barbados, Canada, Cuba, Dominican Republic, Guatemala, Guyana, Jamaica, Trinidad and Tobago, and Uruguay).

In Brazil, the tests are made in both premarital and prenatal groups in the maternity hospitals.

In the serologic tests made in 1969 the lowest percentage of positive reactions (2.1) was recorded in the United States and the highest (45) in the Dominican Republic, followed by Jamaica (22.2).

Five countries submitted data on the number of cases treated in 1969 as a result of serologic tests (Bolivia, Ecuador, Jamaica, Mexico, and the United States of America).

4. Diagnosis of Gonorrhea

To date no satisfactory serologic technique is available for detecting cases of gonorrhea. The Gram stain and culture methods are relied upon for diagnosis and detection.

In women, and in particular the asymptomatic cases that constitute the principal reservoir of infection, culture is the basic technique.

The Gram stain is used in all countries of the Americas, but it is applied in all clinics in only 12 countries (Brazil, Canada, Costa Rica, Ecuador, Guatemala, Jamaica, Nicaragua, Peru, Trinidad and Tobago, United States of America, Uruguay, and Venezuela). Thirteen countries have facilities for culture (Brazil, Canada, Costa Rica, Dominican Republic, El Salvador, Guatemala, Nicaragua, Paraguay, Peru, Trinidad and Tobago, United States of America, Uruguay, and Venezuela).

5. Investigation of Contacts

Identification of contacts, their location, examination, and treatment are essential if the spread of the disease is to be halted.

In recent years, particularly in the United States of America, techniques and procedures have been developed and highly encouraging results have been obtained through their application in syphilis control. In contrast, it is much more difficult to trace the infection source and halt transmission of gonorrhea, because of its very short incubation period. Experience shows that control methods must take into account the differences in behavior of the two diseases, and that new methods specifically applicable to gonorrhea must be found.

Whatever the method used or the level of training of the contact-tracing staff, the information collected shows that contact investigation is performed throughout the entire country in 10 countries (Argentina, Barbados, Canada, Costa Rica, El Salvador, Panama, Trinidad and Tobago, Uruguay, United States of America, and Venezuela). In 12 countries it is practiced only in the large cities (Bolivia,

Chile, Colombia, Cuba, the Dominican Republic, Ecuador, Guyana, Jamaica, Mexico, Nicaragua, Paraguay, and Peru).

Nevertheless, only five of the first-named 10 countries (Costa Rica, El Salvador, Trinidad and Tobago, United States of America, and Venezuela) have data available for 1967 and 1968 on the number of primary and secondary syphilis cases interviewed. In the group where interviews are conducted only in large cities, data were submitted by only six countries (Bolivia, Chile, Dominican Republic, Ecuador, Jamaica, and Mexico).

Of the 11 countries that reported the number of primary and secondary syphilis cases interviewed, five also had data for 1960 (Costa Rica, El Salvador, Mexico, United States of America, and Venezuela).

The *contact index*, i.e., the average number of sexual contacts reported for each case of infectious syphilis interviewed, ranged in 1968 from 0.47 in El Salvador to 4.35 in Venezuela.

Comparison of the 1968 contact index with that for 1960 revealed a decrease from 4.11 to 2.58 in Costa Rica, from 0.92 to 0.47 in El Salvador, and from 3.39 to 2.95 in the United States of America. In Mexico and Venezuela it increased from 1.17 and 1.23 to 1.72 and 4.35, respectively. These differences can be interpreted in terms of changes in the number of sexual partners, or in the techniques and ability of the investigators in obtaining names of contacts from the persons interviewed.

The *percentage of contacts interviewed* reflects the ability of the staff to locate them as well as the availability of funds for the work. It varied from 17 per cent in Ecuador to 90 per cent in Costa Rica. A comparison between 1960 and 1968 shows that in Costa Rica there was an increase from 20 to 80 per cent, and in El Salvador from 32 to 84 per cent, while no change occurred in the United States of America. Mexico and Venezuela showed decreases from 50 to 47 per cent and from 75 to 53 per cent, respectively.

The *index of syphilis cases treated*, which is the average number of cases discovered and treated as a result of investigation of contacts

of each infectious syphilis case interviewed, is known only for El Salvador, the United States of America, and Venezuela. It was 0.43 for the United States in 1960 and 0.43 in 1968. Venezuela showed indices of 0.43 and 2.11 in the same years, and El Salvador 0.17 in 1969.

The *index of early syphilis cases treated* (lesion-to-lesion) represents the average number of infectious syphilis cases for each early syphilis case interviewed. In 1968 it ranged from 0.16 in Mexico to 0.72 in Chile. Between 1960 and 1968 it rose in Venezuela from 0.1 to 0.66, and in El Salvador from 0.13 to 0.28; it remained stationary in Mexico, and decreased from 0.27 to 0.22 in the United States of America.

6. International Control Measures

To control the spread of venereal diseases from one country to another, which has always been a concern of the Governments and of international organizations, attention has centered on the epidemiological control of emigrants and tourists, in the venereal disease control centers of the maritime health authorities as recommended by the Brussels Agreement, and on international exchange of epidemiological information. In 1961 there were 387 venereal disease control centers in the Americas.

As to the exchange of epidemiological information, the country replies indicated that in 1969 only Mexico, the United States of America, and Venezuela notified other countries in the Hemisphere of the traced contacts that had their domicile in the country notified. The number of notification forms sent by Mexico was 147, by the United States, 441, and by Venezuela, 22. Mexico sent one notification to countries in other continents, and the United States sent 396.

THE COST OF VENEREAL DISEASES

Even though only in general terms, it is important to have an idea of the burden imposed by these diseases on the community,

so as to arrive at an estimate of the benefit that can be obtained through their control or eradication—a benefit that in turn justifies, in economic terms, the health programs and the resources assigned to carry them out.

The cost of venereal diseases in terms of morbidity was reflected in the estimates given above for new cases of early syphilis and gonorrhea. But in addition to the magnitude of the problem of the acquired infection and its worldwide recrudescence, it is also important to estimate the disability and premature death that may be expected among patients who are not treated.

Considering the present status of technical knowledge and the fact that effective drugs are available for treatment of the diseases, it is difficult, if not impossible on ethical grounds, to conduct studies to measure the varying degrees of disability and death in the treated and untreated groups. Probably the only source of information that could be used for this purpose, either today or in the future, would be the type of classic material collected by Boeck and Bruusgaard in Oslo and the study made in Tuskegee, Alabama.

It has been estimated on the basis of those studies that for every 200 patients not receiving treatment, one will become blind; four will develop dementia; eight, tabes; and seven, cardiovascular syphilis. Untreated syphilis also reduces life expectancy by 17 per cent, and in 30 per cent of the deaths autopsy revealed that the principal cause of death was syphilitic involvement of the cardiovascular or central nervous system.

Apart from the emotional and social problems caused by the disease and measured in terms of human suffering, untreated syphilis results in enormous economic losses because of the expense required to treat the condition and its complications and disabilities, and the diminution of productivity resulting from man-hours of work lost through absenteeism or reduced years of useful life.

It has been estimated that in the United States of America 24,000 patients with syphilitic psychoses interned in mental

hospitals, represent an expense of \$49 million annually. The cost of maintaining 12,200 persons incapacitated by blindness amounts to \$5 million each year, and the loss of man-years due to lowered life expectancy can be calculated as a loss in productivity equivalent to \$48 million annually.

This total of \$102 million, although a substantial sum, represents only a part of the problem; it does, however, serve as an indicator to assess the economic impact of venereal diseases and as a yardstick to measure the benefits obtained by their control.

FUTURE OUTLOOK AND REQUIREMENTS

In the decade of the 1960's venereal diseases, and gonorrhea in particular, have increased to a significant extent and the progress made in controlling them has not been adequate. Medical and public health efforts have been neutralized and outweighed by ecological influences and rapid changes in the physical and social environment that have favored, and are continuing to favor, the spread of these diseases.

All that can be expected of individual therapy for gonorrhea and syphilis seems to have been achieved, and there is little hope that new advances in treatment will effect any change in the situation.

Since these diseases are so intimately related to individual and group behavior, the psychological, educational, and sociocultural factors affecting their spread must be taken closely into account in the control programs. But unfortunately we know only too little about these factors and even less about the processes by which they may be changed.

It is probable that, as a consequence of this situation, venereal diseases will continue to be a national and international problem of importance, unless vaccines are developed and preventive methods or technical measures are found that can offset the effects of the individual and environmental factors now contributing to their incidence. Both aspects need to be studied, and the necessary attention and

funds must be devoted to this purpose.

Health education programs have not so far offered great promise, and new techniques must be designed to produce the required impact on the individuals and groups most at risk. Social and behavioral studies together with epidemiological research are essential if we are to determine with some precision the identity and characteristics of those who are most exposed to risk. Even though epidemiology is showing increasing interest in the psychological and sociocultural factors affecting patients, and some social scientists are becoming concerned in turn with epidemiology, much still remains to be done and very few studies have so far been made to clarify the problem.

The need for coordinated research is imperative, and the importance of behavior in the venereal disease problem is obvious. However, this should not serve as an excuse for neglecting control activities. In the present state of knowledge, these are essential and they must be intensified since, at least in the case of syphilis, they have demonstrated their effectiveness when properly applied.

Accordingly, each country should perfect and develop its control programs, giving them a permanent basis by effectively incorporating them into the health services so as to assure their continuity.

The programs must be based on an assessment of the situation and of the epidemiological behavior of the disease in different communities and sectors of the communities. There must be adequate registration of cases, supplemented by a system of data analysis and interpretation that facilitates surveillance of the disease trends in different areas and different population groups. This is not possible without obligatory notification that is properly enforced, and it is essential that efforts be redoubled to improve the existing conditions.

A program, to be effective, must include the activities necessary to improve the general state of health, to provide specific protection, and to limit the consequences of the disease.

Health education and sex education are fundamental requirements for improving the

general health situation in relation to venereal diseases. Despite the limitations of the available techniques, efforts must be made to extract the best possible advantage from them, to perfect them, and to explore new methods.

Provision of specific protection requires individual and collective prophylaxis, diagnosis and early treatment of cases, and identification of contacts so as to close off the reservoirs and halt or limit spread of the disease.

Research in preventive methods now in progress must be expanded and intensified with the goal of finding a satisfactory syphilis vaccine and immunizing agents or other types of preventive measures for gonorrhea. The study of preventive techniques could be incorporated into programs for family planning and maternal and child care, which at the same time could be used for epidemiological research into behavioral aspects that encourage the spread of the diseases and impede preventive programs.

General health services must be given the necessary facilities for detection, diagnosis, and treatment of patients.

Case-finding is a basic activity that in turn requires epidemiological surveys of cases, investigation of their sexual contacts and their social contacts within the circle of their activities, and serologic studies. Despite difficulties of an economic and cultural order that may arise in many countries, contact-tracing is an indispensable weapon in the fight against syphilis, and no effort should be spared to develop its use. Case-detection through serologic tests has also demonstrated its effectiveness and should be intensified in those population groups that are especially exposed. A combination and coordination of both procedures, using an epidemiological approach, can bring about improved results, with savings in effort and funds. Research must also be intensified in the field of case-detection by serologic testing in order to find a method of screening applicable to gonorrhea.

The combination of clinical examination and laboratory methods now available is satis-

factory for the diagnosis of syphilis, but not for diagnosis of gonorrhea. Research must be stepped up in this field to find a diagnostic method that is simple, rapid, and applicable at any level. The use of *N. gonorrhoeae* cultures in selective media should be generalized as a means of detecting the infection in asymptomatic female reservoirs, and this should be done systematically in prenatal clinics, gynecological wards, and family planning programs.

In many countries private physicians examine and treat the majority of venereal disease patients, and it is therefore most important to bring them into the control programs. Health authorities should enlist the cooperation of medical schools and professional societies in the effort to combat the venereal disease problem. For the same reason, instruction in venereology should be encouraged in medical schools, with comprehensive instruction in clinical, epidemiological, and social aspects, and with the emphasis on the problem warranted by its seriousness and magnitude. It is most urgent to foster continuing education for practicing physicians and to give them the necessary support in performing their vital role in detecting new cases and eliminating foci of infection.

It is also essential to elicit community interest and cooperation in the fight against venereal diseases. The importance of community participation to the success of any control program demands that health authorities make every effort to encourage it. Similarly, the help of private organizations in fostering public support is particularly needed. In countries that have social and community development programs directed toward marginal groups, venereal disease control activities should be made a part of that work.

Epidemiological problems resulting from increased interchange among population groups in the different countries demand a corresponding reinforcement of international cooperation in venereal disease control and the appropriate steps on the part of Governments to make it effective. □

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