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Sexually Transmitted Diseases

Sexually transmitted diseases (STD) refer to a group of diverse diseases that share only one major feature: sexual transmission. Obviously, many diseases, such as streptococcal pharyngitis, measles, and infectious mononucleosis, can be transmitted from one person to another during sexual activity, but should not be classified as STD. Thus transmission during sexual activity or sexual intercourse does not fully define this group of diseases. From a practical point of view, STD should include all infections in which sexual transmission is epidemiologically important. In some groups, such as patients who receive blood transfusions, hepatitis B is not an STD. In others, such as those composed of homosexual men, hepatitis B is a major STD and sexual transmission is a major epidemiological feature of the disease.

All countries in the Region have limited their concept of STD to the traditional venereal diseases including gonorrhea, syphilis, chancroid, lymphogranuloma venereum, and Donovaniasis (granuloma inguinale). In the past decade, the list of STD has grown significantly in both the number of diseases and complexity (Table 1).

STD usually do not cause significant mortality in any age group. In addition, many of the clinical expressions of the infections are mild and innocuous and quite a few may even be asymptomatic. Their importance, as public health problems, however, lies in their ability to produce severe, chronic, debilitating complications. The late manifestations of neurosyphilis and cardiovascular syphilis are well known. Yet new information suggests that some of the other STD may be responsible for equally serious complications. Recent advances have revealed an association between herpes infection and carcinoma of the cervix, and between chlamydial infection and pneumonia in the newborn.

Recently, the relationship between pelvic inflammatory disease (PID) and infertility and ectopic pregnancy has been carefully documented. The role of *Neisseria gonorrhoeae* in the etiology of pelvic inflammation is well known, but chlamydial infections have further magnified the importance of this clinical complex. Data published in the United States reveal that more than 850,000 episodes of PID occur annually, requiring more than 212,000 hospital admissions, 115,000 surgical procedures, and 2,500,000 physician visits.[1] Direct and indirect costs exceeded $1,250 million dollars in 1979.[1] The consequences of PID include infertility, ectopic pregnancy, and chronic pelvic pain and occur in young women (25-34 years of age) during child-bearing years. The attention of public health administrators and plan-

[1]Curran, J. W. Economic consequences of pelvic inflammatory disease in the United States. *Am J Obstet Gynecol* 138:848-851, 1980.

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Table 1. Sexually transmitted diseases.

Disease	Organism
Viral	
Herpes genitalis	Herpes simplex, Type II
Hepatitis B	Hepatitis B virus
Cytomegalovirus infection	Cytomegalovirus
Condylomata acuminatum	Papova virus
Molluscum contagiosum	Poxvirus
Chlamydial	
Chlamydia urethritis	Chlamydia trachomatis (multiple serotypes)
Chlamydia cervicitis	
Pelvic inflammatory disease	
Conjunctivitis	
Pneumonitis in the newborn	
Lymphogranuloma venereum	Chlamydia trachomatis (Serotypes L)
Mycoplasmal	
Urethritis[a]	T-mycoplasma
Cervicitis[a]	
Bacterial	
Urethritis	Neisseria gonorrhoeae
Cervicitis	
Pelvic inflammatory disease	
Donovaniasis (granuloma inguinale)	Donovania granulomatis
Vaginitis	Corynebacterium vaginale
Spirochetal	
Syphilis	Treponema pallidum
Protozoal	
Trichomoniasis	Trichomonas vaginale
Metazoal	
Scabies	Sarcoptes scabiei
Pediculosis pubis	Phthirus pubis

[a] The etiological role of *T. mycoplasma* in urethritis cervicitis is still disputed.

ners must therefore shift from concern with traditional venereal disease incidence to the entire range of STD and their complications.

Epidemiology of STD in the Region

The true magnitude of the STD problem in the Region cannot be assessed. Data on the incidence of all STD are incomplete, out-of-date, or non-existent.

Although many countries maintain statistical data on reported cases of gonorrhea and syphilis, most of them do not provide detailed information to PAHO and none supply information on the occurrence of other STD or on the magnitude of STD complications. In some cases the latest available information is for 1976 or earlier with no reports received since that year.

Table 2 summarizes available data on the reported incidence of gonorrhea by sex for four areas: North America, continental Middle America (including Mexico), the Caribbean, and South America. The year 1978 was picked arbitrarily since it was the latest year with the

Table 2. Reported cases of gonorrhea, by sex, 1978.

Region, country, or other administrative unit	Male	Female	Total[a]
Caribbean			
Antigua	98	40	185
Bahamas	1,185	309	1,494
Barbados	—	—	—
Bermuda	379	208	587
Cayman Islands	—	—	—
Cuba	9,692	517	10,211
Dominica	—	—	31
Dominican Republic	—	—	18,540
Grenada	—	—	—
Guadeloupe	—	—	20
Haiti	—	—	2,007
Jamaica	—	—	—
Martinique	—	—	18
Montserrat	—	—	—
Netherlands Antilles	—	—	—
Saint Lucia	—	—	627
St. Kitts-Nevis-Anguilla	—	—	117
St. Pierre and Miquelon	—	—	—
St. Vincent	—	—	75
Trinidad and Tobago	—	—	2,599
Turks and Caicos Islands	—	—	61
Virgin Islands (UK)	—	—	76
Virgin Islands (USA)	—	—	216
Subtotal	11,354	1,074	36,864
Middle America			
Belize	—	—	—
Costa Rica	4,627	1,742	6,370
El Salvador	—	—	6,354
Guatemala	—	—	2,867
Honduras	—	—	5,996
Mexico	—	—	20,487
Nicaragua	1,332	1,791	3,123
Panama	2,401	1,242	3,643
Subtotal	8,360	4,775	48,840
South America			
Argentina	—	—	15,883
Bolivia	—	—	1,767
Brazil	—	—	—
Chile	—	—	11,068
Colombia	—	—	42,889
Ecuador	—	—	3,489
Falkland Islands	—	—	—
French Guiana	663	302	967
Guyana	—	—	—
Paraguay	—	—	635
Peru	—	—	4,629
Suriname	—	—	—
Uruguay	234	160	1,619
Venezuela	—	—	26,597
Subtotal	897	462	109,543
North America			
Canada	29,485	17,869	48,751
United States	597,639	415,797	1,013,436
Subtotal	627,124	433,666	1,062,187
Total	647,735	439,977	1,257,434

[a] The sum of male and female cases in some countries may not be equal to the total number of reported cases because of non-reporting of some cases by sex.

—Data not available.

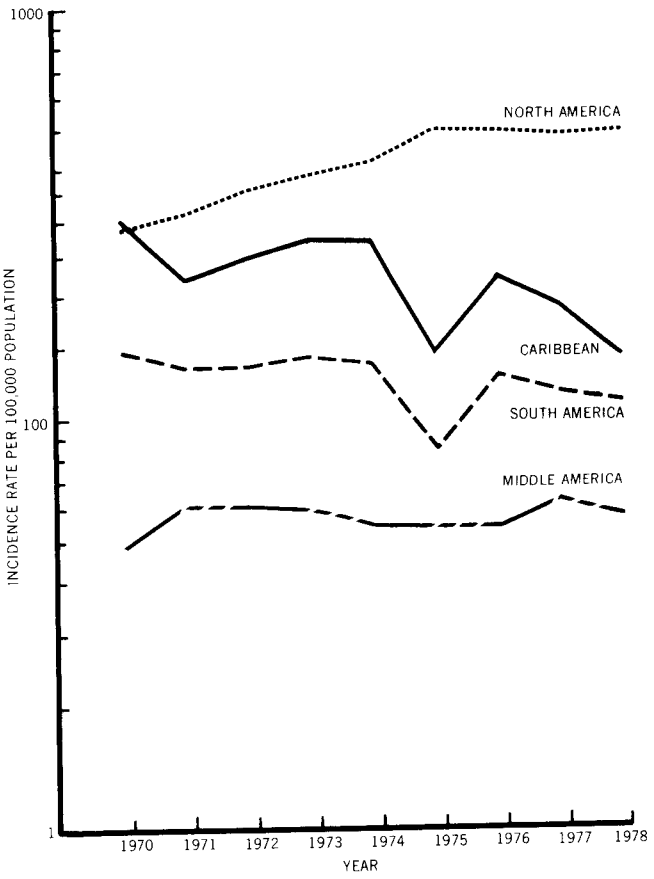
most complete information reported by the greatest number of countries. Several conclusions can be drawn from these and other data:

1. Countries that report by sex consistently show relatively large male to female case ratios, e.g., 10.6:1.0 for the Caribbean; 1.9:1.0 for South America; 1.8:1.0 for Middle America, and 1.4:1.0 for North America. The ratio for the Caribbean is heavily influenced by the data from Cuba (9,692 men vs. 517 women). The ratio is directly related to efforts to detect cases in women who are generally asymptomatic and do not seek care. In the United States and Canada case-finding efforts through culture screening of women at risk result in lower male to female ratios. Very few countries in the Region have initiated programs to diagnose gonorrhea in asymptomatic women, the most vulnerable group for developing PID. Interestingly, two countries, Colombia and Nicaragua, consistently report an excess of female cases.
2. It is impossible to make an accurate analysis without more information other than total cases. Reporting by age and sex is essential. In South America only 1.2 per cent of all cases reported to PAHO were by sex. In the Caribbean, Middle America, and North America the percentages were 33.7, 26.9, and 99.9, respectively.
3. An examination of incidence by age group reveals patterns throughout the Region which are similar to those found in the United States. Gonorrhea is a disease of young people aged 15-34 years.
4. Surveillance systems vary greatly in their completeness throughout the Region. The United States and Canada together reported 1,062,187 cases, or 84.5 per cent of all the cases in the Region. Yet these two countries together have only 40.6 per cent of the Region's total population. It is doubtful that the lack of cases reported from other areas represents a relative absence of disease.

Trends in gonorrhea case rates are presented by area in Figure 1. The rates for North America are heavily influenced by reports from the United States. In North America the increasing trend through 1975 reflects worldwide experience. Vigorous control measures including widespread application of standard, effective treatment, improvements in clinical services, and active case-finding measures stabilized the incidence from 1976 to the present. Trends in other areas are difficult to interpret in the absence of active case-finding efforts among women.

In 1976 the first penicillin-resistant strains of gonorrhea caused by penicilinase (β-lactamase) producing *N. gonorrhoeae* (PPNG) were identified in the Far East. These strains spread quickly and became established in many countries. In North America spread of this isolate was contained and its occurrence was limited to sporadic importations with minor outbreaks. However, during the first half of 1980, the United States reported dramatic increases in PPNG cases which could not be attributed to importation. In Latin America and the Caribbean, only Mexico, Panama, and Argentina have reported a few cases. With these exceptions, nothing is known of the prevalence or distribution of PPNG in these areas.

Figure 1. Trends in reported gonorrhea cases per 100,000 population, by area, 1970-1978.



Syphilis surveillance systems also are incomplete. Although individual countries maintain more detailed information systems, most of the data reported to PAHO are incomplete and do not permit a careful analysis. Assessment of the magnitude of infectious syphilis (i.e., primary, secondary, and early latent less than one or two years' duration) is impossible since in 1978 only 13 of 47 countries reported early syphilis cases. Total syphilis cases were available from reports by 35 of 47 countries and are summarized in Table 3.

Although syphilis reporting is more complete than that of gonorrhea, major discrepancies occur. For example, in South America, Argentina, Chile, Colombia, and Venezuela reported 56,810 cases (85.7 per cent of the

Table 3. Total reported cases of syphilis and rates per 100,000 population, by area, 1978.

Area	No. of cases	Rate
North America	67,764	28.0
Caribbean	26,029	93.6
Middle America	25,123	28.6
South America	66,264	65.3

area total), while no cases were reported by Brasil. The Dominican Republic notified 65.3 per cent of all the cases in the Caribbean.

Age and sex data are too incomplete to draw meaningful conclusions. However, the occurrence of congenital syphilis cases in children less than one year of age may be a good indicator of the seriousness of the problem. Table 4 summarizes available data from a few countries that reported congenital syphilis cases. Major differences in rates may reflect the absence of case reporting, the completeness of the surveillance system, or the severity of the syphilis problem. Cuba and the United States have extensive syphilis control programs and active surveillance systems. Their rates, which are similar, probably reflect accurately the true incidence of congenital syphilis. The high rate in Costa Rica probably results from the revitalization of its STD control program and surveillance system. Comparisons, however, should be made with caution, since the population estimates for the denominators are subject to error.

STD Control

Available control technology consists of early, effective treatment of infected individuals and their sexual partners. Measures for case-finding include provision of acceptable, accessible health care services, screening programs for populations at high risk, contact-tracing services, and STD education for patients, sexual partners, at risk groups, and health care providers. The widespread use of standardized treatment schedules for diseases that can be easily treated must be stressed.

These technologies should be focused, adapted, and implemented to prevent STD complications. This is best accomplished by preventing disease transmission, but interruption of disease transmission is not a prerequisite for eliminating or reducing complications. For example, congenital syphilis and gonococcal ophthalmia neonatorum can be eliminated through specific preventive measures, that is, prenatal serologic screening and administration of silver nitrate or antibiotic prophylaxis at birth, respectively. Gonococcal PID can be prevented in part by early treatment of asymptomatic infected women.

In the Region of the Americas, only Canada, the United States, Costa Rica, and Cuba have implemented programs of national scope to control STD. In the United States, the national program focuses essentially on gonorrhea and syphilis. In Latin America and the Caribbean, control programs are spotty and limited generally to a few large cities, and depend on the interest and enthusiasm of a few clinical and public health leaders. They have been restricted, for the most part, to very selective interventions, such as prostitute screening and treatment for syphilis and antenatal serologic testing to prevent congenital syphilis.

The entire STD problem in areas of the Caribbean, Middle America, and South America needs careful epidemiological investigation in order to identify the magnitude of the problem and the population groups at risk. With ever-increasing urban populations and concomitant changes in social and cultural behavioral patterns, STD control efforts can no longer focus on traditional prostitute control programs nor can they be limited to selected activities for one or two diseases.

(*Source:* Communicable Disease Control, Division of Disease Prevention and Control, PAHO.)

Table 4. Reported cases of congenital syphilis[a] under 1 year of age and rates per 100,000 population for selected countries, 1970–1979.

Country		1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Bolivia	Cases		12	24	13	15	23	29			
	Population[b]		190,700	195,600	200,800	206,000	211,000	212,000			
	Rates		6.3	12.3	6.5	7.3	10.9	13.7			
Colombia	Cases	66						225	422	436	29
	Population[b]	740,900						763,300	785,700	794,995	8,171
	Rates	8.9						29.5	53.7	54.8	35
Costa Rica	Cases						49	51	59	69	
	Population[b]						52,620	53,895	58,362	68,160	
	Rates						93.1	94.6	101.1	101.2	
Cuba	Cases	6	5		17	11	8	8	10	10	
	Population[b]	232,500	236,390		236,997	237,281	186,056	188,690	191,320	193,800	
	Rates	2.6	2.1		7.2	4.6	4.3	4.2	5.2	5.2	
Mexico	Cases	46	36	34	29	27		15			
	Population[b]	2,064,000	2,134,000	2,209,000	2,041,000	2,277,000		2,447,140			
	Rates	2.2	1.7	1.5	1.4	1.2		0.6			
United States of America	Cases	345	451	383	314	270	180	167	144		
	Population[b]	3,503,000	3,579,000	3,261,000	3,081,000	3,066,000	3,076,000	3,027,000	3,171,000		
	Rates	9.8	12.6	11.7	10.2	9.0	5.9	5.5	4.5		

[a] All reported cases of syphilis under 1 year of age are assumed to be congenital syphilis.
[b] PAHO estimate.

Diseases Subject to the International Health Regulations

Cholera, yellow fever, and plague cases and deaths reported in the Region of the Americas up to 28 February 1981

Country and administrative subdivision	Cholera Cases	Yellow fever Cases	Yellow fever Deaths	Plague Cases
BOLIVIA	—	—	—	2
La Paz	—	—	—	2

—None.

Cancer in Puerto Rico, 1978

The Central Cancer Registry (CCR) is a Section of the Cancer Control Program of the Puerto Rico Department of Health. All cancer cases diagnosed in hospitals, clinics, and private offices of physicians in Puerto Rico are registered and analyzed. The CCR maintains a systematic search for all cancer cases in the island. The Act requiring the reporting of cases is used only as a legal mechanism for the protection of physicians and hospitals, and the CCR pays the expenses for the collection and processing of data on practically all cancer cases and their follow-up.

The publication on which this summary is based contains many tables and figures giving detailed information on cancer cases according to site, sex, age, etc., as well as other data that would be helpful in further analyses.

Between 1950 and 1969 the Registry used the *International Classification of Diseases* (Seventh Revision) and the 1953 *Manual of Tumor Nomenclature and Coding* of the American Cancer Society (ACS). Between 1970 and 1975 it used the 1968 *Manual of Nomenclature and Codification of Tumors* of the ACS, and since 1976 it has been using the *International Classification of Diseases for Oncology (ICD-O)*.

If more than one primary tumor is detected in the same person, each tumor is registered as a different case. Every record of the CCR consists of four basic documents: a clinical abstract, a copy of the pathologist biopsy report; one or more follow-up forms with the latest information, and, in cases of deceased patients, a copy of the death certificate.

Of the cases diagnosed in 1978, 8.9 per cent of the records contained a death certificate only, and 91.1 per cent had a clinical abstract and/or a biopsy report. In 88.3 per cent of the cancer cases, the first document received at the CCR was a clinical abstract or a biopsy report.

Incidence

The report *Cáncer en Puerto Rico, 1978* includes all new cancer cases diagnosed in residents during that year, except basal cell and squamous cell carcinomas, unspecified epithelial, and non-specific histological types of skin tumors. Prior to 1975 data were published on these skin tumors.

The estimated population of Puerto Rico as of 1 July 1978 was 3,356,700 inhabitants: 1,644,500 men and 1,712,200 women. During that year, 5,498 new cases of cancer were diagnosed, as compared with the annual averages of 4,396 for the period 1970-1975, 3,179 for 1960-1962, and 2,206 for 1950-1952. The crude incidence rate for both sexes was 163.8 per 100,000 population, 171.0 for males and 156.9 for females (Table 1).

In men the risk of developing cancer of the prostate predominated, and was followed by cancer of the lung, stomach, mouth, esophagus, urinary bladder, colon (except rectum), pharynx, larynx, and lymphomas (Fig. 1). In women the risk was higher with respect to cancer of the cervix-uteri (including carcinoma in situ), followed by cancer of the breast, stomach, colon (except rectum),

Table 1. Comparison of cancer incidence rates in 15 common organs in both sexes, Puerto Rico, 1978.

Site	Crude rate		Ratio
	Male	Female	M/F
All sites	171.0	156.9	1.1:1
Larynx	6.9	0.9	7.7:1
Pharynx	8.0	1.5	5.3:1
Oral cavity	12.2	3.4	3.6:1
Nervous system	2.9	0.8	3.6:1
Lung	16.3	5.4	3.0:1
Esophagus	12.0	4.2	2.9:1
Urinary bladder	8.8	3.4	2.6:1
Liver	3.6	2.0	1.8:1
Stomach	16.1	9.9	1.6:1
Lymphomas	8.1	5.6	1.4:1
Leukemias	5.9	4.7	1.3:1
Rectum	5.5	4.8	1.2:1
Pancreas	4.2	3.6	1.2:1
Colon (except rectum)	8.6	7.8	1.1:1
Gallbladder	1.4	3.4	0.4:1

uterus (except cervix), ovary, lung, rectum, the leukemias, and cancer of the esophagus. If the in situ cancer of the cervix-uteri is excluded, the highest risk for women was breast cancer (Fig. 1).

Trends

The incidence rates for cancer in general in both men and women have been increasing if compared with similar rates every five years since 1950. The trends from 1950 to 1978 varied according to primary site and sex. The trends for the most frequent age-adjusted rates in 1978 are shown in Figures 2 and 3.

The distribution of cancer by age group shows that 40.6 per cent of the male cases and 57.9 of the female cases were less than 65 years old; on the other hand, 2.2 per cent of the men and 1.3 per cent of the women with a diagnosis of cancer were younger than 15 years of age.

The age-specific incidence rates varied as to primary cancer site and sex. For cancer in general, the incidence was higher in the group of male children under 10, in the 10-54 age group it was higher in women, and in those aged 55 and over the incidence was again higher in men.

The location of the malignant tumors varied also according to different age groups and sex. In both men and women under 20 years of age the most frequent malignant tumors were diagnosed in the hematopoietic system (leukemias), and in men 20 years and older the digestive system was the most frequently affected. In the age group of women 20-64 the most frequent cancer was that of the genital organs, and in the 65 and over group it was in the digestive system.

A comparison of cancer incidence rates in 15 organs common to both sexes shows that, except for carcinoma of the gallbladder, all were higher in men (Table 1).

Diagnosis

In 1978, 87.0 per cent of the malignant tumors diagnosed in men and 89.9 per cent of those in women were microscopically confirmed. The percentage of histological confirmation varied according to primary site of the

Figure 1. Incidence rates and percentages for the 10 leading cancer sites, by sex, Puerto Rico, 1978.

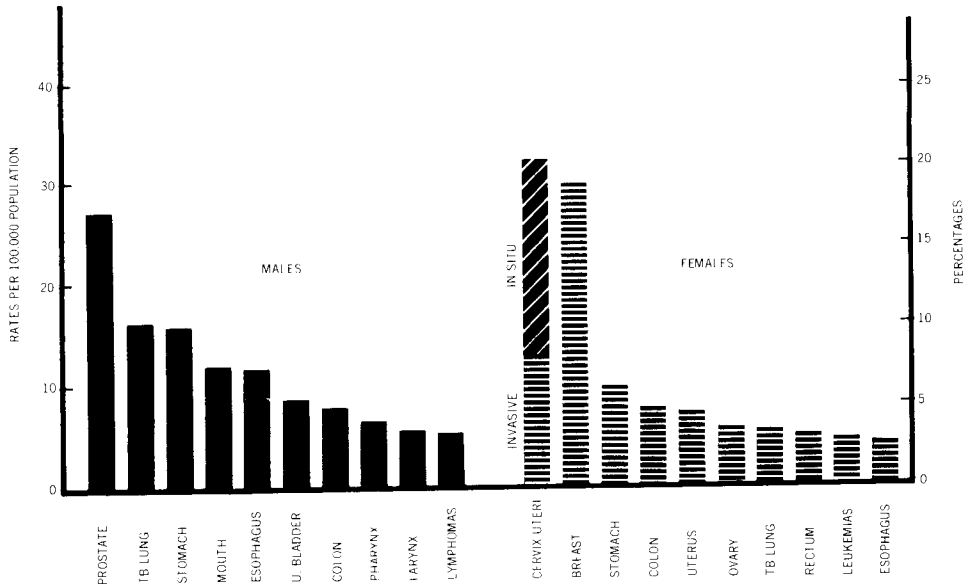


Figure 2. Incidence trends of the most frequent cancer sites in males, Puerto Rico, 1950 to 1978.

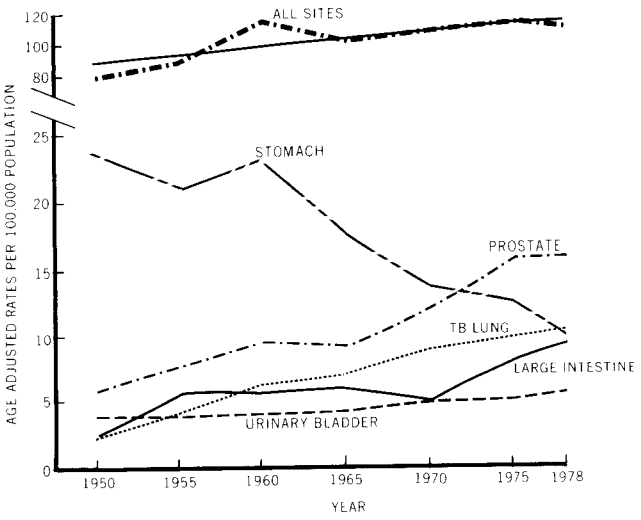
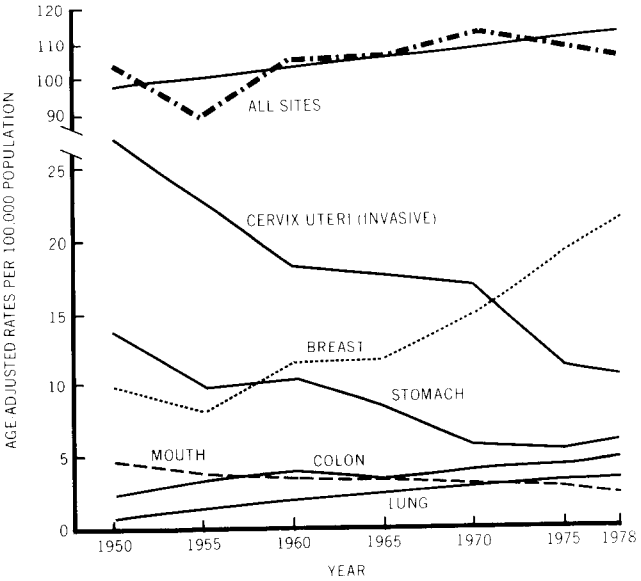


Figure 3. Incidence trends of the most frequent cancer sites in females, Puerto Rico, 1950 to 1978.



tumor, and ranged from 100 per cent in cancer of the lip and of other accessible sites to 0.0 per cent.

Stage

Only 43.1 per cent of malignant tumors in men and 48.1 per cent in women were diagnosed as being localized in the organ where they originated (including in situ carcinoma). The proportion of tumors localized in the organ of origin also varied with the site of the tumor, type of tumor, and sex, from 100 per cent in tumors of accessible sites in both sexes, to 6 per cent of patients with cancer of the pancreas in men. A striking aspect is that only 10 per cent of the cases of cancer of the oropharynx and 11 per cent of the nasopharynx in men were diagnosed when the tumors were localized, despite accessibility of these organs.

Treatment

For cancer in general, the first treatment prescribed for men was surgery in 33.1 per cent of the patients, followed by radiotherapy (15.6 per cent), chemotherapy (4.4 per cent), hormonotherapy (0.4 per cent), and combined treatment plans in 15.7 per cent. In women the first treatment prescribed was surgery in 43.1 per cent of the cases, followed by radiotherapy (12.3 per cent), chemotherapy (3.8 per cent), hormonotherapy (0.1 per cent), and combined treatment plans in 17.2 per cent. Every type of treatment varied according to site, histological type, and stage of the tumor.

The percentage of cases without specific treatment was 21.8 in men and 16.5 in women. These percentages varied also with the different primary sites, stages, and condition of the patient. Only 35.2 per cent of men and 41.8 per cent of women received treatment to the tumor when the disease was localized.

Interval between Diagnosis and Treatment

The percentages of patients beginning treatment during the first month after diagnosis were 57.7 in men and 58.5 in women for cancer in general. These percentages were higher than those registered for the averages during 1970-1972, 1960-1962, and 1950-1952, but were lower than those for 1977. The goal of every person involved in this problem should be to continue increasing the number of persons treated as soon as possible according to present knowledge and resources available.

Index Trends

The index trends used most frequently for evaluating some aspects of the diagnostic and treatment services (excluding basal and squamous cell carcinoma of the skin) was as follows:

	1971 %	1978 %
Males		
Microscopically confirmed	85.8	87.0
Diagnosed in early stage	21.7	43.1
Treated in 1st month after diagnosis	60.6	82.7
Tumor cases without treatment	34.7	30.5

Females		
Microscopically confirmed	89.0	89.8
Diagnosed in early stage	37.6	48.1
Treated in 1st month after diagnosis	57.9	76.6
Tumor cases without treatment	25.7	23.6

Mortality

Mortality rates due to cancer were calculated on the basis of diagnoses specified on death certificates received from the Office of Vital Statistics of the Department of Health, in order to give a general idea of the relation between the mortality and incidence figures. There were striking discrepancies between the diagnoses specified in the clinical reports of cases and those in the death certificates. Often those certificates were signed by a physician who saw the patient as a terminal case or in the beginning stage without the resources necessary for diagnosing the disease correctly.

Despite those discrepancies, mention should be made of the fact that the trend of the age-adjusted mortality rates for cancer in general was unimodal in men after these reached a peak in 1960; in women the trend showed a small but consistent decrease.

The mortality trends of the most frequent sites by sex were as follows:

Male

Increasing	*Decreasing*
Lung	Stomach
Prostate	

Female

Breast	All Sites
Lung	Stomach
Colon	Uterus (All)
Lymphomas	

Without definite trend

Pancreas
Pharynx
Larynx

Exfoliative Cytology Registry

In 1950 a program for detecting cancer of the cervix-uteri was established in Puerto Rico. Initially the activity was limited to women living in the Metropolitan Area of San Juan, Santurce, and Río Piedras, but was later extended to the entire island in 1962.

In 1978 the Cancer Detection Section processed 174,810 smears (a 6.1 per cent increase over 1977). Of that total, 1,000 turned out to be abnormal cytologies, of which 216 were histologically confirmed (164 in situ, 43 invasive, and 9 adenocarcinomas), 232 dysplasias, and 345 other non-malignant lesions. Fifteen patients refused further diagnosis, 132 underwent PAP tests on recommendation of gynecologists, 19 were out of Puerto Rico, 31 were lost to the Program, 17 were waiting for appointments, and 3 were affected by other conditions that prevented diagnosis. Of the 216 malignant tumors, 208 were diagnosed in the cervix-uteri, 3 in the endometrium, 3 in the vagina, 1 in the vulva, and 1 in the ovary. As for the cases of cancer of the cervix-uteri, 78.9 per cent were diagnosed in situ and only 20.1 per cent were classified as invasive.

(Source: *Cáncer en Puerto Rico, 1978.* Central Cancer Registry, Cancer Control Program, Department of Health of Puerto Rico, 1980.)

Editorial Comment

The Central Cancer Registry of Puerto Rico was established in 1950. Its functions include the identification of the incidence of cancer, centralization of clinical histories of patients, systematic collection of clinical data, and determination of the present and future requirements of the oncological services.

Cáncer en Puerto Rico, 1978 contains extensive data on the various aspects of cancer on the island. These data are invaluable in the preparation of studies on cancer epidemiology, pathology, and cytology as well as in the planning of services for the diagnosis and treatment of the disease. They also provide an important mechanism for integrating cancer control into public health programs.

The three major features presented in the publication on which this article was based, which emphasize the need for and importance of the Cancer Registry, are the following:

- The decreasing tendency observed since 1950 in the incidence of invasive cancer of the cervix-uteri, and the increase in the incidence of in situ cancer since that year. This is due, among other factors, to the active cytology program initiated in 1950 and which covered almost 2 million indigent women in the 1962-1979 period.
- The substantial increase in the number of patients treated during the first month subsequent to diagnosis.
- The slow but progressive increase in microscopic diagnoses of cancer cases.

It would be a significant step forward if other countries in the Region of the Americas were to follow the example of the Cancer Registry of Puerto Rico.

According to the available data, cancer registries exist in Costa Rica, Cuba, Jamaica, Peru (Lima), and Brazil (São Paulo), although no information is available on periodical publications of these registries.

The major environmental changes occurring in Latin America are reflected in an increase in the incidence of certain types of cancer. Moreover, because of the constant changes observed in the structure of the population pyramid in the Hemisphere, it is essential to record basic data on cancer as a basis for comparative and epidemiological studies on the disease.

Dengue in Mexico and in the United States, 1980

The latest dengue pandemic in the Caribbean began in 1977 and took the form of extensive epidemic outbreaks in many of the islands, including Puerto Rico.

The Caribbean epidemics probably resulted in the introduction of dengue into southeastern Mexico in 1978. In that year and in 1979 dengue spread northward through Mexico. In October and November 1979 epidemic outbreaks occurred in the vicinity of the city of Tampico, located on the coast of the Gulf of Mexico at a distance of some 480 km south of the border with the United States.

In June 1980 six Mexican communities along the border had reported cases of dengue.

The large number of travelers between Mexico and the United States and the prevalence of *Aedes aegypti*—the vector of the dengue virus—in both countries create the conditions needed for introducing the infection into the United States. There are large *A. aegypti* populations in Texas, Louisiana, Mississippi, Alabama, Georgia, Florida, North and South Carolina, Tennessee, and Arkansas. The areas of the United States most exposed to the introduction of dengue from Mexico include communities in southern Texas and cities along the Gulf Coast at which many travelers from Mexico arrive.

In Mexico *A. aegypti* is found in Chiapas, Quintana Roo, Oaxaca, Veracruz, Tabasco, and Campeche, as well as along the Gulf Coast and in the northeast. The epidemiological information available suggests that, starting with the Caribbean epidemic, dengue penetrated the southern part of the country through Belize and Guatemala in November 1978 and that in 1979 the disease was active in various states in southern Mexico. In 1979 some 3,000 cases were reported.

A study carried out in mid-February 1980 by the Ministry of Health and Welfare of Mexico (SSA) and the U.S. Communicable Disease Control Centers (CDC) confirmed the presence of dengue in Tampico and verified the northward movement of the disease. In Tampico 13 of 198 serum samples provided serologic evidence of recent dengue infections. Entomological studies showed that between 12 and 27 per cent of the cases in two areas of Tampico had *A. aegypti* larvae. The season of the study (February) was a relatively cool and dry one in Mexico, and it was expected that the arrival of the rainy season would bring a substantial increase in the mosquito population.

In the final week of June 1980 clinical cases of dengue-like illness began to be reported in Montemorelos, an agricultural community 85 km from Monterrey (Nuevo León) in the northeast. The SSA sent a team of experts to the region to evaluate the problem. Infection with dengue virus was confirmed serologically in 29 out of 31 convalescent patients. Larval and adult specimens of *A. aegypti* were found in the vicinity and inside the dwellings of most of the patients living in those parts of the city most affected by the disease and in a smaller number of dwellings (and their surroundings) located in city areas where a few cases had occurred.

According to information in the *Border Epidemiological Bulletin* (PAHO), between September and November 1980 the number of reported cases of dengue in Mexican communities located along the border with the United States was as follows: 151 in Matamoros, 326 in Nuevo Laredo, 400 in Piedras Negras, and 5,146 in Monterrey.

In September 1980 the CDCs reported the first case of transmission of dengue into the continental territory of the United States since 1945. The patient, from whom dengue virus type I was isolated, lived in Brownsville, Texas.

At the end of September local and state health author-

Figure 1. Localities on the Mexico-United States Border where cases of dengue were reported in 1980.

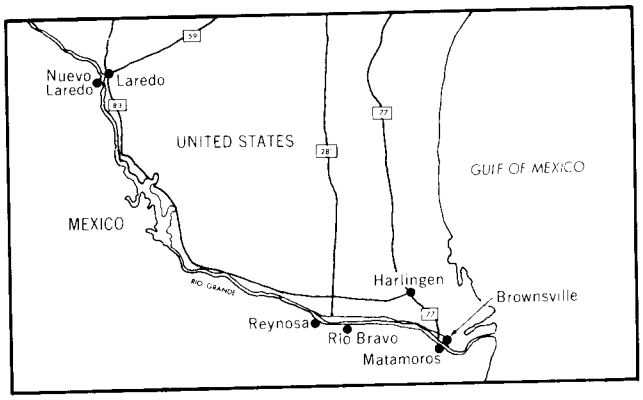
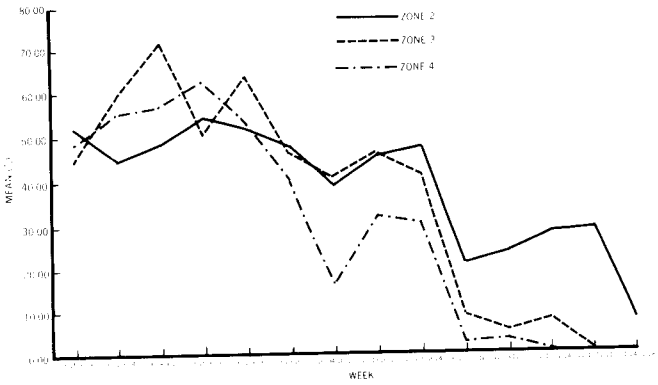


Figure 3. Average per cent positive ovitraps for selected cities in geographic zones of *Aedes aegypti* breeding, by sampling week.



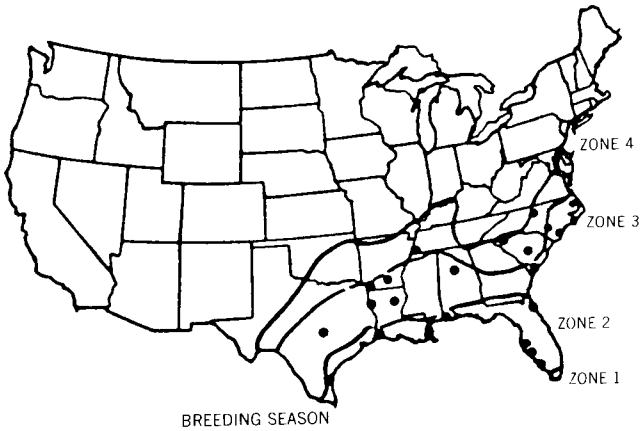
ities made a survey of dengue in two districts of Brownsville. Five persons of the 63 families interviewed in the patient's district had medical histories of dengue-like illness and one person out of 77 families interviewed in the other district. Serum was taken from the patient and her family. Only the patient and an elder sister had antibodies suggesting a recent dengue infection.

In November 1980 the CDCs reported 10 additional cases of dengue infections in residents of communities in the Rio Grande valley in Texas. None of the patients had visited Mexico during the period in which they had contracted the infection. Eight lived in Brownsville, two in Laredo, and one in Harlingen (Fig. 1). The dengue virus was isolated in seven of these patients. The infection was confirmed serologically in the others. Ten were identified through a surveillance system initiated by local and state health departments to detect dengue cases. The remaining case was identified during the survey in Brownsville made after the recognition of the first case.

The delimitation of zones in Figure 2 is based on an analysis of certain climatic factors that limit the distribution of mosquito species.

Figure 3 shows trends in *A. aegypti* activity during collection periods occurring between the end of August and October according to geographic zones. The data utilized were selected from the cities (identified in Fig. 1) considered as representative of the respective geographic zones and that had provided regular reports on ovitraps. *A. aegypti* populations in these cities, measured as the percentage of positive ovitraps, tend to fall from August to October, registering a greater and earlier decline in the northern populations. Oviposition in zones 3 and 4 apparently ceased in winter. Oviposition in zones 1 and 2 is expected to continue at low levels through the winter.

Figure 2. Trends in *Aedes aegypti* activity, by geographic zones, United States, 1980.



(*Sources: Morbidity and Mortality Weekly Report*, Volume 29:75, 169, 407, 481, and 531, 1980; Centers for Disease Control, *Dengue Surveillance Summary*, 8 and 12, 1980, and PAHO *Border Epidemiological Bulletin* 8, 1980.)

Editorial Comment

In January 1981 a meeting was held at the CDCs to examine the dengue situation on the Mexico-United States border. It was attended by representatives of Mexico, CDCs, the State of Texas, and PAHO. In total, some 50,000 dengue cases were reported in Mexico in 1980 and during the winter it reached as far as Veracruz in the course of its northward dissemination. In Texas 48 cases were confirmed, but none were reported after 1 November. According to surveys made in Tampico, Mérida (Yucatán), and Brownsville a count of the containers in

each dwelling should make it possible to effectively determine the localities at risk.

There are a number of important factors in planning dengue campaigns, among which is the adoption of a system for the rapid transmission of information. This indicates the need for developing a new method of diagnosis in addition to serologic examinations and virus isolations. Other factors include studies on methods of educating the public, particularly with a view to assisting teachers in keeping their students informed; training of health personnel; and mosquito surveillance and control. The latter depend on the funds available at the local level.

Further meetings, seminars, and training programs have been planned.

Influenza in the Americas, 1980–1981

In 1980 and so far in 1981 influenza epidemics have been reported in three countries of the Americas: United States, Canada, and Mexico. The predominant strain is A/Bangkok/79 (H3N2), which is similar to A/Bangkok/79 and has not yet been assigned an official name.

United States (as of 2 January 1981): Since November 1980 strains of A/Bangkok/79 (H3N2) have been isolated in 16 states and in the District of Columbia. Mortality due to pneumonia and influenza has exceeded epidemic limits for three consecutive weeks. As of 13 December, nine states (Alaska, Arizona, California, New Jersey, New Mexico, North Carolina, North Dakota, Texas, and Wyoming) had reported localized epidemics; New York reported scattered epidemics. Almost all the other states have reported sporadic episodes of influenza.

Since mid-November most of the epidemic outbreaks have affected individuals in schools and in homes for the elderly.

Canada (as of 6 December 1980): In November an epidemic outbreak of influenza occurred at a home for the elderly (with 150 beds) in Portage-la-Prairie, Manitoba (three deaths). The epidemic occurred as an immunization campaign against the disease was being carried out. On 3 November all the residents in one section of the home (63) had been vaccinated when the epidemic broke out in another section. Of 53 persons who contracted influenza, 13 had been vaccinated. The three deaths (apparently due to pneumonia) were of persons who had not been vaccinated. The influenza virus isolated was antigenically similar to A/Bangkok/1/79.

The large increase in influenza cases in Manitoba led to an increase in the number of hospital admissions for severe illness and pneumonia and to many school absences.

In Toronto an influenza virus antigenically similar to A/Bangkok/1/79 was isolated in a sample obtained from a laboratory technician.

Mexico (as of 31 October 1980): Strains of A/H3N2 influenza virus were isolated in seven individuals whose age varied between 5 and 60 years. The strains were identified as being similar to A/Bangkok/1/79 (H3N2).

Recommendations. The U.S. Centers for Disease Control recommend the following preventive measures against influenza:

1. The annual vaccination of all those exposed to the highest risk of complications because of infections of the lower respiratory system is strongly recommended. Diseases that increase the risk are:

- Congenital or acquired cardiac diseases associated with changes in circulation dynamics.
- Chronic diseases involving the pulmonary function.
- Chronic kidney disease with azotemia or nephrotic syndrome.
- Diabetes mellitus and other metabolic diseases with a high risk of infection.
- Severe chronic anemia.
- Conditions affecting the immunity system, including certain neoplasms and immunosuppressive therapy.

2. Vaccination of persons of advanced age especially those over 65 years.

The present influenza vaccine consists of inactivated preparations of three antigens: A/Bangkok/79 (H3N2), A/Brazil/78 (H1N1), and B/Singapore/79.

(*Sources: Morbidity and Mortality Weekly Report* 29:225–228 and 615–616, 1980; *Canadian Disease Weekly Report* 6:49, 1980, and WHO *Weekly Epidemiological Record* 55:368, 1980.)

Editorial Comment

Because of antigenic changes in the virus, influenza vaccine should be prepared annually on the basis of worldwide data from WHO on strains in circulation.

The Advisory Committee on Immunization Practices of the U.S. Public Health Service meets each January to review the data available on worldwide movements of influenza viruses. According to the strains in circulation recommendations are made on the antigenic composition of the vaccine to be used in the next influenza season. The Committee's recommendations are forwarded to vaccine manufacturers who produce and test the new vaccine in time for distribution at the end of July or in early August. By November or December most of the production has been purchased and distributed for use.

As a general rule, but not invariably, new influenza strains are first discovered in the Far East and the presence of the virus in Australia during the winter months (May-July) indicates that in the succeeding months the virus will be disseminated northward in the temperate climate countries. In the Americas the Far Eastern strains usually appear initially in the southern temperate climate countries and advance in the direction of the northern hemisphere in subsequent months. Thus in temperate climate countries such as Argentina, Chile, Uruguay, Paraguay, (southern) Brazil, Bolivia, and Peru the influenza season frequently corresponds to the summer production cycle of vaccine in the United States.

With the exception of the United States and Canada, no country in either the tropical or temperate zones consider influenza surveillance or vaccination as one of the priorities of the health sector. For those countries (except the U.S. and Canada) wishing to carry out influenza vaccination campaigns, there are two options:

1. Convene their own advisory groups each year to examine the worldwide epidemiological data provided by WHO on strains in circulation and make their own recommendations on the local production of vaccine for the subsequent year.
2. Purchase vaccine produced in the United States or in Europe in August on the assumption that no antigenic change will occur before the next local influenza season in May-July of the following year.

For most of these countries the options at present are neither practical nor acceptable. In the absence of any other epidemiological information on the circulation trends of the influenza virus it is not possible to make recommendations on the approach that should be adopted to routine vaccination against influenza in tropical and temperate countries.

Status of Leprosy in Rio Grande do Sul, Brazil, 1979

Incidence

In 1979, 222 new cases of leprosy were diagnosed in Rio Grande do Sul, Brazil, representing an incidence of 2.73 cases/100,000 population. The State is located in the southeast of the country, and it has 232 municipalities and 7,665,372 inhabitants. The active register of cases also included nine patients from other states and six individuals who had a recurrence of the disease, making a total of 237 cases in 1979.

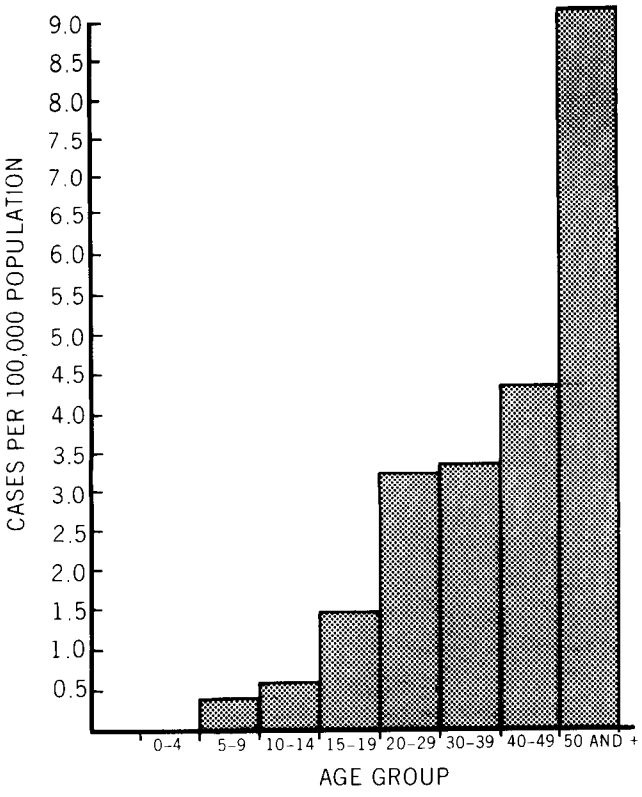
Among the new cases, there was a marked predominance of more advanced ages; no case occurred in children under five years and only 10 cases occurred in the under-15 age group (Fig. 1). The distribution by sex showed a slightly higher incidence among females (112 against 110 male cases). Of the contagious forms of leprosy (lepromatous and dimorphous), 74 occurred in men and 56 in women.

Of the total of 237 cases registered, the most frequent clinical forms were lepromatous (43.9 per cent) and tuberculoid (28.7 per cent). As for the detection of the disease the majority of cases (55) were discovered during medical consultations (50.6 per cent), while 23 (18 per cent) were reported cases (Table 1).

Prevalence

On 31 December 1979, 3,195 cases of leprosy had been registered in Rio Grande do Sul, representing a prev-

Figure 1. Leprosy incidence by age groups, Rio Grande do Sul, Brazil, 1979.



alence of 0.39 cases/1,000. On the basis of WHO criteria the State would be regarded as an area of medium endemicity (prevalence of between 0.2 and 1.0 cases/1,000).

Of the cases reported, 63.9 per cent were defined as lepromatous, 17.0 per cent as tuberculoid, 10.3 per cent as indeterminate, and 8.8 per cent as dimorphous (Table 2).

The coefficient of prevalence maintained the decreasing trend observed since 1968. There was a small increase in the number of registered cases in relation to the preceding year (3,143), representing a rise of 1.65 per cent, which is less than the State's population growth, calculated at 2.03 per cent per annum.

Control of Patients

Based on criteria adopted by the National Dermatology Division of Brazil, leprosy cases are regarded as being under control if they meet the following conditions:

1. Those of indeterminate clinical form with a negative Mitsuda reaction and those of lepromatous and dimorphous form that have been re-examined at least once in the preceding six months.
2. Those of indeterminate form with a positive Mitsuda reaction and those of tuberculoid form that have been re-examined at least once in the preceding 12 months.

Although the control targets set for 31 December 1979 were not reached, an improvement was noted in control percentages in relation to preceding years with the exception of the tuberculoid form (Table 3).

Discharges. In 1979, 185 discharges of leprosy patients were recorded (5.5 per cent of the total number of patients on the active register for the year). Of those discharges, 67 represented cures, 59 deaths, 24 transfers to other states or countries, 5 errors in diagnosis, and 30 statistical adjustments. The last category includes patients whose whereabouts are unknown and whose situation is one of the following:

1. Patients who, according to the life expectancy table of Rio Grande do Sul State, are probably deceased, bearing in mind the time elapsed since they disappeared and their age when they were last seen.

Table 1. Leprosy cases in the active register, by clinical form and method of detection, Rio Grande do Sul, 1979.

Method of detection	Clinical form				
	Lepromatous	Dimorphous	Tuberculoid	Indeterminate	Total
Reported	23	5	12	3	43
Examination of contacts	12	4	18	5	39
Consultations	55	20	28	17	120
Other means	1	1	2	—	4
Not specified	6	3	4	3	16
Subtotal (new cases)	97	33	64	28	222
Transfers	7	—	—	2	9
Recurrences	—	1	4	1	6
Total	104	34	68	31	237

Table 2. Registered leprosy cases, cases under control, and percentage of control by clinical form, Rio Grande do Sul, 1979.

Clinical form	Known cases	Controlled cases	Percentage of control	Target for 1979 (%)
Lepromatous and dimorphous	2,323	1,988	85.6	87
Tuberculoid	543	411	75.7	80
Indeterminate	329	250	76.0	80
Total	3,195	2,649	82.9	85

Table 3. Percentage of control of leprosy cases by clinical form in Rio Grande do Sul, 1976-1979, and target for 1980.

Clinical form	Control year				Target for 1980
	1976	1977	1978	1979	
Lepromatous and dimorphous	81.9	80.9	84.5	85.6	87.0
Tuberculoid	74.2	76.1	75.7	75.7	80.0
Indeterminate	68.3	70.3	74.3	76.0	80.0
Total	78.7	78.8	81.8	82.9	85.0

2. Patients not included in the preceding category and whose whereabouts have been unknown for more than 20 years, irrespective of the clinical form from which they suffered and of their age.

3. Parents with an indeterminate clinical form showing a positive Mitsuda reaction and those with a tuberculoid clinical form whose whereabouts have been unknown for more than 10 years, irrespective of their age.

The following observations are pertinent:

(a) No patients with lepromatous or dimorphous forms have ever been discharged as cured because recurrences occur very frequently in these cases.

(b) Since 1975, when the State introduced the system of computerized registration of leprosy cases, there have been no double registrations of the same patients and there have therefore been no discharges for that reason.

(c) The number of discharges as cured (67), exceeding the number of deaths (59), indicates a satisfactory level of control of patients with indeterminate forms, positive Mitsuda reactions, and tuberculoid forms, whose period of treatment should not exceed five years.

Hospitalizations. On 31 December 1979 there were 226 leprosy in-patients at the Colonia Itapúa Hospital.

During the year there were only 10 in-patient admissions to that hospital: nine were readmissions and one a first admission. During the same period there were 23 hospital discharges. Since 1975 the Colonia Itapúa Hospital has been used solely to provide in-patient facilities for cases with serious social problems. For the hospital treatment of leprosy cases with clinical intercurrents the Department of Health and the Environment has the Dermatological In-patient Unit (UIDS) located in Porto Alegre, which also treats cases of other dermatoses. In 1979, 47 leprosy patients were admitted to the UIDS and a further 62 cases with clinical and surgical intercurrents were admitted to privately-run general hospitals.

A total of 42 general hospitals in Rio Grande do Sul accept leprosy patients.

Control of Contacts

On 1 July 1977 the registration of all household contacts of leprosy cases was initiated throughout the State. Personal data for these contacts, including names and addresses, were processed by computer, so that it was possible to eliminate without difficulty all cases on which there was a double record for the same person (which has frequently happened when two or more leprosy cases form part of the same household).

By 31 December 1979 the contacts of 2,101 (65.8 per cent) of the 3,195 cases on the active register had been recorded. The total number of contacts recorded was 5,635 with an average of 2.7 contacts per case. This is lower than the average family size in the State (4.9 persons per household according to the 1970 census, which would indicate 3.9 contacts per case) as frequently there is more than one leprosy case in the same family group, thus substantially reducing the ratio of contacts to cases.

The number of contacts of patients with lepromatous and dimorphous forms registered as of the end of 1979 was 4,043. Of these 1,440 (35.1 per cent) were under control, i.e., they had been examined at least once in the preceding 12 months.

(*Source: Informe Epidemiológico*, July 1980, Ministry of Health and of the Environment, Rio Grande do Sul, Brazil.)

Editorial Comment

Leprosy continues to be a serious public health problem in several countries of the Americas, especially in Brazil, Paraguay, Colombia, Argentina, and the Dominican Republic.

Health authorities of the American countries have developed programs for the prevention and control of the disease with varying results.

A study of the status of leprosy in the State of Rio Grande do Sul, presented in this report, indicates that the State's leprosy control program has had successful results.

A knowledge of the organization, methodology, development, and implementation of the program can be useful to persons and institutions concerned with the leprosy problem in affected areas.

As of 1939, the only services available in Rio Grande do Sul State for leprosy patients were those offered by private philanthropic societies. In that same year, an official leprosy control program was established. Its main purposes were to put a hospital for leprosy patients into operation; to hospitalize patients on a mandatory basis, and initiate an active registry of cases.

The program was modified in 1954 and the leprosy campaign began, based fundamentally on the use of specialized dispensaries and home control of patients by medical professionals. Though the results of the campaign were satisfactory the costs of implementation and maintenance were high.

In 1964 steps were taken to initiate the integration of the activities of the leprosy control program with the general health services (health centers and general hospitals), supervised by specialized professional and technical personnel.

Two new elements were introduced into the program in 1975: the initiation of activities for prevention and treatment of physical disabilities resulting from the disease, and the registry of cases using a computerized system. This system led to better data processing and analysis and facilitated the identification of problem areas, establishment of priorities, and evaluation of the program.

Courses

Residences in Epidemiology, Public Health, and Health Administration in Canada, 1981

The Department of Epidemiology and Community Medicine of the University of Ottawa, Canada, announces that it has vacancies for residents in community medicine. Three areas of specialization are offered: epidemiology, public health, and health administration. Interested persons should apply to Dr. L. C. Niri, Programme Director, Department of Epidemiology and Community Medicine, 1461 Heron Road, Ottawa, Ontario DIV 6A6, Canada.

Courses at the Centers for Disease Control (CDCs), United States, 1981

The courses described below have been prepared especially for professional health workers who are either from, or working in, countries other than the United States.

Epidemiology and public health administration in disease control (15 June–2 July 1981: registrations close on 22 May). This course is for physicians and other health practitioners or candidates for a degree in those fields. It includes CDC's programs of disease surveillance and control, and covers changes in trends and emphasis in delivering those health services (in the United States) that could be adapted to the particular situations in the countries of origin of the participants. It consists of lectures and discussions on disease surveillance, public health administration, global eradication schemes, laboratory techniques, control of internationally-important diseases, nutrition surveys, zoonoses, family planning evaluation, immunization practices, and training methods.

Schedule of Courses on Epidemiology in Latin America and the Caribbean, 1981.

Country.	Institution, and address	Course title	Length	Commencement date
ARGENTINA	Institute of Epidemiology Ituzaingó 3520 (7600) Mar del Plata	Epidemiology Epidemiology for professionals	2 months 1 month	15 July 1 September
	Public Health Department Health Resources Sector Human Resources Subsector Buenos Aires	Epidemiology for professionals Epidemiology for graduate nurses	1 month 3 months	September —
	National University of Buenos Aires Faculty of Health Sciences School of Public Health M. T. de Alvear 2202 Buenos Aires	Epidemiology	3 weeks	October
	National University of Córdoba Faculty of Medical Sciences School of Public Health Córdoba	Epidemiology	1 month	—
BRAZIL	Oswaldo Cruz Foundation National School of Public Health Rua Leopoldo Bulhoes 1480-Manguinhos Caixa Postal 8016 2000 Rio de Janeiro	Advanced course in epidemiology	18 weeks	15 August
	University of São Paulo Faculty of Hygiene and Public Health Avenida Dr. Arnaldo, 715 São Paulo	Specialized course in entomological epidemiology	14 weeks	4 August
CHILE	University of Chile Faculty of Medicine Casilla 6537-Correo 4, Santiago Norte, Santiago	Seminar on clinical epidemiology	2 weeks	10 July
COLOMBIA	University of Antioquia National School of Public Health Calle 62 No. 52-19 Apartado Aéreo 51922 Medellín	Epidemiological control and surveillance Specialized course in epidemiology	8 weeks 5 months	11 June 4 August
CUBA	Institute of Health Development Ministry of Public Health Apartado 9082, Zona No. 9 Havana	Specialized course in epidemiology	30 months	1 September
MEXICO	School of Public Health of Mexico Avenida Dr. Francisco de P. Miranda No. 177 Lomas de Platero México 19, D. F.	Specialized course in advanced epidemiology	10 months	12 February
TRINIDAD AND TOBAGO	Caribbean Epidemiology Center (CAREC) P.O. Box 164, Port-of-Spain	Epidemic investigation and surveillance for epidemiologists	1 month	1 September
VENEZUELA	Central University of Venezuela School of Medicine Ciudad Universitaria Caracas	Epidemiology	7 months	—

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