Epidemiological Bulletin

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Status of the Malaria Programs in the Americas[1]

Background

Despite the fact that the countries of the Region of the Americas have adopted malaria-control strategies, the epidemiological situation continues to grow worse. The number of registered cases increased from 830,700 in 1983 to 984,171 in 1984, even though the data from three countries were incomplete. This increase was higher than in any previous year.

The originally malarious countries of the Region have been ranged in four groups on the basis of the status of the problem and the progress and results of the program, as follows:

Group 1 includes 12 countries or territories where there is no evidence of transmission: Cuba, Chile, Dominica, Grenada, Guadeloupe, Jamaica, Martinique, Puerto Rico, Saint Lucia, Trinidad and Tobago, the United States of America, and the Virgin Islands (USA).

Group 2 covers four countries—Argentina, Costa Rica, Panama, and Paraguay—where malaria transmission has been considerably reduced and this favorable situation is being maintained.

Group 3 includes four countries—Brazil, French Guiana, Guyana, and Suriname—with endemic areas where malaria has increased and which produced 42.2% of all cases in the Region in 1984.

Group 4 is made up of 13 countries comprising three geographic subregions which generated 56.5% of all cases reported in the Americas in 1984: *Subregion A:* Haiti and the Dominican Republic; *Subregion B:* Belize, El Salvador, Guatemala, Honduras, Mexico and Nicaragua; *Subregion C:* Andean countries, Bolivia, Colombia, Ecuador, Peru, and Venezuela.

Epidemiological Situation of Malaria

Table 1 shows the totals for malaria cases reported annually by each group of countries between 1981 and 1984. Although Group 1 registered a total of 1,206 cases in 1984, most of them were imported cases.

Haiti and the Dominican Republic are the only Caribbean countries in which transmission is active. In 1984 the situation in Haiti worsened, but the Dominican Republic registered 1,431 fewer cases than in 1983. The autochthonous cases detected in these two countries were all caused by the species *Plasmodium falciparum*.

In Mexico the situation deteriorated in 1984 (10,472 more cases than in the preceding year), while in Central America and Panama, only the latter country and Honduras showed any appreciable improvement. Panama was the only country that was able to sustain the downward trend of incidence, and most of the 125 cases discovered during the year were imported from neighboring countries. In Honduras, 10,204 fewer cases

[1]This article includes material covered in Report XXXIII on the Status of Malaria Programs in the Americas (Document CD31/INF/2) presented at the XXXI Meeting of the Directing Council of PAHO (September-October 1984). Copies of this document may be obtained from the Tropical Diseases Program, PAHO.

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Table 1. Cases of malaria reported annually, by groups of endemic countries, 1981-1984.

Country groups		Population of the malarious areas in 1984[a]	Number of cases registered			
			1981	1982	1983	1984
Group 1	Countries in which malaria eradication has been certified[b]	77,953	1,599	972	914	1,206
Group 2	Argentina	3,752	323	567	535	437
	Costa Rica	718	168	110	245	569
	Panama	2,037	340	334	341	125
	Paraguay	2,701	73	66	49	554
Subtotal		9,208	904	1,077	1,170	1,685
Group 3	Brazil	55,927	197,149	221,939	297,687	378,257
	French Guiana	73	769	1,143	1,051	1,021
	Guyana	836	2,065	1,700	2,102	3,017
	Suriname	281	2,479	2,805	1,943	3,849
Subtotal		57,117	202,462	227,587	302,783	386,144
Group 4	*Subregion A:*					
	Dominican Republic	6,060	3,596	4,654	3,801	2,370
	Haiti	4,818	46,703	65,354	53,954	54,896[c]
	Subregion B:					
	Belize	160	2,041	3,868	4,595	4,117
	El Salvador	4,132	93,187	86,202	65,377	66,874
	Guatemala	3,104	67,994	77,375	64,024	74,132
	Honduras	3,867	49,377	57,482	37,536	27,332
	Mexico	41,639	42,104	49,993	75,029	85,501
	Nicaragua	3,165	17,434	15,601	12,907	15,702
	Subregion C:					
	Bolivia	2,469	9,774	6,699	14,441	16,338
	Colombia	18,600	60,972	78,601	105,360	55,268
	Ecuador	5,276	12,745	14,633	51,606	78,599
	Peru	6,361	14,812	20,483	28,563	32,621[d]
	Venezuela	13,156	3,377	4,269	8,400	11,127[c]
Subtotal		112,807	424,116	485,214	525,593	524,877
Total		257,085	629,081	714,850	830,460	913,912

[a]In thousands.
[b]See page 1.
[c]Up to September.
[d]Up to October.
[e]Up to November.

were registered than in 1983. While the situation remained stationary in Belize, it deteriorated in other countries of that area, including Nicaragua where, after a downward trend in recent years, there were 2,795 more cases than in 1983. In Costa Rica the number of cases rose by 132% from 1983 to 1984, although the absolute figure remained low (569 cases).

In South America the epidemiological situation developed as follows in 1984: Of the five malarious countries in the Andean subregion—Bolivia, Colombia, Ecuador, Peru, and Venezuela—only in Colombia did the number of cases go down; in the others (although data for Peru and Venezuela are incomplete) there was an increase in the number of cases, which was especially noticeable in Ecuador.

The figure was also higher for Brazil, up from 297,687 cases in 1983 to 378,257 in 1984. In the other Group 3 countries, only in French Guiana did the situation remain stationary during the year. The other two countries (Guyana and Suriname) reported increases in malaria transmission of 915 and 1,906 cases, respectively, although the absolute number of cases was low in both countries.

The number of cases in Argentina was down slightly, from 535 in 1983 to 437 in 1984, but the increase in the course of the year in Paraguay was alarmingly steep, from 49 to 554 cases.

Field Operations

During 1984, the countries of the Region continued the effort begun in previous years to strengthen their epidemiological surveillance systems and to find the means for making antimalaria activities an integral part of the operations of all health sector institutions. The

malaria program was further developed through vector control by intradomiciliary spraying with residual insecticides; larvicidal measures (using chemicals and larvivorous fish, and reduction of breeding places), and personal protection (use of repellents and mosquito nets, and case treatment).

The use of insecticides, the chief vector-control measure, was kept at a low level in 1984. DDT use was practically the same as in 1983, while that of propoxur increased slightly, and the use of fenitrothion diminished. DDT continued to lead among the insecticides applied, even though it was not utilized at all in El Salvador, Guatemala, or Haiti.

During the 1981-1984 period it might have been expected that decreased reliance on intradomiciliary spraying with residual insecticides as the main attack measure would have been accompanied by a diversification of control measures, but this did not happen. In most areas where spraying was discontinued, no other vector surveillance and control measures were implemented.

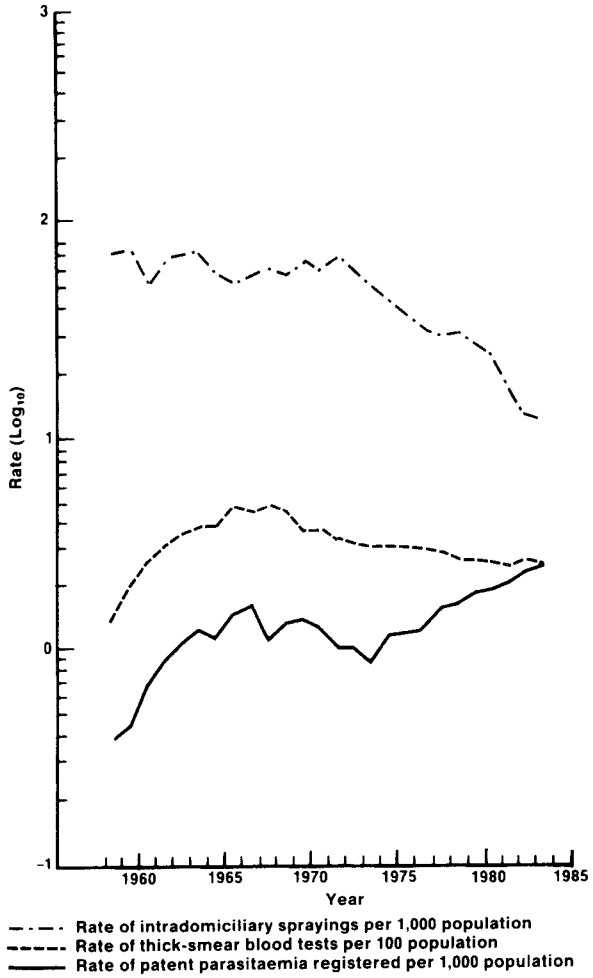
Eight countries used larvicides as a malaria-control measure for the protection of 2,242,000 inhabitants. In Haiti, larvivorous fish were used on the same scale as in 1983 in an area with 42,614 inhabitants. El Salvador and Mexico also opted for small-scale sanitary engineering works to reduce breeding places, thus providing protection for 392,000 persons.

Another measure for prevention and control of the disease was mass drug distributions, which were carried out in five countries with a coverage of 1,273,540 persons. Selective treatment was used for 651,257 persons in four countries.

It should be noted that large proportions of the populations at risk in the malarious zones did not receive any protection at all. Eight countries reported that around 13 million persons had been left without care for lack of funds, and it is estimated that a further 680,000 are without proper protection owing to social problems that are disrupting public order and to the difficulty of access to some places.

Figure 1 shows that the number of intradomiciliary sprayings per 1,000 inhabitants has declined greatly since the beginning of the 1970s. On the other hand, the rate of detected parasitaemia remained stable between 1960 and 1973 but has risen steadily since 1974. The annual rate of blood examinations (per 100 persons) declined slightly in the closing years of the 1960s and remained stable up to 1984.

Figure 1. Malariometric rates of 21 countries of the Americas, 1960-1985.



Problems Impeding the Progress of the Programs

The problem of vector resistance to insecticides in Central America and Haiti has caused serious operational and financial difficulties in those areas, owing to the high cost of alternative products. For example, 1 kg of DDT-75 costs US$1.40, the same quantity of fenitrothion-40 costs $4.50, and of propoxur $10.50. Amounts needed for one spraying, however, are 533 g of wettable DDT powder, 1,000 g of fenitrothion, and 800 g of propoxur.

Levels of resistance are highest in the Central American isthmus, from southern Mexico to Panama. *Anopheles albimanus*, the leading vector of malaria in those countries, has become resistant to chlorinated insecticides, many organophosphates, and some carbamates. It is known that an important factor in the emergence of this phenomenon is the presence of cotton plantations and rice fields, which are subjected to massive airborne applications for several months that are also the months of heaviest anopheline density. The use of insecticides in agriculture is an important factor in the natural selection of multiresistant anopheline strains that are difficult to control. The countries concerned have been obliged to solve this problem by

using new insecticides, whose initial efficacy soon fades. It is also known that, when a country decides to use a new product in its health campaigns, it often turns out that the product has already been in agricultural use for months and even years in advance.

In Central America good results have already been obtained by replacing DDT with other insecticides, such as propoxur, which was applied on a large scale in the early 1970s. Unfortunately, the cost of this carbamate has prevented its widespread use. The same can be said of chlorphoxim, resmethrin, fenitrothion and bendiocarb. The latter two appear to be the most promising and are starting to be used in Guatemala, Haiti, Honduras, and Mexico.

It is regrettable that some countries have started spraying with new insecticides donated by the governments of producer countries on occasions when there has been no justification for abandoning the use of DDT. It commonly happens that the quantity donated is used up without any advance arrangements having been made for a continued supply. In such cases, the spraying program has come to a standstill and the epidemiological situation has worsened all over again. This is a problem for which a permanent solution has to be found, because it is one of the causes of the ups and downs in the indices of malaria transmission noted by the programs.

Although *A. darlingi* and *A. nuñeztovari* are susceptible to insecticides, including chlorinated hydrocarbons, obtaining foreign exchange for purchases of DDT abroad is at times a formidable obstacle difficult to overcome. This causes delays in purchasing and therefore also in the schedules for sprayings, which are not applied at the requisite times and intervals.

The problems created by parasite resistance to drugs are very serious in South America, especially in Brazil and Colombia. In these coutries it has been necessary to establish treatment regimes to replace those using chloroquine in order to treat resistant *P. falciparum* infections in areas of the Amazon region, the Magdalena valley, Catatumbo, and the Turbo region. The use of other drugs more expensive than chloroquine has aggravated the problem of financial imbalance.

Human migrations, which are very heavy in the Brazilian Amazonian region and in some land-settlement areas of Colombia, are another factor that prevents or impedes the implementation of prevention and control programs. Movements of people in border areas are inevitable and difficult to control. These movements affect countries that have achieved a satisfactory control of malaria, as they are compelled to maintain strict and expensive surveillance to prevent reintroduction of the disease in transmission-free areas.

Other problems impeding the progress of the programs were:

- The difficulty of obtaining foreign exchange for public health activities, which are very often given lower priority than other development activities;
- Reluctance of the population to accept spraying;
- Pressure from local and international environmental protection groups opposed to the use of pesticides;
- Makeshift housing in many rural localities, which makes it doubtful whether intradomiciliary spraying has any effect at all; and
- Risks of environmental pollution in areas growing crops or raising livestock for export.

Research

During 1984, research was carried out in the Region in the areas of epidemiology, entomology, vector biology and control, immunology, chemotherapy and applied social sciences. These studies were supported by the national malaria programs and research institutes of Brazil, Colombia, the Dominican Republic, Guatemala, Honduras, and Mexico; universities of those countries and the United States; and specialized agencies such as the Brazilian Research Council, the Agency for International Development (AID), the National Institutes of Health and Department of Defense of the USA, the Special UNDP/World Bank/WHO Program for Research and Training in Tropical Diseases, and PAHO.

The need to define the socioeconomic factors that influence the transmission and control of malaria has prompted various research projects through which it is hoped to gain a better understanding of the social epidemiology of malaria in the Americas. In Brazil, efforts are being made to identify the risk factors (biological, environmental, behavioral, economic, social, and of access to services) that affect the prevention and treatment of malaria infection.

In Colombia a multidisciplinary team has continued studies to relate housing conditions and other socioeconomic variables to malaria transmission. Its findings are expected to provide baseline data for a revision of the National Malaria Service's control strategies.

Also in Colombia, an analysis of the influence of socioeconomic and epidemiological factors on the incidence of malaria and its prevalence in the household and community was completed in 1984. The object of this study was to determine the impact of the disease on labor production, family income, and domestic and production activities. Attempts were also made to design methodologies for evaluation of the cost-benefit ratio, cost-effectiveness, and social benefits of the antimalaria campaign. The results of these studies show that the rate of exposure to mosquito bites of persons working outdoors and the activities of the control program are the variables that influence malaria incidence the most.

To sum up, the greatest difficulty encountered by the countries in regard to malaria prevention and control was the lack of more specific data on the situation with which to make better use of resources on existing epidemiological problems. The financial crisis affected all the countries to the extent that most of the steps taken were emergency measures. It is worth stressing that eight countries reported endemic zones, with a total population of about 13 million, in which no control activities were being carried out for lack of funds. Some countries also announced that current social and political unrest made it impossible for them to apply control measures in the localities involved. In other countries no work could be done in certain areas that are extremely difficult to reach.

Teaching and Practice of Epidemiology in Venezuela[1]

Introduction

The first National Meeting on the Teaching and Practice of Epidemiology in Venezuela was an outcome of interest on the part of the Venezuelan Ministry of Health and Social Welfare in the integral development of epidemiology and the health services system as a response to needs implicit in the changing health-sickness profile of the population. It was hence part of a wider effort prompted by growing local and international awareness of the enormous potential of epidemiology for understanding, analyzing, and modifying the population's health problems and for more harmonious, efficient, and effective articulation of the services. It also arose from a conviction that a strong effort to revise and improve both the teaching and practice of epidemiology is needed for the discipline to be able to perform its important function.

The significance traditionally attached in Venezuela to the development of epidemiology, especially as regards certain communicable diseases, is part of the reason for the progress made in the control of many of them. At the present time the changes occurring in the epidemiological profiles of the general population and of certain specific groups are characterized by an increase in chronic degenerative pathologies, accidents, work-related problems, pollution and degradation of the environment, and other factors determined by processes requiring adjustment and updating of epidemiological knowledge and techniques. The differences in the health-disease conditions of specific population groups have become more clearly defined in terms of their exposure to biological, physicochemical, and social risks which entail a fresh, more responsive approach for proper diagnosis, interpretation, and management. Moreover, growing economic and administrative difficulties in the health services demand a more accurate assessment of the priority needs of the population and an evaluation of the real impact of services and programs on its health.

Internationally, the spread of the theory, methods, and practices of epidemiology and the explosive advances made in the physical, chemical, biological, and social sciences from which it draws its sustenance have created a climate favorable to these endeavors. Special mention must be made of the stimulus provided by international health agencies through activities such as the meeting on "Epidemiology: Current Uses and Future Prospects" organized by PAHO at the end of 1983. All of these developments have helped give momentum to the sizable effort undertaken by Venezuela for the advancement of epidemiology.

Evaluation Activities

In 1984 the Ministry of Health and Social Welfare formed a committee to evaluate the current status of the teaching and practice of epidemiology in order to establish the groundwork for an integral development program. The committee was made up of representatives from the Ministry, the Central University of Venezuela, and PAHO. Consequently, in November and December of the same year, two workshops were held to define the areas of epidemiological work in Venezuela. The resulting document, once approved by the Ministry, became the basis for a national evaluation made in 1985 by the original committee plus representatives of the Venezuelan Social Security Institute and the Lisandro Alvarado West-Central University.

This evaluation covered the epidemiology services (ambulatory and inpatient) of various health institutions at all levels of the system, as well as schools of

[1]Based on the General Report of the First National Meeting on the Teaching and Practice of Epidemiology in Venezuela, held in Caracas, Venezuela, on 1-3 December 1985.

medicine, dentistry, veterinary science, nutrition, nursing and bioanalysis, and the country's leading research centers.

First National Meeting on the Teaching and Practice of Epidemiology

The report on the aforementioned evaluation became the basic document for discussion in this first meeting, which was sponsored by the Ministry of Health and Social Welfare and PAHO.

Institutions actively involved in the teaching and research of epidemiology were invited to attend. The participants for the Ministry of Health included the Sectoral General Directorate of Health; the Directorate of Epidemiology and Health Programs; the Division of Communicable Diseases and Accidents; the Department of Sexually-Transmitted Diseases; the epidemiologists of the Anzoategui, Aragua, Barinas, Bolivar, Carabobo, Cojedes, Federal District, Lara, Merida, Miranda, Portuguesa, Sucre, Tachira, Trujillo and Zulia subregions; the Tachira Gastric Pathology Service, and the Research Unit on the Epidemiology and Control of Vector-borne Diseases. The university community was represented by members of the preventive medicine departments of the Schools of Medicine of Carabobo (Aragua Extension), Los Andes, Eastern, Zulia, and West-Central Universities and of the Faculty of Dentistry and School of Public Health of the Central University of Venezuela. Representatives of PAHO were also present. The meeting was opened in a formal session by the Minister of Health and Social Welfare.

Purposes of the Meeting

The purposes proposed and approved for the meeting were:

- To learn, discuss, and enlarge upon the results of the evaluation made of the teaching and practice of epidemiology in Venezuela.
- To lay the foundations of a plan for the integral development of epidemiology in Venezuela.

Findings of the Evaluation

In accordance with the first purpose of the meeting, it was noted that the factors that had most contributed to positive results were:

- Organization of the health administration on sectoral lines;
- The vital statistics registry system;
- The system for the weekly dissemination of epidemiological information, which has been kept going for over forty years; and
- The availability of trained and dedicated personnel, made possible by the policy of granting fellowships on the part of the health agencies.

The chief constraints encountered during the evaluation were also enumerated:

- Lack of instructional supervision for improvement of the services;
- Lack of operating resources, including resources for the mobilization and supervision of activities;
- Assignment of many functions not specifically related to epidemiology to those in charge of epidemiological activities at the different levels;
- Lack of a career-development policy that would offer employment tenure, adequate remuneration, and incentives to improve the quality of the work;
- Inadequate epidemiological training of the staff at the district and local levels and at the subregional level in other services;
- Lack of diagnostic support methods;
- Lack of continuing education courses in epidemiology;
- Lack of a clearly defined research policy;
- Little access to current technical information; and
- Lack of a system for the constant provision of current information.

Recommendations

After analyzing the results of the evaluation, the participants agreed on a number of recommendations that would lead to the establishment of a plan for the integral development of epidemiology in Venezuela, as follows:

Diagnosis and Health Profiles

All diagnostic activities need to be increased, especially at the district and local levels. These activities should be directed not only at the general population but at specific groups in accordance with their socioeconomic status, working conditions, and exposure to risks. They should also take account of biological, ecological, and social determinant processes, and should include a diagnosis of the services and material and human resources. The knowledge gained from diagnosis of the epidemiological profiles of the general population and of specific groups must serve as the basis for the planning of health measures and decision-making in keeping with the priority needs at the local, district, subregional, and national levels. In addition, diagnostic activities should promote and develop organized participation by the community.

More precise indicators of the quality of life and real dynamics of the health-sickness processes in the population will have to be developed, since the conventional indicators (morbidity and mortality) fall significantly short in this respect.

In order for diagnostic work to advance, national

protocols suited to local situations and designed for the improvement of available resources must be prepared. Information systems will also have to be reviewed at all levels with a view to the improvement of record-keeping and data-processing. Sources of information must not be limited to the records of the Ministry of Health but must be supplemented by surveys and other active methods, as well as data generated by other institutions.

Epidemiological Surveillance

It is essential to review all guidelines, standards, and procedures currently in effect in the country. Epidemiological surveillance must respond to the health-sickness profiles of local and district populations; it cannot therefore be limited to a few communicable diseases, but must cover all acute and chronic health problems, whether communicable or not, that are of importance to a particular group. Surveillance of risks and determinant processes must be emphasized, rather than confining it to the evaluation of health problems.

More importance should be attached to analysis and decision-making at the local and district levels and to the population's organized participation in the surveillance and control of its main problems. Adherence to traditional medical information will not be sufficient; new mechanisms will have to be devised to provide timely information on problems that are not adequately recorded by the services, especially chronic disorders that are not communicable or not normally perceived by the population as "medical" problems.

Evaluation Activities

The predominantly administrative focus of the evaluation of services, programs, and activities must be changed to permit the assessment of their impact on the quality of life of the population and in cost-benefit terms.

Evaluation of the technologies and procedures (preventive, diagnostic and therapeutic) used in the health system needs to be undertaken.

It is also proposed that academic departments of preventive and social medicine be brought into the evaluation process as part of the efforts to strengthen the integration of teaching and services. Moreover, self-evaluation should be encouraged among service units.

Research Activities

It is essential to formulate a policy for epidemiological research which establishes its indisputable importance for the development of the services and spells out the requisite priorities and incentives, as well as the necessary financial arrangements. The generation of knowledge can thus be properly incorporated in the development of the services and in the decision-making process.

The timely dissemination of information requires the establishment of a technical periodical on epidemiology and a documentation center to selectively disseminate current scientific information on the subject.

The strengthening and development of epidemiological research will require the conclusion of interinstitutional agreements and other arrangements at the local and international level, and the development of laboratories and other relevant resources in order to enhance the quality of this research at the subregional level.

Personnel Training

It is necessary to formulate a policy for the selection, recruitment, training, and promotion of personnel in the field of epidemiology. Competence in public administration has to be an essential component in the training of an epidemiologist, and the specialty should be fully recognized by the appropriate agencies. The establishment of monetary and technical incentives would prevent the loss of epidemiologists to other specialties. There is also need for an intensive program of continuing education in the discipline for epidemiologists and other health professionals, technicians, and auxiliary personnel.

There must be a review of undergraduate and postgraduate training and a definition of the profiles of health personnel required at various levels of the services, so that professional curricula can be brought into line with conditions in the country and with the latest developments in theory and practice of this discipline. It is desirable to strengthen the course content in the social and biological sciences, ecology, and in some clinical and laboratory aspects, and special attention should be given to training in the methodologies of scientific research.

The participants also considered that priority should be given to the training and employment of epidemiology and statistics technicians at the subregional and district levels.

Administrative Activities

It was recommended that an accurate determination and evaluation be made as soon as possible of the functions assigned to the epidemiological services at the different levels, and of the human and material resources required for their performance, with a view to the setting of staffing and equipment targets for the short, medium, and long term.

High priority was given to relieving epidemiologists of the numerous administrative tasks they now have to perform and to seeking means of avoiding the frequent turnover of personnel in local and district service units.

Immediate Measures

As a result of their deliberations on priorities, the participants in the meeting agreed to recommend to the Minister of Health and Social Welfare the establishment by resolution of a Working Group or Committee for the Integral Development of the Teaching and Practice of Epidemiology in Venezuela. The members of the group should be representatives of the different agencies of the Ministry of Health and Social Welfare, other health institutions, and teaching and research centers, and be advised by PAHO.

In the immediate future the group will execute the following activities:

1. Frame and propose policies for epidemiological research.
2. Define and propose a career post of epidemiologist and the incentives needed for its consolidation.
3. Establish flexible mechanisms for the dissemination of scientific information in epidemiology, including a technical periodical.
4. Arrange technical events in epidemiology and promote the conduct and publication of research by epidemiologists.
5. Review the epidemiological reporting systems at all levels.
6. Establish model protocols for research on diagnosis, health profiles, and related matters, and promote the mobilization of technical and financial resources for carrying them out.
7. Formulate a plan for the integral development of the teaching and practice of epidemiology in Venezuela and propose specific projects suitable for cooperative execution by local and international agencies.

To ensure the continuity of the work, it was recommended that membership in this group be based on institutional and not personal affiliations.

Finally, it was considered advantageous for the committee established in 1984, and which performed the national evaluation and arranged the meeting, to continue to function until the proposed working group is set up. That committee should go on working to create favorable conditions for implementation of the recommendations approved at the meeting.

Inventory of Human Resources in Epidemiology

The Epidemiology Unit of the Pan American Health Organization is developing an information system of human resources in epidemiology. The Unit will use this inventory of professionals to identify consultants in specific areas, candidates for job openings, and resource persons for seminars and workshops. To this end, qualified and interested readers of the *Bulletin* are invited to participate by having their name and specialized background included in the inventory. Aside from mailing address, the following should be specified: present employment and relevant employment history, educational background, and area of special experience and/or training in epidemiology.

Leading Causes of Death, Canada, 1983

Most recent mortality rates for Canada, calculated from data provided by Statistics Canada, are presented in Table 1. Ischaemic heart disease is still the single most important cause of death for males and females in the 25-74 age range (Table 2). However, in the period 1969 to 1983 the age-standardized mortality rate for ischaemic heart disease declined by 32.1% for males and 37.0% for females. The all-cause mortality rates declined by 19.4% for males and 22.0% for females in this period. Over the same period, the male cancer mortality rate increased by 6.4% and the female rate decreased by 1.7%. Figures 1 and 2 indicate the time-trend rates for the leading five causes of death for both males and females. The most significant increase is for female lung cancer mortality, 152.3% from 1969 to 1983. In the September 1982 issue of *Chronic Diseases* a prediction was made that if current trends continued for female lung cancer mortality a

Table 1. Age-standardized mortality rates (ages 25-74) per 100,000 population for major causes of death, Canada, 1969-1983.

Causes of death	ICD-code[a]	Sex	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
All causes	001-999	M	1,024.7	1,022.9	1,003.4	1,017.7	1,009.6	1,009.8	989.4	968.8	962.6	939.2	913.8	890.9	861.7	851.2	825.9
		F	541.3	534.4	514.5	526.8	514.5	510.3	503.8	478.3	477.4	464.0	456.8	449.8	441.4	434.8	422.2
All malignant neoplasms	140-208	M	226.3	230.3	231.0	231.7	233.6	235.5	232.0	234.6	236.7	237.9	240.1	241.9	237.3	244.5	240.8
		F	172.0	173.4	167.8	174.5	170.9	172.2	167.1	163.7	168.7	167.1	169.4	167.5	169.3	169.9	168.9
Malignant neoplasm of stomach	151	M	23.3	21.5	21.3	20.7	19.6	18.5	18.4	17.2	16.1	14.9	16.5	14.7	13.8	13.6	13.0
		F	8.7	10.6	8.9	9.0	8.3	8.3	7.3	7.5	6.8	6.7	6.6	5.8	6.4	6.0	5.6
Malignant neoplasm of colon; and of rectum, rectosigmoid junction and anus	153-154	M	29.7	31.2	29.2	30.7	30.6	28.9	29.3	29.7	28.9	29.3	29.5	29.5	29.6	29.3	28.9
		F	26.4	27.8	26.0	25.3	25.5	26.2	23.5	22.5	23.9	23.2	24.3	23.7	23.2	21.9	21.6
Malignant neoplasm of pancreas	157	M	14.0	14.7	14.5	13.9	14.9	13.3	12.9	14.1	13.2	14.2	14.3	13.2	12.9	14.4	13.9
		F	8.0	7.6	7.6	8.3	8.3	8.0	8.1	8.1	8.4	8.5	8.3	7.9	8.3	8.1	8.3
Malignant neoplasm of trachea, bronchus and lung; and of pleura	162-163	M	68.0	71.3	73.4	74.3	76.9	80.7	78.4	81.2	83.1	84.5	85.9	88.1	86.0	91.6	91.1
		F	10.9	11.5	11.6	14.1	14.7	16.0	16.9	17.0	19.8	20.5	22.8	23.6	25.1	26.8	27.5
Malignant neoplasm of female breast	174	F	41.7	41.0	41.4	42.9	41.7	41.4	41.6	40.4	41.5	39.9	40.2	40.1	39.8	40.1	40.2
Malignant neoplasm of ovary and other uterine adnexa	183	F	13.5	13.6	12.5	13.7	12.8	12.3	12.2	11.8	12.4	12.0	11.7	11.6	11.3	11.5	10.5
Malignant neoplasm of prostate	185	M	12.7	12.7	13.5	13.2	12.3	13.6	13.5	12.6	13.6	13.3	13.8	12.8	13.3	13.6	14.2
Diabetes mellitus	250	M	14.7	16.1	15.7	16.4	15.5	14.5	14.3	13.9	12.8	13.6	12.2	12.0	12.0	11.3	11.0
		F	16.3	16.8	15.9	15.7	15.3	14.5	13.7	11.6	11.9	10.4	10.2	9.6	9.5	9.6	9.1
Ischaemic heart disease	410-414	M	375.1	378.9	362.3	363.2	355.2	354.2	341.7	338.7	335.1	315.7	297.6	287.5	273.1	264.6	254.6
		F	133.7	131.4	122.1	121.8	120.0	121.5	116.7	109.7	109.0	105.0	96.6	97.1	91.6	88.2	84.3
Cerebrovascular disease	430-438	M	67.6	65.9	63.6	66.8	64.2	63.4	57.9	55.0	54.6	50.9	49.4	45.2	43.1	40.8	38.6
		F	51.0	49.9	48.0	48.9	45.9	44.4	44.0	41.1	37.7	35.1	35.8	33.0	33.2	29.7	28.1
Chronic obstructive pulmonary disease	490-493, 496	M	32.7	33.8	33.2	32.1	35.5	33.5	33.6	34.5	31.1	33.7	30.0	30.2	28.5	29.5	27.9
		F	7.3	8.1	7.2	7.8	8.7	8.3	8.8	9.1	9.3	9.5	9.5	9.5	9.2	10.0	10.2
Gastric, duodenal, peptic, and gastrojejunal ulcers	531-534	M	9.3	7.9	8.4	7.0	6.6	6.0	5.5	4.6	4.1	3.8	3.7	3.3	3.6	3.8	3.6
		F	2.5	2.3	2.2	2.4	2.0	2.2	1.8	1.8	1.5	1.5	1.6	1.4	1.5	1.8	1.4
Chronic liver disease and cirrhosis	571	M	19.1	21.5	22.7	25.8	29.6	30.9	31.4	32.0	30.2	30.4	27.9	27.7	26.6	22.9	21.6
		F	9.9	9.7	10.2	11.5	12.2	12.3	12.6	12.3	11.6	12.5	11.6	11.3	11.2	9.4	9.0
Nephritis, nephrotic syndrome and nephrosis; and other kidney diseases	580-593	M	9.7	8.0	8.7	7.9	7.6	7.6	7.8	6.7	7.4	6.5	5.7	5.7	5.6	5.8	5.3
		F	7.3	7.0	6.6	6.3	5.3	5.2	5.5	4.6	4.8	4.5	4.4	4.3	4.1	4.1	4.1
Motor vehicle traffic accidents	E810-E819	M	40.1	34.6	37.2	39.4	38.1	35.6	32.8	28.8	28.3	26.6	30.5	27.8	29.5	21.2	21.5
		F	13.9	12.9	13.8	14.4	15.2	13.0	13.3	11.3	11.4	11.3	11.6	11.5	10.0	8.8	8.7
Suicide and self-inflicted injury	E950-E959	M	25.0	26.1	27.2	25.9	27.3	26.8	25.2	25.6	28.3	29.7	28.7	28.0	27.4	29.5	30.1
		F	10.9	11.0	11.1	11.5	11.8	11.9	10.8	11.1	11.4	11.2	10.2	10.2	10.1	9.6	10.5
All natural causes of death	001-799	M	908.4	911.8	886.7	898.8	888.9	892.1	876.9	865.0	855.8	832.9	806.4	791.3	762.8	760.9	738.7
		F	502.8	493.6	472.6	483.0	470.5	467.7	462.0	439.4	437.6	425.6	418.9	413.3	407.1	402.7	391.6

Source: Statistics Canada Cat. No. 84-203. Annual Series, Cause of Death.
[a]*International Classification of Diseases,* Ninth Revision, 1975.

Figure 1. Time trends of major causes of death for Canadian males, 1969-1983.

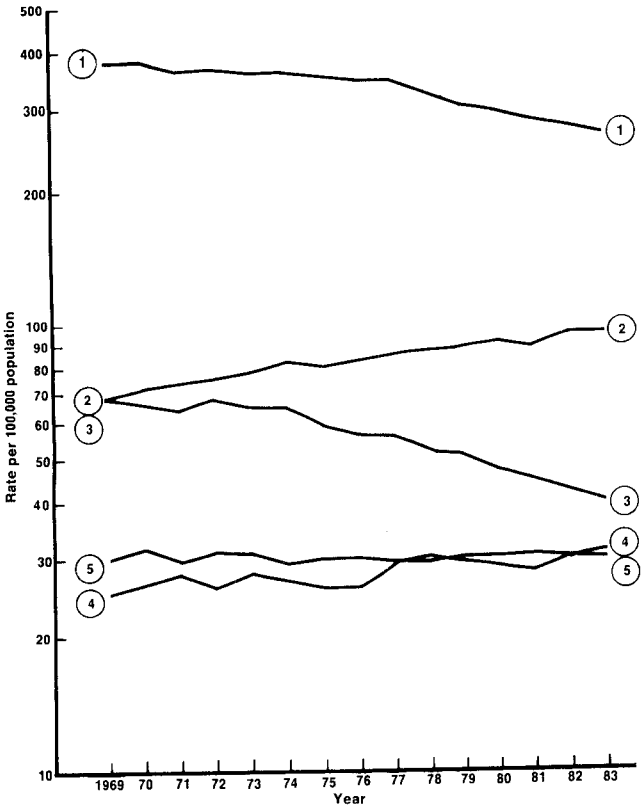


Figure 2. Time trends of major causes of death for Canadian females, 1969-1983.

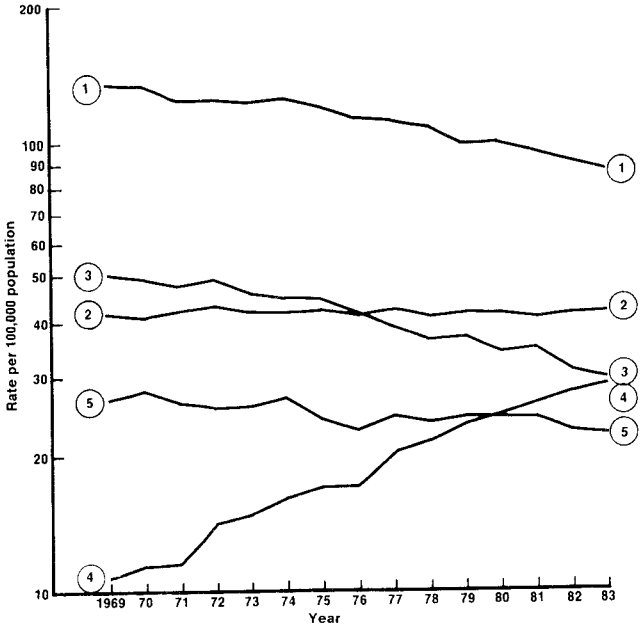


Table 2. Leading causes of death, Canada, 1983.

Rank[a]	Male	ASMR[a]	Female	ASMR
1	Ischaemic heart disease	254.6	Ischaemic heart disease	84.3
2	Malignant neoplasm of trachea, bronchus and lung; and of pleura	91.1	Malignant neoplasm of female breast	40.2
3	Cerebrovascular disease	38.6	Cerebrovascular disease	28.1
4	Suicide and selfinflicted injury	30.0	Malignant neoplasm of trachea, bronchus and lung; and of pleura	27.5
5	Malignant neoplasm of colon; and of rectum, rectosigmoid junction and anus	28.9	Malignant neoplasm of colon; and of rectum, rectosigmoid junction and anus	21.6
6	Chronic obstructive pulmonary disease	27.9	Malignant neoplasm of ovary and other uterine adnexa	10.5
7	Chronic liver disease and cirrhosis	21.6	Suicide and selfinflicted injury	10.5
8	Motor vehicle traffic accidents	21.5	Chronic obstructive pulmonary disease	10.2
9	Malignant neoplasm of prostate	14.2	Diabetes mellitus	9.1
10	Malignant neoplasm of pancreas	13.9	Chronic liver disease and cirrhosis	9.0
11	Malignant neoplasm of stomach	13.0	Motor vehicle traffic accidents	8.7
12	Diabetes mellitus	11.0	Malignant neoplasm of pancreas	8.3
13	Nephritis, nephrotic syndrome and nephrosis; and other kidney diseases	5.3	Malignant neoplasm of stomach	5.6
14	Gastric, duodenal, peptic, and gastrojejunal ulcers	3.6	Nephritis, nephrotic syndrome and nephrosis; and other kidney diseases	4.1
15	. . .		Gastric, duodenal, peptic, and gastrojejunal ulcers	1.4

[a]Ranked by 1983 age-standardized mortality rate (ASMR), ages 25-75, per 100,000 population.

rate of 35/100,000 could be achieved by 1986. The reported 1983 rate of 27.5/100,000 is rapidly approaching that prediction.

(Source: Walter Litven, Elen Smith and Patricia Milks, Non-Communicable Disease Division, Bureau of Epidemiology, Health and Welfare Canada.)

Editorial Comment

The data presented underscore the importance of mortality statistics for the formulation and evaluation of health policies. They also serve as a reminder that gradual changes in mortality similar to those described for Canada can be expected over the medium and long term in the countries of Latin America and the Caribbean, where health profiles are changing rapidly in the same direction.

The Epidemiology of Suicide in Suriname[1]

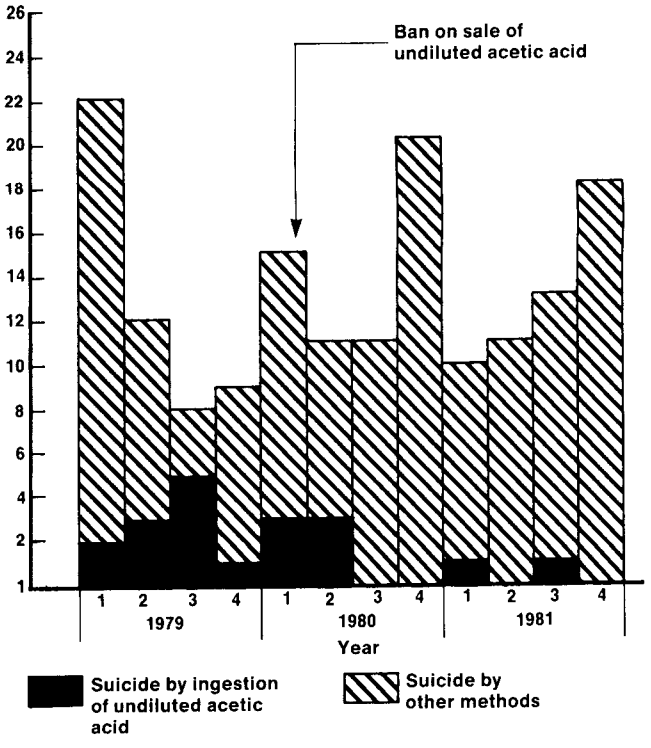
Health authorities in Suriname have maintained surveillance for suicide and have collected data for that cause of death since 1976. The number of deaths due to suicide by ingestion of agricultural insecticides and chemicals and other methods between 1976 and 1983 is shown in Table 1. Deaths due to the ingestion of the pesticide paraquat are also shown for 1980-1983. In recent years a change has been observed in the methods used for suicide. Whereas before 1979 hanging and ingestion of undiluted acetic acid were common, the latter practically disappeared as a method of suicide after the Government banned the sale of undiluted acetic acid. The impact of the ban can be seen in Figure 1. However, various toxic substances and chemical pesticides are readily available in stores, and they are commonly found in homes and on small farms throughout the country. A secondary effect of the ready availability of agricultural pesticides has been the increasing use of these substances for suicide (Table 1). In 1978, only 11% of the total number of suicidal deaths were due to toxic agricultural compounds, and three of the four deaths reported were accidental. By

Table 1. Deaths by suicide due to poisoning and other methods in Suriname, from 1976 to 1983.

Year	Ingestion of toxic substances: Paraquat	Ingestion of toxic substances: Other insecticides and chemicals	Other methods	Total number of deaths
1976	0	5	28	33
1977	0	0	22	22
1978	0	4	32	36
1979	0	12	37	49
1980	12	5	41	58
1981	23	10	19	52
1982	35	0	29	64
1983	59[a]	...	...	...

[a]Reports from two hospitals.
... Data not available.

Figure 1. Number of suicides in Suriname per quarter year, 1979-1981.



[1]Based on a presentation to the CAREC Epidemiologists Meeting in June 1984, by Dr. Wim Bakker, Chief, Epidemiology Unit, Ministry of Health, Suriname.

1981 however, this proportion had risen to 63.5% and 23 out of 33 fatal poisonings were caused specifically by paraquat. Only two of those deaths were accidental.

The alarming increase in suicide by poisoning prompted an intensification of the surveillance program for intoxications. Sentinel stations were established to report all such cases, and a specific questionnaire was introduced to collect data on paraquat intoxications. The ultimate purpose of the intensified surveillance program was to collect the information necessary for the development of regulations on the distribution and use of toxic agricultural products.

Table 2 and 3 summarize the results of intoxication surveillance at the Nickerie Hospital in 1983. This hospital serves a population of about 30,000 persons, most of them of East Indian origin. In 1983, of a total of 35 cases of intoxication treated at the hospital, 28 were attempted suicides. Six of the attempts resulted in death. Among the six persons who successfully committed suicide, four were females (three housewives and one schoolgirl). Table 3 reveals that almost 70% of the patients who attempted suicide by poisoning were younger than 25 years of age. The male-to-female ratio in this youngest age group was 1:2. Herbicides and pesticides used in 18 of the 28 suicide attempts included paraquat, endrine, azodrine, and other substances.

In January 1984, intoxication surveillance was extended to the Academic Hospital of Paramaribo. As Table 4 shows, between 1 January and 17 May 1984 a total of 140 patients were treated in the emergency ward for intoxications. Thirty-six, or 25.7% of these patients had ingested paraquat. Because of lack of information on 29 patients who were hospitalized during this period, and on the nature of their intoxication (whether suicidal, accidental, or homicidal), a retrospective study of the records of the Academic Hospital was performed for the year 1983. The records of 70 patients admitted to the hospital for paraquat poisoning were reviewed (Table 5). Of these, 56 (80%) had died and 14 had recovered. Table 5 also reveals that the number of patients seen for this problem had doubled in the second half of 1983. Accidental paraquat poisonings accounted for six cases, and one of them had died. Again half of the total number of patients were younger than 25 years of age. Table 6 shows the age and ethnic composition of the 70 patients hospitalized for paraquat intoxication. Fifty-five (79%) of the patients were of

Table 2. Cases treated for intoxications at Nickerie Hospital, 1983.

Incidents	Cases	Deaths
Suicidal intoxications	28	6
Accidental intoxications	5	–
Homicidal intoxications	2	1
Total	35	7

Table 3. Attempted and successful suicides seen in Nickerie Hospital, by sex and age, 1983.

Age group	Attempts			Deaths		
	Male	Female	Total	Male	Female	Total
10-14	1	–	1	–	–	–
15-19	1	9	10	–	1	1
20-24	4	4	8	–	2	2
25-34	5	1	6	2	–	2
35-44	1	1	2	–	1	1
45-54	1	–	1	–	–	–
Total	13	15	28	2	4	6

Table 4. Cases of intoxications treated at the Emergency Ward of the Academic Hospital, Paramaribo, 1 January to 17 May, 1984 (per month).

Month	All cases	Paraquat
January	68	12
February	35	12
March	13	5
April	14	5
May 1-17	10	2
Total	140	36

Table 5. Outcome for hospitalized cases of paraquat intoxication, Academic Hospital, Paramaribo, 1983, by sex and ethnic group.

Period	Deaths	Recoveries	Total
First half, 1983	19	5	24
Second half, 1983	37	9	46
Total year	56 (80%)	14 (20%)	70
Male	48 (69%)		
Female	18 (26%)		
Sex unknown	4 (6%)		
East Indians	55 (79%)		
Other ethnic groups	15 (21%)		

Table 6. Number of patients with paraquat intoxication treated at the Academic Hospital, Paramaribo, 1983, by age, sex, and ethnic group.

Age	East Indians				Other ethnic groups				Total		
	Male	Female	Unknown	Total	Male	Female	Unknown	Total	(all groups)	Recovered	Nonsuicide
– 9	2	–	–	2	–	–	–	–	2	–	2
10-14	–	1	1	2	1	–	–	1	3	1	–
15-19	8	3	–	11	3	2	–	5	16	7	1
20-24	7	3	–	10	4	1	–	5	15	1	–
25-29	5	2	1	8	–	–	–	–	8	–	–
30-34	4	–	–	4	1	1	–	2	6	3	3
35-39	3	–	–	3	–	–	–	–	3	–	1
40-44	4	3	–	7	–	–	–	–	7	2	1
45-54	2	–	1	3	–	–	1	1	4	–	–
55-64	3	1	–	4	1	–	–	1	5	–	–
65 +	–	1	–	1	–	–	–	–	1	–	–
Total	38	14	3	55	10	4	1	15	70	14	8

East Indian origin. The reasons for the reversal of the male-female ratio at this hospital compared to the Nickerie Hospital are unknown.

Discussion

The relatively sudden appearance in 1980 of paraquat as a major means of suicide in Suriname coincides with its introduction and ready availability throughout the country. At the moment, paraquat can be freely obtained. It can be found on the shelves of general stores, often next to groceries. It is frequently sold in soft drink and beer bottles. Moreover, bottles and other containers of paraquat carry no labels with warnings or directions for its use. Sometimes these bottles are stored in refrigerators, and the contents are accidentally ingested when mistaken for beer and soft drinks. Suriname's previous experience with the ban on the sale of undiluted acetic acid demonstrates that the use of toxic substances for suicide can be controlled by vigorous regulation of the sale and distribution of those products. The data described here suggest that similar regulations should be instituted for the sale and use of agricultural pesticides.

(Source: Epidemiology Unit, PAHO.)

Calendar of Courses and Meetings

Takemi Fellowships in International Health

The Harvard School of Public Health announces its 1986-1987 fellowships for research and advanced training on critical issues of international health, especially those relating to developing countries. Applicants must have completed graduate degrees and/or had some years of experience. They are expected to demonstrate strong interest in the issues central to the Program; potential leadership capacity in their home countries, and appropriate preparation (including facility in English) to enable them to benefit from a period at Harvard. Applicants may come from any relevant discipline or profession (e.g. medicine, law, public health, economics, administration, and other social sciences).

Information is available from: Professor David E. Bell, Acting Director, Takemi Program in International Health, Harvard School of Public Health, 665 Huntington Avenue, Building 1, Boston, Massachusetts 02115, U.S.A.

Summer Courses in Epidemiology in the United States

- The Johns Hopkins University School of Hygiene and Public Health will sponsor the fourth annual

Graduate Summer Program in Epidemiology, to be conducted from 23 June to 12 July 1986. The program includes design and conduct of clinical trials, epidemiological methods for evaluating health services, epidemiological and preventive aspects of cancer, epidemiology of infectious diseases, introduction to biostatistics, methods in epidemiology, occupational epidemiology, environmental epidemiology, and principles of epidemiology. Proficiency in the English language is required.

Further information is available from Mr. Steven G. Warm, Program Coordinator, Graduate Summer Program in Epidemiology, School of Hygiene and Public Health, The Johns Hopkins University, 615 North Wolfe Street, Baltimore, Maryland 21205, U.S.A.

- The University of Minnesota School of Public Health and the Department of Professional Development and Conference Services announce the 21st Graduate Summer Session in Epidemiology, to be conducted from 22 June to 12 July 1986. Courses will be offered in fundamentals of biostatistics and epidemiology, epidemiology of infectious diseases, epidemiology of cancer, epidemiology of cardiovascular diseases, epidemiology and health policy, epidemiology of injuries, and categorical analysis of data. Special courses will also be offered in surveillance and control of communicable diseases, clinical epidemiology, epidemiology of adverse drug reactions, epidemiology for developing countries, epidemiology of aging, methods in hospital infection control, clinical trials: design and conduct, clinical trials: analysis and interpretation; methods in occupational epidemiology, and epidemiology of AIDS.

For further information write to Dr. Leonard M. Schuman, Director, Epidemiology Summer Session, Division of Epidemiology, 1360 Mayo Memorial Building, 420 Delaware Street, S.E., University of Minnesota, Minneapolis, Minnesota 55455-0118, U.S.A.

- Tufts University at Medford, Massachusetts, and the New England Epidemiology Institute are sponsoring a course to be conducted from 27 July to 15 August 1986. The course will cover the theory and practice of epidemiology, the theory and practice of case control research, biostatistics for epidemiologists, regression and categorical data methods, nutritional epidemiology, microcomputers for epidemiologists, data acquisition and management, epidemiologic basis for public policy, logistic regression and survival analysis, environmental and occupational epidemiology, cancer epidemiology, biomedical writing, and reproductive and perinatal epidemiology. Proficiency in English is essential.

For more information contact the New England Epidemiology Institute, Dept. SC, P.O. Box 57, Chestnut Hill, Massachusetts 02167, U.S.A.

Courses in the Bacteriology, Epidemiology and Control of Tuberculosis, 1986

Training for managers of tuberculosis control programs and of tuberculosis bacteriology networks is provided in annual courses of four to six weeks duration. These courses may be attended by fellowship recipients from anywhere in the Region, and are held in several countries:

Bacteriology

CEPANZO/PAHO: 5 May to 13 June. *Officer in charge:* Dr. Joe R. Held, Director, Pan American Zoonoses Center, Casilla de Correo 3092, Correo Central, 1000 Buenos Aires, Argentina.

LCDC/Canada: 20 May to 27 June (in English). *Officer in charge:* Dr. Adalbert Laszlo, Laboratory Centers for Disease Control, Tunney's Pasture, Ottawa, Ontario K1A OL2, Canada.

Argentina: 3rd quarter. *Officer in charge:* Dr. Eduardo Balestrino, Director, Instituto Nacional de Epidemiología, Casilla de Correo 106, 3000 Santa Fe, Argentina.

Chile: 4th quarter. *Officer in charge:* Dr. María Teresa Valenzuela, Instituto de Salud Pública de Chile, Casilla de Correo 48, Santiago, Chile.

Mexico: 3rd quarter. *Officer in charge:* Dr. Lamberto Blancarte, Director, Laboratorio Central de Tuberculosis, Lago Pátzcuaro 55, Colonia Anáhuac, México, D.F., CP11320 Mexico.

Epidemiology and Control

Argentina: 3rd quarter. *Officer in charge:* Dr. Eduardo Balestrino, Director, Instituto Nacional de Epidemiología, Casilla de Correo 106, 3000 Santa Fe, Argentina.

Brazil: 3rd quarter. *Officer in charge:* Dr. Germano Gerhardt, Director, División Nacional de Pneumología (DNPS), Rua do Resende 128 - 2o. andar, Rio de Janeiro, RJ, Brazil.

Chile: 3rd quarter. *Officer in charge:* Dr. Edgardo Carrasco, Director, Instituto Nacional de Enfermedades Respiratorias y Cirugía Torácica (INERCYT), Ministerio de Salud Pública, Avenida J. M. Infante 717, Santiago, Chile.

Cuba: 3rd quarter. *Officer in charge:* Dr. Libertad Carreras, Programa de Tuberculosis, Ministerio de Salud Pública, La Habana, Cuba.

Mexico: 3rd quarter: *Officer in charge:* Dr. Gonzalo Cano, Programa de Tuberculosis e Infecciones Respiratorias, Mazaryk 490, 8o. piso, Colonia Polanco, México 5, D.F., Mexico.

Venezuela: 4th quarter: *Officer in charge:* Dr. Manuel Adrianza, Departamento de Tuberculosis y Enfermedades Pulmonares, Ministerio de Sanidad y Asistencia Social, El Algodonal, Antímano, Caracas, Venezuela.

International Symposium on Addiction Patterns and Treating Strategies

The International Symposium on Addiction Patterns and Treating Strategies will be held in the Baden Congress Center, Baden, Austria, from 19 to 24 May 1986. The program will include sessions on models of addiction, strategies on treatment, and social approaches to therapy. Some of the topics to be considered in the workshops are psychodiagnosis, psychotherapy, social and cultural history of addiction, neurophysiology, neuropharmacology, models of prevention, therapy, and legislation on alcohol and drug abuse. Official languages of the symposium will be German and English. For further information write to: Anton Proksch Institut, Mackgasse 7-9, A-1237 Vienna, Austria.

AIDS Impact on Public Policy. An International Forum: Policy, Politics, and AIDS

Cosponsored by the New York State Department of Health-AIDS Institute and the Milbank Memorial Fund, this conference will take place at the New York Hilton-Rockefeller Center, New York, from 28 to 30 May 1986. Topics include public health and private rights: health, social and ethical perspective; research: international cooperation and competition; clinical management: treatment modes and impact on the health care system; education and communication: enhancing public understanding and fostering disease prevention; and AIDS and economics: an international perspective. For more information contact: Sherry Chorost, AIDS Conference Coordinator, P.O. Box 2116, Albany, New York 12201, U.S.A.

International Symposium on Malaria

The Symposium will be held at the Instituto Oswaldo Cruz, Rio de Janeiro, Brazil, from 1-5 June 1986, with the participation of distinguished national and international experts. A thorough updating of the malaria situation will include plenary sessions, round table discussions, and conferences, covering the following topics: epidemiology of the disease; role of the general health services in control activities; new developments in the diagnosis, treatment, immunology and immunopathology of malaria; vector capacity; physiology of the plasmodium; vaccination prospects, and recent advances in molecular biology.

For more information, please contact Dr. Claudio Tadeu Daniel Ribeiro, Instituto Oswaldo Cruz, Avenida Brasil 4365, Manguinhos, Cx. Postal 926, CEP 20000, Tel. (021) 280-8787, PABX, Rio de Janeiro, RJ, Brazil.

Second International Symposium on Infection Control in Hospitals

The Second International Symposium on Infection Control in Hospitals will be held in the Kensington Conference and Exhibition Center in Central London, England, from 11 to 15 August, 1986. The program has been designed to attract hospital infection control physicians and nurses, epidemiologists and public health authorities, physicians dealing with immune suppressed hosts, and medical microbiologists. Sessions will include infection control in mother and child, in Third World countries, new antibiotics, and special problems. The symposium will be held in English only. More information is available from: Infection Control in Hospitals, Concorde Services Ltd., 10 Wendell Road, London W12 9RT, United Kingdom.

Master's Degree in Hospital Epidemiology

Loma Linda University announces a professional training program leading to the degree of Master of Public Health in Hospital Epidemiology. The program is offered by the School of Health in conjunction with the Loma Linda University Medical Center.

This course of graduate study is geared to the needs of nurses with Bachelor of Science degrees in nursing who intend to specialize in hospital epidemiology, infection control, or quality assurance. The program incorporates studies in public health, epidemiology, statistics, computer applications, health administration, microbiology and nursing. A field research project will give the candidates an opportunity to apply and master the newly learned skills.

For information on dates and other matters, write to: Program Director, Biostatistics and Epidemiology, School of Health, Loma Linda University, Loma Linda, California 92350, U.S.A.

Publications

Controlled Clinical Trials. (Official journal of the Society for Clinical Trials).

This journal reports on the design principles of better data collection techniques, from the perspective of the overall system down to the forms used in recording information. It features articles on the critical design and operating components of data processing systems that are used for maintaining a long-term data base, and on quality assurance methods for error detection in data generation and processing procedures.

Additional articles in *Controlled Clinical Trials* discuss the history and impact of clinical trials in the practice of medicine, as well as the medical, legal, and ethical issues involved in the conduct of prospective follow-up studies. It also provides valuable information for researchers and professionals working in biostatistics, epidemiology, computer science, management science, and bioethics.

For subscription information and sample copies write to: *Controlled Clinical Trials,* Elsevier Science Publishing Co. Inc., P.O. Box 1663, Grand Central Station, New York, New York 10163, U.S.A.

American Journal of Infection Control (Official publication of the Association for Practitioners in Infection Control)

This periodical publishes original articles in English pertaining to the epidemiology, surveillance and control of infections in health care institutions and their relationship to the community. It also provides a forum for dialogue on controversial issues, from the critical examination of infection prevention measures to dealing with the changes in health care financing.

For subscription information write to: *American Journal of Infection Control,* The C.V. Mosby Company, 11830 Westline Industrial Drive, Saint Louis, Missouri 63146, U.S.A.

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 1986.

Country and administrative subdivision	Cholera Cases	Yellow Fever		Plague Cases
		Cases	Deaths	
PERU	–	*16*	*16*	–
San Martín	–	16	16	–

Note: Since the publication of the last issue of the *Epidemiological Bulletin* (Vol. 6, No. 6, 1985), *Bolivia* has reported an additional case of yellow fever in the La Paz Department, for a partial total of 51 cases and 35 deaths in 1985. *Peru* has reported 8 additional cases of yellow fever, in the San Martín Department, for a partial total of 59 cases and 44 deaths in 1985.

Additional plague cases have also been reported for 1985. *Brazil* has added 21cases to the year's figures (18 in the State of Bahia and 3 in the State of Ceará), for a total of 62 cases and no deaths. *Peru* has reported 23 additional plague cases in the Departments of Cajamarca (20), Piura (2), and Lambayeque (1), bringing the year's total up to 44 cases and 3 deaths.

PAN AMERICAN HEALTH ORGANIZATION
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