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PROGRAM FOR THE CONTROL OF NONCOMMUNICABLE DISEASES

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PROGRAM FOR THE CONTROL OF NONCOMMUNICABLE DISEASES

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2. Definition of the Problem

Advances in the control of communicable diseases and the increase in life expectancy, together with cultural and environmental changes produced by urbanization and industrialization, are factors contributing to a rise in noncommunicable diseases in most of the countries of the Region of the Americas.

Prevalence data on these diseases are scarce, and much of the existing information lacks both reliability and a common denominator to make the figures comparable. Mortality data are available in most of the countries and can be used to estimate the significance of noncommunicable diseases, but the quality of death certification varies greatly and is related to the availability of medical services.

The study undertaken by the Pan American Health Organization on the characteristics of urban mortality in the 15-74-year age group in 10

Latin American cities, San Francisco in the United States of America, and Bristol in the United Kingdom, showed that noncommunicable diseases represented about two thirds of the total causes of death.¹

Information obtained from the overall Region, 1971-1977, shows that the magnitude of the problem varies considerably from country to country. The death rate for cardiovascular diseases per 100,000 ranges from 47.7 in El Salvador to more than 300 in Argentina, Barbados, Canada, Uruguay and the United States of America. For malignant tumors it ranges from 13.5 in Honduras to more than 150 per 100,000 in Canada, Uruguay, and the United States of America (Tables I and II).²

All available data indicate that diabetes is a problem that will keep growing in future years. Improved understanding of the disease and progress made in treating its metabolic defects have shifted attention to its chronic vascular and microvascular complications. Diabetes-related hospital discharges have increased 15 to 20 times over the last 50 years, whereas the overall rate of hospital discharges has merely doubled. Mortality rates in the Caribbean area are among the highest in the world.³

Chronic rheumatic diseases and some chronic allergic diseases are frequent causes of prolonged morbidity and incapacity, restricting a large number of people from active life and producing a sizable load on medical care services.

Within the group of noncommunicable diseases, some, such as ischemic heart disease, are more important in terms of prevalence and as causes of mortality, morbidity or incapacity. Other diseases are important as public health problems because the means to achieve their control are available. For example, rheumatic fever can be controlled by proper prevention and treatment of streptococcal infections, thereby lessening the risk of chronic heart disease. Arterial hypertension, an important risk factor in cardiovascular, cerebrovascular and kidney

¹R. R. Puffer and G. W. Griffith. Patterns of Urban Mortality: Report of the Inter-American Investigation of Mortality. Pan American Health Organization, Washington, D.C., Scientific Publication No. 151, 1967.

²PASB Health Statistics Unit. Unpublished data, 1980.

³J. Litvak. Diabetes Mellitus: A Challenge for the Countries of the Region. Bull. PAHO 9(4):317, 1975.

diseases, can also be controlled by proper treatment. Secondary prevention of diabetes mellitus is feasible through the development of a comprehensive system of care. Carcinoma of the uterine cervix--the leading cause of cancer deaths among females in most countries of the Region--is one of the most curable types of cancer, provided that existing measures of early diagnosis and treatment are made available.

Briefly, it can be stated that noncommunicable diseases are emerging both in relative and absolute terms as a public health problem throughout the Region, although the distribution is still heterogeneous, reflecting the different profiles of the countries as related to the several variables that are known to influence the incidence of these diseases. It is also possible to anticipate that this changing pattern of disease morbidity and mortality will be accentuated in the coming years, along with the process of socioeconomic development. Infectious and parasitic diseases should be progressively minimized as competing risks for the chronic diseases; the age structure of the populations will show an increasing proportion of older age groups, which are those at greater risk of chronic disease, and, finally, chronic diseases and exposure to polluted environments and ill-habits have increasingly been shown to be linked.

3. Objectives and Targets

The principal objective of the program is to promote the prevention and control of noncommunicable diseases, with due regard to the criteria for determining priorities, and within the existing health structures of each particular country. If the guidelines for the program define the role of each operative level within the existing levels of care, it will be possible for the health authorities to incorporate it into other community based programs within the general health services. Comprehensiveness and extension of coverage will then be dependant on the strengthening of primary care and community participation.¹ To this end, and as stated in the recommendations of the Ten-Year Health Plan for the Americas, such approach requires that, where the magnitude of the problem justifies such action, countries should organize technical units responsible for the chronic disease program in their Ministries of Health.

¹IV Special Meeting of Ministers of Health of the Americas, Washington, D.C. Pan American Health Organization, Official Document 155, 1978.

As defined above, the program objectives involve the following components:

- gaining a better understanding of the magnitude and characteristics of the problem;
- reducing the incidence of preventable diseases;
- encouraging early diagnosis and treatment as well as progressive and continuing care of patients;
- meeting the spontaneous demand for care, both in the urban and rural areas;
- training personnel at all levels;
- conducting epidemiological, clinical and operational research;
- promoting exchange of information; and
- emphasizing community education and participation.

4. Description of the Program

The Noncommunicable Diseases Unit of the Division of Disease Prevention and Control includes the program areas of chronic diseases, mental health, dental health, radiation and health, and prevention of traffic accidents. This document deals only with the chronic diseases program, as requested in Resolution XVIII of the XXVI Meeting of the Directing Council in 1979.

4.1 Cancer

Malignant neoplasms, as a group, ranked second to heart disease among the principal causes of death for all ages in the countries of the Americas in 1975.¹ They were among the first five causes, excluding "senility, ill-defined and unknown causes," in 30 of 37 countries. Argentina, Canada, Chile, and Uruguay exhibited the highest combined rates for both sexes, while the Dominican Republic, El Salvador, Honduras, and Nicaragua had the lowest. Cancer incidence data are scarce, since they require cancer registries that use a reliable system for reporting cases of cancer and that also approach completeness.

¹Health Conditions in the Americas, 1973-1976. Pan American Health Organization, Washington, D.C., Scientific Publication No. 364, 1978.

Some of the difficulties of international cancer control arise because of a lack of standardization. These difficulties include:

- a) differences in pathological nomenclature of malignant diseases;
- b) differences in classification of malignant diseases;
- c) differences in cancer staging; and
- d) differences in evaluation and presentation results.

In addition, as with any other problem in public health, the first prerequisite in planning cancer control programs must be the proper and adequate diagnosis of the size and nature of the problem. To this end, PAHO is encouraging the implementation of hospital-based cancer registries as an initial step for developing countries wishing to attain a population-based cancer registry.

A modular course for physicians and registrars has been prepared that uses the WHO Handbook for Standardized Cancer Registries, Hospital Based¹ and other standardized material, such as the International Classification of Diseases for Oncology (ICD-O)² and the International Union Against Cancer's TNM's System for Cancer Staging.³ The first course was given in 1978 in Costa Rica, and a second is planned for 1980 in the English-speaking Caribbean countries, to comply with a recommendation of the last Conference of Ministers Responsible for Health.

¹WHO Handbook for Standardized Cancer Registries, Hospital Based. World Health Organization, Geneva, Offset Publication No. 25, 1976. (Also available in Spanish and Portuguese as PAHO Scientific Publication No. 349, 1977).

²International Classification of Diseases for Oncology. World Health Organization, Geneva, '976. (Also available in Spanish and Portuguese as PAHO Scientific Publication No. 345, 1977).

³TNM Classification of Malignant Tumors. International Union Against Cancer, Geneva, 1974.

The organization of effective uterine cervical cancer control programs has been the principal focus of national cancer projects supported by PAHO. The Inter-American Investigation of Mortality conducted by the Pan American Health Organization in the early sixties brought to light the significance of uterine cervical cancer as a major health problem.¹ The combined data from nine Latin American cities revealed that this malignant neoplasm accounted for almost one fourth of all cancer deaths among women between 15 and 74 years of age. Furthermore, they showed that the death toll from cervical cancer in young women was 10 times greater in those cities than in urban areas favored by higher living standards. This finding corroborated the well-known socioeconomic gradient that points to a much higher risk of the disease in the less-advantaged strata. It is possible that differences in sexual hygiene and in gynecological-obstetrical care may be responsible for much of this variation. But whatever the final explanation may be, the fact remains that in our Region, where large pockets of less-than-adequate development persist, we are confronted with a cancer that kills thousands of women yearly, although it is a cancer whose incidence and mortality can be greatly reduced by detection and treatment of preneoplastic conditions and early invasive lesions.

The foregoing observations motivated the Organization to call together a group of expert consultants for the preparation of the Manual of Norms and Procedures for Cervical Cancer Control.² This manual is currently being updated by a second panel of consultants. Its use has contributed significantly to the improved operation of the programs at the clinical, laboratory, diagnostic, and follow-up levels and has also helped to upgrade current administrative practices and coordination policies. As a result of the high cost and low effectiveness of the isolated screening activities performed through family planning programs, PAHO is cooperating with several countries in integrating the existing resources with nationally-planned cancer control programs.

The strengthening of specialized centers is an important step in defining the role of the different levels of care in cancer control programs. It facilitates centrifugal projection of norms and guidelines and the possibility of making integral use of available knowledge in control measures. A significant portion of PAHO's activities in support of this aspect of cancer control programs is conducted through the Latin American Cancer Research Information Project (LACRIP). This joint project of PAHO and the U.S. National Cancer Institute is financed to a large extent with extrabudgetary resources.

¹R. R. Puffer, and G. W. Griffith. Op. cit.

²Manual of Norms and Procedures for Cervical Cancer Control. Pan American Health Organization, Washington, D.C., Scientific Publication No. 248, 1972.

To strengthen cancer centers, LACRIP is providing information on latest advances in the field, and is participating in collaborative programs on clinical and epidemiological research.

During 1979 LACRIP provided nearly 900 searches of the CANCERLINE data base to oncologists throughout the Region, using a terminal located at PAHO Headquarters. LACRIP's Selective Dissemination of Information Service, which is carried out in collaboration with the Regional Library of Medicine and the Health Sciences (BIREME) in São Paulo, Brazil, and two subcenters located in Mexico and Venezuela, was extended to 2,800 subscribers in the Region.

Another activity of LACRIP, the Collaborative Cancer Treatment Research Program (CCTRP), is developed through nine centers in Latin America and six in the United States of America. The countries participating in the CCTRP are Argentina, Brazil, Chile, Colombia, Peru, United States of America, and Uruguay. By the end of 1979, this program included the active participation of 36 oncological institutions in 27 protocols on breast cancer, head and neck cancer, gynecological malignancies, melanomas, sarcomas, lymphomas, leukemia, and gastric cancer. The CCTRP is also supporting 3-month training programs at participating institutions in the United States or America for junior physicians and nurses, as well as the exchange of principal investigators. In addition to drugs required in the treatment of patients, the centers receive research grants in support of their local expenses.

Different epidemiologic patterns exist in the Region for tumors, such as cancer of the uterine cervix, breast, stomach, and gall bladder. Collaborative research in these areas, under the auspices of LACRIP, will result in a better knowledge of the natural history of malignant neoplasms.

PAHO is planning a regional meeting on cancer epidemiology, in collaboration with the U.S. National Cancer Institute, for early 1981, to review the current knowledge on cancer epidemiology in the Region and to plan further collaborative projects among epidemiologists interested in similar research areas.

4.2 Cardiovascular Diseases

The Organization is collaborating with the Governments of the Region to establish policies on the control of cardiovascular diseases on the basis of epidemiological data, the feasibility of primary and secondary prevention, and the availability of resources needed for the

program. The basic strategy has been to support the organization within the Ministries of Health of technical units which are responsible for setting norms and policies for the control of noncommunicable diseases, including cardiovascular diseases. This will make possible the integration of these programs within the existing health care systems.

Each country obviously must define its own priorities based on the particular problem it faces. The progressive increase in the prevalence and incidence of cardiovascular disease, however, makes it necessary to determine the characteristics and environmental and other risk factors associated with this problem. This is conceptually linked to the commitment of the WHO long-term program in the field of cardiovascular diseases, within the context of "Health for All by the Year 2000," that is, to define optional ways to secure access to protection and prevention in cardiovascular health. To this end, WHO, with the Regional Offices, has planned several consultations for 1980-1981 within the activities of the global medium-term program for this disease area, oriented toward the definition of strategies for primary prevention of cardiovascular diseases, including the intervention in cardiovascular risk-inducing habits, such as cigarette smoking or inadequate diet, with a community-based approach implemented through primary health care.

In the developing countries, where the problem of cardiovascular diseases is not yet manifestly of public health relevance, with adequate research and appropriate intervention such trends of untoward health consequences as are now experienced in the industrialized societies might be avoided.

Cardiovascular diseases (heart and cerebrovascular disease) constituted the first cause of death for all ages in 21 of 29 countries of the Americas in 1975.¹ Death rates, however, differ from country to country, as can be seen in Table III, where six groups of countries have been identified. These death rates range from less than 50 per 100,000 in El Salvador and Guatemala to over 400 per 100,000 in Uruguay and the United States of America.

According to available national statistics, mortality from cerebrovascular disease has been on the wane in many of the industrialized countries.² Also, one of the most important recent developments in regard to coronary disease in the United States of America is the accelerated

¹Health Conditions in the Americas, 1973-1976. Op. cit.

²Hatano, S. The Worldwide Problem of Hypertension and Stroke. In: Hypertension and Stroke Control in the Community. World Health Organization, Geneva, 1976.

decline in mortality rates recorded since the late 1960's.¹ These trends demonstrate that cardiovascular diseases may be amenable to control, provided that intervention on major risk factors becomes feasible, i.e., as related to the role of high-fat diet, hypercholesterolemia, hypertension, and cigarette smoking.

Prevention and control methods are well known for rheumatic heart disease, and, indeed, a dramatic decline has been attained in many countries in recent decades. However, estimates of the magnitude of rheumatic fever and rheumatic heart disease, based on their percentages within all causes of hospital discharges in several Latin American countries, do not show a tendency to decrease, as reported in the VI Pan American Conference on the Study and Prevention of Rheumatic Fever, in Lima, Peru, in 1977.²

Prevalence of hypertension in several Latin American locations was reported by the participants in the PAHO Annual Workshops on Control of Hypertension, which were first held in 1976.³ In various population samples, the rate of hypertension was found to be more than 15 per cent in the age groups over 20 years, a figure similar to that in industrially developed countries.⁴

The prevention of rheumatic fever and rheumatic heart disease, as well as of hypertension--a major risk factor for cardiovascular diseases amenable to control--constitutes, therefore, a priority area within the overall program of control of cardiovascular diseases of the Organization. Furthermore, the need to strengthen the activities on hypertension control was stressed in a recent resolution of the Executive Committee⁵.

Since many countries in the Region have not yet included cardiovascular disease control in their health programs, PAHO is promoting and coordinating projects in chosen communities on a limited scale in these two areas. These intercountry studies are designed to show the feasibility and effectiveness of preventive therapeutic measures, and to gain the experience needed for organizing permanent broad-coverage control programs.

¹Working Group on Heart Disease Epidemiology. National Heart, Lung and Blood Institute Report. NIH Publication No. 79-1667, 1979.

²A. Mispireta. Informe de Países: VI Conferencia Panamericana sobre la Presencia de Fiebre Reumática. Lima, Peru, November 1977.

³Pan American Health Organization. Final Report, Second Meeting of the Working Group on Control of Hypertension, Washington, D.C., 1977.

⁴J. Litvak, H. Boffi, Z. Pisa, and T. Strasser. International Programs in Blood Pressure Control. Bull. PAHO 13(4):354, 1979.

⁵CE80.R6, Arterial Hypertension, 1978.

Eight countries (Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Peru, and Venezuela) are participating in a cooperative program for the prevention of rheumatic fever, and eight countries (Argentina, Brazil, Chile, Colombia, Cuba, Mexico, Peru and Venezuela) are taking part in a program for the control of arterial hypertension, based on a PAHO-prepared protocol which was adopted jointly by the participating countries.

Secondary prevention at the community level constitutes the main emphasis of the intercountry pilot project on rheumatic fever. If successful, it should serve as a model for the progressive extension of health service coverage. The scheme it proposes is simple: all persons who are known to have had rheumatic fever are entered in a register, which then serves as the basis for follow-up to determine whether they are complying with the prescribed prophylactic regimen. Factors related to non-compliance are then identified and analyzed.

An interim analysis of data from the participating Latin American countries appears to indicate some general tendencies. Programs showing the lowest rate of attrition seem to be those that are most integrated with the existing health services, and those that include the active involvement of local health centers and auxiliary personnel, as well as health education and community participation components. At the other extreme, more non-compliance seems to be reported from centers where the programs are both vertical and lacking in community-based logistical support.

A manual on operational norms for a program of control of rheumatic fever and rheumatic heart disease within the existing health services is being prepared by the working group of the above-mentioned PAHO study and will be available for all governments within the next six months.¹ If the guidelines for these programs define the role of each operative level within the existing levels of care, it will be possible for the health authorities of each country to incorporate them into other community health programs within their general health services.²

¹Prevención y control de la fiebre reumática en la comunidad. Normas operacionales para un programa de extensión de la cobertura a los diferentes niveles de atención. Pan American Health Organization. For publication, 1980.

²J. Litvak and H. R. Acuña, Prevention and Control of Rheumatic Fever and Rheumatic Heart Disease. Proceedings of the VIII World Congress of Cardiology, Tokyo, 1978. International Congress Series No. 470. Excerpta Medica, Amsterdam.

Hypertension is the main risk factor associated with cardiovascular disease, and can be controlled with proper treatment and compliance.¹ PAHO's collaborative intercountry study has shown that the approach to a successful program must be community-oriented, and that a certain organizational threshold of health services must be reached before a community hypertension control program can succeed. Other risk factors, such as smoking and bad dietary habits, which are associated with such cardiovascular diseases as coronary heart disease, are also the focus of other intervention programs currently in a planning phase.

4.3 Other Noncommunicable Diseases

4.3.1 Diabetes Mellitus

We can assume, on the basis of available morbidity and mortality data, that the specific problem of diabetes mellitus will grow over the next 10-15 years in terms of both disease incidence and the frequency of complications. Right now the seriousness of the problem is reflected by the large number of diabetics who suffer, die, or become invalids as a result of their disease, the chronic nature of which often entails long periods of medical care and supervision. This situation involves extensive human and economic waste, since the disease can be prevented or treated specifically in most cases.

Data from the Inter-American Investigation of Mortality reveal high death rates from diabetes mellitus and from arteriosclerotic heart disease in diabetes patients-fatalities considered largely preventable because effective treatments for these diseases were known.²

These considerations led to a recommendation included in the Ten-Year Health Plan for the Americas that the present tendency toward a rising prevalence of diabetes mellitus should be reduced, within the context of control programs aimed at this and other chronic diseases associated with being overweight, such as obesity and other atherosclerosis.³

¹Arterial Hypertension. Report of a WHO Expert Committee. World Health Organization, Geneva, Technical Report Series 628, 1978.

²R. R. Puffer, and G. W. Griffith. Op. cit.

³Ten-Year Health Plan for the Americas. Pan American Health Organization, Washington, D.C., Official Document 118, 1973.

As a result, the Pan American Health Organization convened a committee of experts from the Region for the purpose of drawing attention to the importance of diabetes mellitus as a health problem and preparing appropriate recommendations for establishing and implementing control programs.¹

Existing data on the prevalence of diabetes mellitus in different countries are not comparable, since population samples are not always representative and diagnostic criteria vary. Ten different countries set the prevalence figure at anywhere from 1.2 to 6.9 per cent.²

Mortality from diabetes reveals only part of the problem, largely because of registration difficulties. The figures that are available, however, show that the situation is very serious in several Caribbean countries: Barbados, Trinidad and Tobago, and Jamaica rank first, second and third, respectively, among 22 countries in the region.³

Control of the diabetes problem requires an organized effort by all the countries of the Region. Programs of primary prevention, except for those related to obesity, are hard to envisage at present. On the other hand, secondary prevention is feasible and should be stressed through mass education campaigns for diabetics, their families, health professionals, and the general public; by early detection of cases in high-risk groups; by means of case registration and follow-up; and through development of a system of comprehensive medical care.

In seeking ways to meet this challenge, the PAHO study group stressed the need to organize programs of comprehensive care for the diabetic patient, in accordance with the existing health systems in each country. These programs should be designed to increase coverage by the decentralization of patients from specialized centers toward the secondary and primary levels of care. To this end, the Organization, in collaboration with the Latin American Diabetes Association, is preparing a manual with operational guidelines to facilitate the planning and implementation of a comprehensive program of diabetes control within the existing national health services.⁴

¹Grupo de Estudio sobre Diabetes Mellitus. Pan American Health Organization, Washington, D.C., Scientific Publication No. 312.

²J. Litvak. Op. cit.

³Health Conditions in the Americas, 1973-1976. Op. cit.

⁴Manual de normas técnicas y administrativas. Programa de control de diabetes. Pan American Health Organization, Washington, D.C. In preparation.

These guidelines, together with those in preparation for other program areas such as rheumatic fever and hypertension, define the role of the different levels of health care, and thereby allow the integration of noncommunicable disease program activities, with special emphasis on the needs at the primary care level and the participation of auxiliary personnel for the programs.

4.3.2 Chronic Rheumatic Diseases

Chronic rheumatic diseases are a frequent cause of prolonged morbidity and incapacity, restricting a large number of people from active life. Arthritic complaints are among the most common complaints requiring medical attention, and the length of hospitalization for severe cases is usually greater than the average for all other causes.

In order to investigate the impact of these diseases on such parameters as the degree of incapacitation and dependency and the demand for medical services, the Organization is coordinating a collaborative study with the participation of centers in Argentina, Brazil, Chile, Mexico, and Uruguay. The information obtained will serve as a basis for better planning of resources towards the secondary and tertiary prevention of these diseases.

4.3.3 Chronic Allergic Diseases

Chronic allergic diseases generate a large demand for medical care. Bronchial asthma and allergic rhinitis are the second greatest causes of absenteeism from work and school, the cost of which is considerable in work days and in medical care. Although there are no known proven means of attaining primary prevention for these diseases, some risk factors may be identified. A collaborative study to investigate these and other characteristics of allergic patients, and their exposure to potentially harmful environmental factors, is now in progress, with the participation of centers from eight countries.

4.4 Health Care of the Elderly

Concern for the care of the elderly is being expressed in the developed and developing world alike, witnessed by the fact that a recent resolution was approved by the World Health Assembly¹ and that a United Nations World Assembly on the Elderly is to be held in 1982.²

¹WHA32.35, Health Care of the Elderly, 1979.

²UNA33.52, World Assembly on the Elderly, 1979.

In most industrialized countries the elderly emerge as the main recipients of health and social services, and the problems related to the future expansion of these services is a matter of great concern to governments. In developing countries, the proportion of people aged 65 and above will increase rapidly in the coming years. Also, the increasing urbanization and migration of young working populations is making more evident the problems of the aged, who are living in social isolation and are often disabled and without economic support.

Although the proportion of the population aged 65 or over is still relatively small in Latin America, this age group is expected to increase from 12 million in 1975 to 28 million in the year 2000.¹ In the period 1960-1965, life expectancy at birth was over 65 years in 12 countries of the Region, while projections for 1980-1985 show that 26 countries will reach the same life expectancy.

Pursuant to the adoption of the resolutions of the World Health Assembly and the United Nations General Assembly mentioned above, WHO and the Regional Offices are preparing a plan of action concerning the program for care of the aged and WHO input to the UN World Assembly on the Elderly. To this end, a preparatory conference will be held in December 1980 in Mexico, to review the subjects which WHO and the Member Governments wish to see in the program. PAHO is planning to design a regional approach in cooperation with those countries wishing to assess the profile of the elderly population and to identify the consequences of their increased numbers. A collaborative project with the National Institute on Aging of the United States of America is being considered at the present time.

5. Summary and Conclusions

Noncommunicable diseases are emerging both in relative and absolute terms as a public health problem throughout the Region.

The principal objective of the PAHO program is to promote activities of prevention and control within the national general health services. Initially, the program should be limited to chosen communities on a reduced scale, and include such areas as hypertension, rheumatic fever and rheumatic heart disease, uterine cervix cancer, and diabetes mellitus, where effective means to achieve their control are available.

¹Health Conditions in the Americas, 1973-1976. Op. cit.

PAHO intercountry studies have been designed along these lines to show the feasibility and effectiveness of preventive and control measures, and to gain the experience needed for broader coverage control programs. As a result, guidelines are being prepared that define the role of each operative level, making it possible to incorporate the activities of the program areas mentioned above into other community-based programs within the general health services, with special emphasis on the primary care level.

The PAHO Program for the Control of Noncommunicable Diseases will continue to help the Member Governments to cope with the ever-changing patterns of disease morbidity and mortality associated with the process of socioeconomic development, and with the increasing proportion of the aged in need of health care.

Table I

CARDIOVASCULAR DISEASE MORTALITY

(Rates per 100,000 population)

Country	Year	Crude Rate	Age-adjusted Rate
Argentina	1977	379.0	193.6
Bahamas	1975	130.4	129.6
Barbados	1977	370.1	165.5
Belize	1975	112.1	95.6
Canada	1977	350.0	126.7
Chile	1977	153.4	112.6
Costa Rica	1977	95.1	96.6
Cuba	1977	247.4	153.3
Dominican Republic	1976	69.6	77.3
Ecuador	1974	93.1	107.2
El Salvador	1974	47.7	51.7
Guadeloupe	1974	175.1	136.6
Guatemala	1976	48.4	56.0
Honduras	1976	63.7	72.6
Jamaica	1971	263.8	225.7
Martinique	1975	174.4	128.3
Mexico	1974	108.0	115.7
Nicaragua	1976	91.2	102.7
Panama	1974	118.5	112.4
Paraguay	1977	183.2	163.4
Peru	1973	62.1	69.8
Puerto Rico	1975	252.3	143.1
St. Lucia	1975	247.2	176.9
Trinidad and Tobago	1976	267.3	250.8
United States of America	1977	452.2	166.0
Uruguay	1976	418.6	166.9
Venezuela	1977	119.9	139.6

Source: PAHO/WHO, Form A, Annual Report from the Countries, Health Statistics Unit (most recent data available)

Table II

MALIGNANT NEOPLASMS MORTALITY
(Rates per 100,000 population)

Country	Year	Crude Rate	Age-adjusted Rate
Argentina	1977	148.7	80.3
Bahamas	1975	61.8	61.9
Barbados	1977	125.3	63.8
Belize	1975	39.3	34.2
Canada	1977	154.9	71.8
Chile	1977	99.2	76.1
Costa Rica	1977	68.3	69.9
Cuba	1977	104.4	68.8
Dominican Republic	1976	22.4	25.3
Ecuador	1974	35.4	41.7
El Salvador	1974	18.9	20.5
Guadeloupe	1974	73.4	60.4
Guatemala	1976	25.8	30.1
Honduras	1976	13.5	16.0
Jamaica	1971	83.3	74.3
Martinique	1975	81.0	60.9
Mexico	1974	36.0	40.4
Nicaragua	1976	16.0	19.0
Panama	1974	43.3	42.6
Paraguay	1977	66.5	65.2
Peru	1973	35.6	39.2
Puerto Rico	1975	91.4	58.0
St. Lucia	1975	77.8	63.8
Trinidad and Tobago	1976	58.8	54.3
United States of America	1977	178.7	78.1
Uruguay	1976	205.4	94.0
Venezuela	1977	53.1	60.3

Source: PAHO/WHO, Form A, Annual Report from the Countries, Health Statistics Unit (most recent data available)

Table III

CARDIOVASCULAR DISEASE MORALITY IN THE COUNTRIES OF THE AMERICAS

(Crude rates per 100,000 inhabitants)

Mortality Rate per 100,000 Inhabitants		Number of Countries	Countries
<u>Less</u> than	50	2	El Salvador Guatemala
	50-99	6	Costa Rica Dominican Republic Ecuador Honduras Nicaragua Peru
	100-199	9	Bahamas Belize Chile Guadeloupe Martinique Mexico Panama Paraguay Venezuela
	200-299	5	Cuba Jamaica Puerto Rico St. Lucia Trinidad and Tobago
	300-399	3	Argentina Barbados Canada
	400 and over	2	United States of America Uruguay

Source: PAHO/WHO, Form A, Annual Report from the Countries, Health Statistics Unit (most recent data available)