Epidemiological Bulletin

PAN AMERICAN HEALTH ORGANIZATION

Vol. 13, No. 2 July 1992

Communicable Disease Mortality: Now You See It, Now You Don't

Reports from developing countries frequently state that the pattern of their health situation is similar to that of developed countries, inasmuch as their mortality is dominated by diseases of the heart, tumors, and accidents, while communicable infectious diseases are no longer perceived as an important problem. (In this article, the designation "country" is used for both countries and territories.)

In apparent support of the above, Table 1 shows that of 21 countries in the Americas reporting more than 2,000 deaths, and for which deaths from defined causes represent at least 70% of estimated total mortality, all but three countries included malignant neoplasms (ICD-9: 140-208), diseases of the heart (390-429), cerebrovascular disease (430-438), and accidents (E800-E949, E980-E989) among their five leading causes of death. (Deaths from "defined" causes are those coded in all categories with the exception of symptoms, signs and ill-defined conditions (ICD-9: 780-799). "Defined" causes are not necessarily "well defined"; they are subject to diagnostic, certification and/or coding errors.)

In these countries, the other categories included among the leading five (although not necessarily ranking in fifth place) were: influenza and pneumonia (480-487), in six countries (Canada, Chile, Cuba, Puerto Rico, the United States and Uruguay); certain conditions originating in the perinatal period (760-779), also in six countries (Argentina, Brazil, Costa Rica, Panama, Suriname and Venezuela); diabetes mellitus (250), in three (Barbados, Martinique, and Trinidad and Tobago); and nutritional deficiencies (260-269), mental disorders (290-319), and unspecified intestinal infections (007-009), in one country each (Guyana, Guadeloupe and Paraguay, respectively).

Jamaica and Mexico included only three of the categories typifying developed-country mortality among their five leading causes of death: malignant neoplasms and diseases of the heart were included in both; cerebrovascular disease was included in Jamaica, and accidents in Mexico. Guatemala only included two of the categories: diseases of the heart and accidents *(1)*.

Although in most countries there has indeed been a considerable increase in deaths from cardiovascular diseases and tumors, and substantial progress has been accomplished in the prevention of infectious disease mortality, the claimed lack of importance of the latter in many developing countries of the Americas is inconsistent with other kinds of evidence, and does not withstand closer inspection. Rather, it is an artifact

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Table 1. Total deaths, deaths from defined causes, and combined proportional mortality from malignant neoplasms (ICD-9: 140-208), diseases of the heart (390-429), cerebrovascular disease (430-438) and accidents (E800-E949, E980-E989). Selected countries in the Americas, around 1986.

Country[a], Year	Total reported deaths	Ill-defined conditions[b] (%)	Deaths defined causes	Mortality 4 categories[c] (%)
Argentina, 1986	241,004	2.3	235,549	66.3
Barbados, 1988	2,174	3.8	2,092	61.0
Brazil, 1986	811,623	20.4	646,071	54.2
Canada, 1988	190,011	1.6	186,889	71.1
Chile, 1987	70,559	8.1	64,826	59.2
Costa Rica, 1988	10,944	2.3	10,693	59.2
Cuba, 1988	67,944	1.5	67,793	70.4
Guadeloupe, 1981	2,091	9.7	1,888	61.7
Guatemala, 1984	66,260	10.4	59,352	17.2
Guyana, 1984	4,781	10.8	4,266	48.5
Jamaica, 1984	13,706	12.7	11,961	60.1
Martinique, 1985	2,140	11.1	1,903	68.1
Mexico, 1986	400,079	4.4	382,613	39.0
Panama, 1987	9,105	8.2	8,354	54.7
Paraguay, 1987	12,695	17.3	10,502	50.3
Puerto Rico, 1987	23,950	0.7	23,773	57.1
Suriname, 1988	2,275	16.2	1,906	48.0
Trinidad and Tobago, 1986	7,699	2.5	7,508	58.8
United States of America, 1988	2,167,999	1.4	2,137,048	70.6
Uruguay, 1987	29,882	6.2	28,016	68.3
Venezuela, 1987	80,991	13.2	70,286	53.1

[a]Includes countries with over 2,000 reported deaths, where deaths from defined causes represent at least 70% of estimated total deaths.

[b]Symptoms, signs and ill-defined conditions (780-799).

[c] Percentage over deaths from defined causes. The 4 categories specified in the title represent 4 out of the 5 leading causes of death in all countries, except Guatemala, Jamaica and Mexico.

Source: PAHO Technical Information System.

resulting from the characteristics of the list of categories used for determination of leading causes. This artificial resemblance among the countries' mortality profiles provided one of the reasons to further explore this issue.

Any sequence of leading causes is strongly influenced by the criteria according to which the cause-groups of the candidate list (or "short" list) are defined. The ranking of a given cause-of-death category depends not only on the relative frequency of deaths in that category, but also on the definition of all causal categories that are candidates for ranking. Broadly defined categories have a better chance of qualifying as leading causes than specific single diseases.

An additional problem stems from the continued use of a given short list after there has been a substantial change in the mortality pattern; and further difficulties arise from defining and using a single list for different, not necessarily compatible purposes, such as leading-cause analysis and surveillance of mortality from infectious diseases. On the ranking lists used by the Pan American Health Organization (PAHO) and the National Center for Health Statistics (NCHS), many infectious diseases are specified singly, whereas diseases of the heart and malignant neoplasms are combined into one group each *(2,3)*. Most countries in the Americas use lists similar to these for their analyses, with the resulting lack of visibility of communicable disease mortality.

There exists no unique "best" list for determining leading causes. The characteristics of the prevailing health situation, and the needs of the institutions performing the analysis at the national or subnational level, all imply that different countries may require different cause-group lists, and that within each country, more than one grouping criterion may be required.

Criteria for defining cause-groups need to be geared to the use to which the outcome of the analysis will be put. Biomedical research usually requires very narrowly defined disease categories. Grouping criteria best suited to assist in the organization of health care delivery

services will be different from those useful for prevention and control of major health problems. Special attention should be paid to mortality deemed preventable in the light of current knowledge and available technology, and to the early detection of newly emerging mortality problems. Policy formulation will benefit from a short list of cause-groups that provide a broad overview of the general situation, and assist in visualizing prevailing and emerging mortality problems and trends. In addition, and to be useful at the international level, short lists must facilitate inter-country comparisons.

Another problem encumbers the leading cause approach, irrespective of the merits or drawbacks of the short list being used: a given causal category may qualify as a leading cause of death in some countries or age groups but not in others; it may appear, disappear, and reappear again in successive years, without a clue to its relative magnitude when not among the leading causes.

To circumvent these difficulties, it is proposed that cause-specific mortality be analyzed by means of a progressive structural approach encompassing deaths from all causes, before (or instead of) restricting the analysis to a given number of leading ones. Accordingly, a new short list for the ICD-9 was prepared at PAHO and an adjustment of the ranking list is being introduced, with due consideration to the recommendations formulated at a Regional Meeting on Guidelines and Procedures for Mortality Analysis convened by PAHO in February, 1988. These include (but are not limited to) the six principles suggested by the WHO Collaborating Center for Classification of Diseases for North America, i.e. hierarchy, comparability, expandability, consistency, suitability for the identification of leading causes of death, and responsiveness to public health needs. The meeting's participants stressed the particular importance of this last principle, and the need to emphasize epidemiological criteria *(4,5)*.

The new short list aims at facilitating public health-oriented regional assessments, and consists of 61 all-inclusive categories, contained within six broad cause-groups. The six broad groups are intended to provide an initial overview of the major epidemiological components of the mortality profile. An additional category, symptoms, signs and ill-defined conditions (SSI), is included as a measure of data quality. These groups encompass all causes, and are defined as follows *(6)*:

0.00 Symptoms, signs and ill-defined conditions (780-799)

1.00 Communicable diseases, comprising all infectious and parasitic diseases (001-139), meningitis (320-322), acute respiratory infections (460-466), pneumonia (480-486) and influenza (487)

2.00 Neoplasms (140-239)

3.00 Diseases of the circulatory system (390-459)

4.00 Certain conditions originating in the perinatal period (760-779)

5.00 External causes of injury and poisoning (E800-E999)

6.00 All other diseases (remainder of 001-779).

Data reliability --completeness and quality-- needs to be assessed before any further analysis is undertaken. While the evaluation of data completeness requires additional information, a first appraisal of data quality can be achieved by means of the category SSI. This category comprises deaths for which a defined cause could not be identified; it represents deaths from "cause unknown" and is equivalent to a "non-response" category. Deaths coded SSI should be excluded from the denominator when computing proportional mortality, which should be based on deaths from defined causes only. As the frequency of SSI increases, cause-specific analyses must be kept progressively simpler; computation of rates will at some point become unadvisable, and only very broad appraisals may be warranted. Not only should the proportion of SSI always be explicitly stated; it should also assist in determining how detailed an analysis the data will support.

The use of the six-group causal structure has proven helpful in documenting the epidemiologic mortality patterns prevailing in countries of the Americas and differentiating between them. Table 2 illustrates some of these patterns with data from Guatemala, Chile and the United States (US). Guatemala provides an example of the situation in those developing countries where life expectancy at birth is still fairly low (62.0 years), and where close to one-half of deaths continue to be due to communicable diseases. At the other end of the spectrum, the US represents countries with high life expectancy at birth (75.4 years), where mortality from communicable diseases no longer constitutes an important problem (HIV infections excluded), while non-communicable diseases have become responsible for more than two-thirds of all deaths. Chile exemplifies countries at an intermediate stage, where life expectancy at birth has been increasing (70.6 years), but where at least part of communicable disease mortality has yet to be prevented, while chronic non-communicable diseases already account for half of all deaths, reflecting the aging of the population. Inasmuch as this paper aims at highlighting some characteristics of the list rather than at analyzing the mortality patterns themselves, only

Table 2. Mortality structure by 6 broad cause groups, all ages Guatemala (1984), Chile (1987) and United States of America (1988).

Cause groups (ICD-9) Both sexes	Guatemala		Chile		United States of America	
	No.	%	No.	%	No.	%
Total deaths, all causes (001-799, E800-E999)	66,260	100.0	70,559	100.0	2,167,999	100.0
0.00 Symptoms, signs and ill-defined conditions (780-799)	6,908	10.4	5,733	8.1	30,951	1.4
Total deaths, defined causes (001-779, E800-E999)	59,352	100.0	64,826	100.0	2,137,048	100.0
1.00 Communicable diseases (001-139,320-322,460-466, 480-487)	26,512	44.7	7,927	12.2	111,258	5.2
2.00 Neoplasms (140-239)	2,464	4.2	13,496	20.8	491,783	23.0
3.00 Diseases of circulatory system (390-459)	4,428	7.5	19,358	29.9	973,969	45.6
4.00 Certain conditions originating in perinatal period (760-779)	9,684	16.3	1,779	2.7	18,220	0.9
5.00 External causes of injury and poisoning (E800-E999)	4,028	6.8	8,404	13.0	152,572	7.1
6.00 All other diseases (remainder of 001-779)	12,236	20.6	13,862	21.4	389,246	18.2

Source: PAHO Technical Information System.

proportional mortality is used to illustrate the list's informative value.

Mortality of children under 5 years of age accounts for 49% of all deaths in Guatemala, 9% in Chile and 2% in the US; and, as can be seen in Table 3, the discriminatory power of the category for communicable disease mortality is even more pronounced in this age group than for mortality at all ages. In Guatemala, communicable diseases are responsible for 53% of all deaths in children not yet 5 years old, and 60% of all communicable disease mortality occurs in this age group. Thus, deaths from communicable diseases in children under 5 years of age represent 26.6% of deaths from all causes at all ages, the equivalent of a ratio of more than 1 death out of every 4. In Chile the analogous ratio is 1 in 40, as compared to 1 in 1,000 in the US.

Although useful for achieving a first overview of the different mortality profiles prevailing in the countries of the Americas, the six-group list may require some adjustments, such as inclusion of HIV infections in the group of communicable diseases.

While the very shortness of this six-group list is an asset for comparing mortality profiles between countries and over time, it needs to be complemented with a more detailed list, to allow for more specific analyses of the mortality structure, and to identify causal categories that may explain the magnitude of any of the six broad groups. For this purpose, and to serve the needs of individual PAHO technical units, 61 categories were defined; they are inclusive of all deaths from defined causes, and can be nested within the initial six groups. The 61-group list will not be discussed here.

The lists proposed are not intended to be used for identifying leading causes of death. To serve that purpose, PAHO's ranking list for the ICD-9 is being modified by introducing a category for communicable diseases, defined as in cause-group 1 of the six-group list, i.e. comprising all infectious and parasitic diseases (001-139); meningitis (320-322); and acute respiratory infections (460-466, 480-487). Categories of the old ranking list included in the new cause-group are eliminated; the other 22 categories remain unchanged. The effect of this modification on the visibility of mortality from communicable diseases is shown in Table 4, where it can be seen that when these diseases are combined into a single group, they rank among the leading five causes of death in all 21 countries analyzed. Table 4 also shows that proportional mortality from this cause-group in children under 5 years of age tends to be even higher than for all ages.

Of necessity, the new category ranks in at least fifth place in all countries which include influenza and pneumonia among their leading five causes according to the old ranking list, such as Canada, Cuba, the US and Uruguay, where the new category ranks 5th, and Chile and Puerto Rico, where it ranks in third place. At the same time, the table documents the persistent importance of infectious diseases, even in countries that, such as Cuba and Costa Rica, have already achieved low infant mortality and high life expectancy at birth. In

Table 3. Mortality structure by 6 broad cause groups, age 0-4 years, Guatemala (1984), Chile (1987) and United States of America (1988).

Cause groups (ICD-9) Both sexes		Guatemala		Chile		United States	
		No.	%	No.	%	No.	%
	Total deaths, all causes (001-799, E800-E999)	32,404	100.0	6,088	100.0	46,339	100.0
0.00	Symptoms, signs and ill-defined conditions (780-799)	2,592	8.0	278	4.6	6,784	14.6
	Total deaths, defined causes (001-779, E800-E999)	29,812	100.0	5,810	100.0	39,555	100.0
1.00	Communicable diseases (001-139,320-322,460-466, 480-487)	15,784	52.9	1,508	26.0	2,266	5.7
2.00	Neoplasms (140-239)	36	0.1	79	1.4	760	1.9
3.00	Diseases of circulatory system (390-459)	-	-	33	0.6	1,485	3.8
4.00	Certain conditions originating in perinatal period (760-779)	9,684	32.5	1,779	30.6	18,165	45.9
5.00	External causes of injury and poisoning (E800-E999)	212	0.7	1,015	17.5	4,587	11.6
6.00	All other diseases (remainder of 001-779)	4,096	13.7	1,396	24.0	12,292	31.1

Source: Technical Information System.

Table 4. Communicable disease mortality: Number, proportional mortality, and ranking; all ages and 0-4 years. Selected countries of the Americas, around 1986.

Country, year	All ages			0-4 years		
	No.	%[a]	Rank[b]	No.	%[a]	Rank[b]
Guatemala, 1984	26,512	44.7	1	15,784	52.9	1
Paraguay, 1986	2,152	20.5	1	1,319	53.3	1
Mexico, 1986	68,262	17.8	1	35,943	47.8	1
Brazil, 1986	91,289	14.1	2	45,315	38.5	2
Venezuela, 1987	9,505	13.5	3	4,426	31.6	2
Suriname, 1985	235	12.3	2	99	27.6	2
Chile, 1987	7,927	12.2	3	1,508	26.0	2
Panama, 1987	960	11.5	3	362	26.1	2
Jamaica, 1984	1,174	9.8	4	530	42.1	1
Guyana, 1984	341	8.0	3	97	13.7	2
Puerto Rico, 1987	1,772	7.5	3	105	10.4	3
Costa Rica, 1988	741	6.9	5	276	19.5	3
Cuba, 1988	4,441	6.6	5	611	22.3	3
Argentina, 1986	13,580	5.8	4	3,214	16.1	2
Trinidad and Tobago, 1986	432	5.8	5	70	16.1	2
Guadeloupe, 1981	104	5.5	5	22	17.3	3
Barbados, 1988	110	5.3	5	5	6.3	...
United States of America, 1988	111,258	5.2	5	2,266	5.7	4
Uruguay, 1987	1,358	4.8	5	197	14.6	3
Martinique, 1985	89	4.7	5	3	5.0	...
Canada, 1988	8,000	4.3	5	118	4.2	4

[a]Percentage over deaths from defined causes.

[b]According to PAHO's modified ranking list.

Source: PAHO Technical Information System.

those two countries communicable disease mortality for all ages is just below 7%, but accounts for around one out of every five deaths in children under 5 years of age. In five countries where communicable disease mortality for all ages varies between 10 and 15% (Panama, Chile, Suriname, Venezuela and Brazil), it represents between 25 and 40% of all deaths for children under 5. Finally, it can be seen that the problem retains truly dramatic dimensions in Guatemala, Paraguay, and Mexico, where adverse living conditions still prevail for large segments of the population, and where about one-half of all deaths of children under 5 are due to communicable diseases.

Clearly, the definition criteria and characteristics of a short list will influence the relative weight of all structural components, and thus the sequence of the ranking as well. However, in an all-inclusive structural approach the entire grouping is explicit and can be easily visualized, as opposed to the leading-cause approach, where the structure is truncated, and definitions and frequencies for non-leading causes are usually not published. The analysis of the total structure of cause-specific mortality was found to be far more informative and easier to interpret than the one based on leading causes of death.

To become more useful, mortality analyses need to be made more meaningful *(7)*. The option proposed here attempts to satisfy some of the criteria required for assessments that should become more public health oriented and explanatory, to assist in the evaluation of the health status of the population and --it is hoped-- to be used as input for decisions involving definition of priorities and resource allocation.

References

*(1)*Pan American Health Organization. *Health Conditions in the Americas, 1990 edition.* Scientific Publication No. 524, Vol. I, 1990, pp. 421-481.

*(2)*Ibid. p. 502.

*(3)*National Center for Health Statistics. Vital Statistics: *ICD-9 Underlying Cause-of-Death Lists for Tabulating Mortality Statistics.* Effective 1979. NCHS Instructional Manual. Part 9. Hyattsville, MD, Public Health Service. 1979.

*(4)*Pan American Health Organization. Research on health profiles. Background information on mortality analysis projects. *Epidemiological Bulletin PAHO*, 9(2):1-3, 1988.

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*(6)*Pan American Health Organization. *Health Conditions in the Americas, 1990 edition.* Scientific Publication No. 524, Vol. I, 1990, pp. 35-44.

*(7)*Illsley, R. Comparative review of sources, methodology and knowledge. *Social Science & Medicine*, 31(3):229-236, 1990.

(*Source*: Health Situation and Trend Assessment Program, PAHO. First published in the *Journal of Public Health Policy*, 12(4):464-474, 1991. Reprinted with permission of the *Journal*.)

Publications

Health Statistics from the Americas. 1991 Edition, Mortality Since 1960, is the first of an annual series to be published by the Pan American Health Organization which will provide basic data and serve as a supplement to the quadrennial publication *Health Conditions in the Americas*, a report initiated in 1954 and published for the tenth time in 1990.

This first edition provides an overview of mortality in the countries of the Region from 1960 onward and is documented with data provided by the PAHO Technical Information System. Future editions will include updated information, further details on specific mortality problems, and other indicators of health and disease. Data will gradually be included that will make it possible to relate the health situation to the living conditions of the population and the patterns of utilization of the available health services.

Pan American Health Organization, 1991. 474 pp. Scientific Publication No. 537, ISBN 92 75 11537 O. Published in Spanish with the title: *Estadísticas de salud de las Américas. Edición de 1991.La mortalidad desde 1960.* 476 pp. 1991, Publicación Científica No. 537, ISBN 92 75 31537 X. This publication may be ordered from: PAHO, 525 23rd Street, N.W., Washington, D.C. 20037, U.S.A. Attn: Distribution and Sales.

The Health of Adults in the Developing World, a publication of the Oxford University Press for the World Bank, discusses the causes and consequences of disease and poor health among the adult population of the developing countries. It includes useful information on mortality and morbidity in adults and their repercussions on the family environment and on society as a whole.

The Health of Adults in the Developing World. Feachem, Richard G.A.; Kjellstrom, Tord; Murray, Christopher J.L.; Over, Mead, and Phillips, Margaret A., editors. 1992, The World Bank, published by Oxford University Press, Inc. ISBN 0 19 520879 X.

Health Promotion at PAHO

During the XXIII Pan American Sanitary Conference, Health Promotion was adopted as one of the strategic orientations for the work of the Pan American Health Organization (PAHO) for the quadrennium 1991-1994. (1). This orientation is very clear in stressing that health promotion "is increasingly conceived as the sum activity of the population, the health services, the health authorities, and other social and productive sectors, aimed at improving the status of individual and collective health." In 1991, the Program, previously called Health of Adults, became the Regional Program on Health Promotion, introducing certain structural and functional changes through strengthening of the components of social communication and management of information.

In organizing the First International Conference on Health Promotion in November 1986, together with the Ministry of Health and Social Welfare of Canada and the Canadian Public Health Association, the World Health Organization took the definite step, as it had with regard to Primary Health Care and Health for All by the Year 2000, in establishing the strategy of Health Promotion in the Charter of Ottawa *(2)*. This product of the Conference briefly summarizes the principles of public health for the development of *health* as opposed to medical interventions, which are limited solely to disease.

According to the definition contained in the aforementioned document, *health promotion is the process of enabling people to increase control over, and to improve, their health.*

Renewal of these concepts beginning in 1986, is a landmark in the history of modern public health insofar as declaring *peace, education, shelter, food, income, a stable ecosystem, sustainable resources, social justice, and equity,* as fundamental requirements for health.

Also worthy of note is the recognition that health promotion is not solely a responsibility of the health sector. On the contrary, it is only through intersectoral action that success can be achieved in attaining acceptable health levels among the population.

The concept of health promotion encompasses diverse, albeit complementary, fields and approaches, which include education, information, mass communication, legislation, policy-making, community organization and participation, and efforts designed to reorient the health services.

These principles and approaches are not actually new to public health work. The history of medicine and of public health is rich in the contributions made by many scientists to the social causes of disease or, more precisely, the partial or total loss of individual and community well-being. Cabanis, in the period following the French Revolution, proposed his well-known aphorism: "Les maladies dépendent des erreurs de la societé" (Diseases depend on the mistakes of society.)*(3)*. A reading of the recommendations made in the last century by Virchow *(4)* for eradicating typhus epidemics shows a startling similarity with current proposals for health promotion: "The remedy is complete and unlimited democracy, or education, freedom, and prosperity." A great number of authors could be cited who have recognized the determinants of health in the various social sectors and who have criticized the solutions proposed by the various political actors.

The challenge has always involved moving toward *action,* and even more so preparing the health sector for such action. At this point the Ottawa Charter becomes useful again in defining five operational areas for implementation of the strategy:

- Build public policy
- Create environments of social support
- Strengthen community action
- Develop personnel skills
- Reorient health services

Mechanisms and lines of action for work in these areas will assist in reorienting public health toward reaching targets and objectives more likely to improve the living conditions and, obviously, the health of the population. These areas form the bases for developing work patterns that will contribute to improving *the circumstances and lifestyles that influence health. (2)*

Consequently, it becomes clear that health promotion, in the final analysis, refers to *health in development* and is a strategy that makes it possible to seek a greater commitment on everyone's part to improvement of the quality of life and of the environment in which we live.

Health promotion thus forms part of the political arena of the various sectors and levels, which constitutes one of its greatest achievements and a significant advance in bringing about the action desired. Similarly, from a positive perspective, the concept of work for health is incorporated into the daily life of the individual and the community as a whole. In addition, health is considered as a *resource* for the development of the peoples of the Americas, and a high value is thus assigned to human capital.

The responsibility of health workers should include a seeking of general welfare extending beyond changes in lifestyles, but also including this important area of positive change in order to avoid the risks associated with them.

Implementation Mechanisms

Several mechanisms have been identified in the programs and activities for health promotion, with the aim of strengthening the participation of the people in health interventions at both the individual and collective levels.

Thus, for example, education, as an instrument for changing human beings, plays an important role in transforming living conditions and bringing about changes in unhealthy behavior. However, health education is a problem for the health sector in that its success also depends on the commitment and effectiveness of the education sector. Health and education, jointly, should apply methodologies to inform and educate adults, and also to create attitudes and less risky lifestyles in the younger generations.

Taking into account the importance of health education and information, PAHO also defined *Using Social Communication in Health (1)* as a complementary and empowering strategic orientation for health promotion.

The provision of health information and knowledge to the population and the promotion of community discussion on the needs and alternatives to be considered in seeking the common welfare, reinforces the principles of health education and the democratization of scientific knowledge. The purpose of this orientation is to capture the interest not only of the workers in the sector but also of those in the social and political sectors, in order to obtain their support for the changes that will help the population to attain higher levels of health.

One of the major challenges for the health sector today is the design of information programs and materials for the entire population, those educated formally and those who have not had the privilege of formal education. The methods and techniques of social communication, which were developed for other purposes, have an enormous potential for application to health.

It is worth mentioning briefly some of the interventions in the industrialized countries that have been successful in changing the behavior or lifestyles currently associated with major health problems, such as non-communicable diseases, accidents and injury, and addictions to substances harmful to health.

Among these interventions is school education, which seeks not only to provide health knowledge to children and adolescents, but also to change their behavior so that they will resist external pressures from their peers to lead them to risky consumption and behavior.

Other successful interventions are the specific activities of social communication, such as use of the mass media, which is reinforced with interpersonal communication and *role models* selected from within the community to exemplify healthy behavior.

Community organization is decisive and involves a process of strengthening the mechanisms of participation natural to communities through joint analysis of health problems, and searching for solutions, by representatives of the sector and representatives of the various formal and informal groups. In the English-speaking world, the *advocacy* approach is often used, which in the final analysis seeks to create a climate of social conscience with regard to a given problem, thereby facilitating political decision and, above all, supporting its implementation. The best example of this is the campaign against smoking, which, *inter alia*, in creating a collective conscience regarding its effect on health, promotes regulatory action to protect nonsmokers and enforce legislation against advertising.

Population interventions at the community level should be supported by public policies, both at the national and local levels.

Regulatory policies, tax increases, regulation of the food industry, and protection of the environment, among many others, are indispensable in the task of promoting health. This must not be overlooked, and it is very important that it be incorporated into the health sector and into the actions of health workers. All of this is part of the necessary coordination of the efforts of different sectors.

Development of the Strategy

Development of the strategy of health promotion requires strengthening the health infrastructure. The new tasks added to public health activities in the area of noncommunicable disease prevention and associated risk factors, together with the intersectoral activities that must be carried out to improve health levels, demand both human and financial resources. This should be taken into account to an even greater degree in developing countries, where the economic crisis has left very little possibility of investing resources in preventive activities and where the expenditures for curative services, also necessary, are becoming increasingly burdensome. Reorientation in the training of human resources is urgent in order to devise public health approaches that are consistent with health promotion.

Health policies also require important changes, especially with regard to providing a true response to the most outstanding problems. Illustrative of this is the fact that in countries where cardiovascular diseases clearly number among the most urgent health problems, no policies are being formulated to diminish their frequency. For this reason, it is necessary to strenghten the use of epidemiological analysis in health planning.

The resources and approaches of health programs should be reoriented so as to utilize epidemiology to a

much greater extent, not only for the purpose of planning in the health sector but also for planning in other sectors concerned with the determinants of health conditions and, consequently, of development. Again, the need for intersectoral action is immediately apparent at all levels of action.

PAHO Program on Health Promotion

The mandate for the Program includes application of the strategy of health promotion in several technical fields that fall within its purview and collaboration with other units and programs in assimilating operational concepts, principles, and mechanisms to implement the strategy in Member Countries. Insofar as the specific technical aspects of the Program are concerned, health promotion is an axis that serves to articulate approaches to highly prevalent problems in most countries of the Region, such as the noncommunicable cardiovascular diseases, cerebrovascular diseases, cancer, chronic respiratory diseases; mental disorders, drug abuse, injury, and accidents. In addition, the Program has been assigned technical responsibility for helping to improve the quality of life and well-being of special groups, such as the elderly, and to promote human development through improved mental health.

In general terms, unhealthy lifestyles are closely related to risks and disease, and consequently their modification is of great importance in this Program.

For the purpose of implementing the new orientations, lines of action have been formulated that are directed toward garnering support in the countries for implementing community-based demonstration programs aimed at reducing morbidity and mortality associated with the problems mentioned above, as well as those that promote the formulation of policies, plans, and programs to improve the quality of life of the population. High priority is being assigned to social communication and the dissemination of information to mobilize the population in the search for alternative healthy behavior.

Approaches and mechanisms for health promotion may also be identified in other PAHO programs and in interprogram activities that emphasize the role of health in intersectoral work for the development and improvement of the living conditions of the population. Cholera is a good example of this type of work. The catastrophic situation revealed to all by the epidemic of cholera, which the Director has framed within the context of the interrelationship of health and development *(5)*, has made it possible for the Organization to analyze more clearly the fundamental and historical role it should play in implementing the principles of health promotion in the countries.

The Healthy Municipalities movement that is being organized in the countries with the assistance of PAHO is another clear-cut example of work for health promotion that is paving the way toward new forms of conceiving and implementing public health actions.

Health promotion, together with disease prevention and the recovery of well-being, are the challenges that lie before us and for which we must assign rational priorities and organize resources efficiently and effectively.

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(Source: Health Promotion Program, PAHO.)

First Ibero-American Congress of Epidemiology

The Spanish Society of Epidemiology and the Andalusian School of Public Health are sponsoring the First Ibero-American Congress of Epidemiology, which will take place in Granada, Spain, on 19-21 October 1992. The Congress will examine the historical development and practice of epidemiology, in addition to Ibero-American cooperation in health, by means of lectures and discussion groups. Subject areas will include economic and cultural inequalities, administration of services, the environment, working conditions, problems related to age, and major health problems and work methodologies. On 22 October the Andalusian School of Public Health will hold its Seventh Seminar on Public Health and Health Administration on the subject of environment and health.

Papers will be accepted until 10 July, and registrations until September. The languages of the Congress will be Spanish and Portuguese. Requests for information should be addressed to: Secretaría del Primer Congreso de Epidemiología, Escuela Andaluza de Salud Pública, Campus Universitario de Cartuja, Apdo. 2070, C.P. 18080, Granada, Spain.

Epidemiological Activities in the Countries

Caribbean Epidemiology Centre Scientific Advisory Committee and Council Meetings

The 1992 meeting of the Scientific Advisory Committee (SAC) of the Caribbean Epidemiology Centre (CAREC) took place on 18 to 20 March at the CAREC facilities in Port-of-Spain, Trinidad. Responding to a recommendation made by SAC in 1991, the staff prepared and distributed the Annual Report well in advance of the meeting, which allowed SAC to make a concise review of CAREC's programs and progress made since 1991. SAC felt that the report was of high quality and reflected the continuing progress that the Centre is making both scientifically and managerially. Particular note was made of the fact that CAREC has initiated strategic planning, which should allow more precise development of objectives and review of achievements.

Together with CAREC staff, SAC members held a series of working group discussions and plenaries focussing on the following key issues: Disease surveillance, diarrheal diseases, social and economic impact assessment, sexually transmitted diseases (STD) and AIDS, vaccine preventable diseases, vector control, and the outcomes of the 1991 meetings of national epidemiologists and national laboratory directors. Following these meetings, SAC developed recommendations intended to guide and support the scientific program at CAREC. Important recommendations which may be of general interest to readers are as follows:

- *CAREC should work with national authorities to strengthen surveillance in local health systems.*
- *EpiInfo should be adopted as the preferred computer software for epidemiological surveillance.*
- *Linkages with epidemiological and laboratory centres within the Caribbean and abroad should be fostered.*
- *Annual reports of Chief Medical Officers should become substantial documents for ongoing yearly assessment of the health situation of populations.*
- *Detailed case investigations of deaths from diarrhea and case-control studies of diarrheal diseases should be promoted.*
- *The Ministers Responsible for Health should be made aware of the need for legislation on accreditation for all laboratories, both public and private, and of the need for a policy on the immunization of laboratory workers against hepatitis B.*
- *All national laboratories should develop policies for laboratory safety, with training and guidance from CAREC.*
- *The Special Program on STD/AIDS should focus on information, education and communication, the development of HIV surveillance and the use of data from knowledge, attitude, behavior and practice surveys.*
- *CAREC should promote greater awareness of legal, ethical and human rights issues relating to HIV/AIDS.*
- *Appropriate studies and interventions with adolescents and youths need to be undertaken to stop the spread of AIDS among young people.*
- *In conjunction with surveillance for measles elimination, surveillance of rubella and dengue can be strengthened so as to improve control of these diseases. The Expanded Program on Immunization should consider a joint measles-rubella initiative and hepatitis B immunization in the Caribbean.*
- *CAREC should give priority to relevant and sustainable vector control for malaria, dengue and arthropod pests.*

At its meeting on 23 and 24 March, the CAREC Council accepted the recommendations of SAC and forwarded them to the Director of PAHO. In its capacity as the main governing body for CAREC, created under the terms of the multilateral agreement for the operation of CAREC signed by all Member Countries, Council expressed its concern with the decline in quota contributions and the accumulation of arrears in payment, which is having a significant impact on the operations of the Centre. Council also expressed strong support for the rebuilding of CAREC, consistent with the Center's financial health.

International Symposium on Public Health Surveillance

On 22 to 24 April 1992, an *International Symposium on Public Health Surveillance: Guiding Solutions to Improving Health and Quality of Life* was held at the Carter Center in Atlanta, Georgia, United States of America. Sponsors of the symposium were the Centers for Disease Control of the United States Public Health Service, the Carter Center of Emory University, the World Health Organization, the Pan American Health Organization and the Emory University School of Public Health.

The objectives of the symposium were (1) to reach greater understanding on the definition, role and importance of surveillance in reducing morbidity and mortality from infectious and noninfectious diseases and injuries, improving quality of life and setting effective health policies and (2) to identify critical issues

in public health surveillance that would benefit from more detailed and focused discussions in subsequent meetings. Experts who participated in the symposium represented countries at different stages of economic development and addressed questions about why we conduct public health surveillance and what role surveillance has played in influencing public health policies and practice over the past 25 years. (In May 1968, a principal focus of the Twenty-First World Health Assembly was *National and Global Surveillance of Communicable Diseases.* Since then, few international meetings have dealt with surveillance.)

The symposium recognized that the feasibility and applicability of different surveillance methods will vary among countries, in relation to economic, demographic and epidemiological characteristics. It was felt, nonetheless, that public health professionals would benefit from sharing lessons learned in surveillance that had an impact on setting health policies and program priorities, allocating resources or directing, monitoring and evaluating health programs.

Major themes discussed during the symposium were (1) lessons learned by decision makers at different levels in the health system about the use of public health surveillance data; (2) issues in setting priorities with limited resources, informatics and using surveillance data to set health objectives; (3) communicating surveillance data to decision makers; (4) surveillance of non-communicable diseases; and (5) getting surveillance on the agenda for public health. The arrangement of formal presentations and invited discussion followed by open discussion allowed for active and productive participation by all invited experts.

The symposium proceedings will be published. It is anticipated that other meetings will be held, leading up to a WHO Expert Committee Meeting on Strengthening of Epidemiology for Public Health Action, scheduled for the end of 1993. The *Bulletin* will keep its readers informed of publications and events related to public health surveillance.

Second National Workshop on Epidemiology in the Health Services and the Family Physician in Cuba

The Second National Workshop on Epidemiology in the Health Services and the Family Physician was held in the city of Havana on 22-23 March 1992. It was attended by 160 professionals from the areas of services, research, and education, and had the collaboration of international advisers.

In his inauguration of the Workshop, the Deputy Minister of Hygiene and Epidemiology reviewed the development of Cuban epidemiology over the past decades:

- Between 1962 and 1975 the actions taken consisted basically of dealing with the principal problems related to the infectious-contagious diseases, which led to the elimination of a group of diseases from Cuba. However, policies were not redefined, and epidemiology consequently stagnated during the period from 1975 to 1980.
- The devastating effect of the epidemic of hemorrhagic dengue obliged the National Health System to take steps to strengthen epidemiology efforts in the country. Municipal hygiene and epidemiology centers and units were quickly set up throughout the national territory, in addition to vector control units. Palpable results were obtained in another group of infectious-contagious diseases and the health situation continued to change, showing a trend toward the predominance of noncommunicable diseases.
- As an outgrowth of these efforts, the First National Workshop on Epidemiology in the Health Services and the Family Physician was convened in May 1988. This Workshop specified the fundamental guidelines for expanding work in epidemiology by including the family physician in the health system (see *PAHO Epidemiological Bulletin*, vol. 9, no. 3, pp. 11-15, 1988).
- The Second National Workshop on Epidemiology in the Health Services and the Family Physician focused on the need to conceive new ways of working with family physicians in the context of *Objectives, Aims, and Guidelines to Increase the Health of the Cuban Population, 1992-2000*, published in February 1992 and characterized by its emphasis on the epidemiological goals of impact, decentralization, and multisectoral response.

The Workshop also evaluated fulfillment of the agreements reached by the First Workshop, and actions were planned with a view to advancing beyond the work already accomplished. The participants agreed that many of the guidelines from the First Workshop were still applicable and that it was essential to develop them further.

The most important recommendations were as follows:

Epidemiology and Health Services Organization

-To improve the quality of studies on the health situation, make headway in the epidemiological analysis needed for decision-making, and systematize this process at the level of the health area and at municipal, provincial, and national levels.

-To ensure that health actions are based on situation analysis. Such actions should be evaluated systematically with the active participation of the community.

-To include and develop the epidemiological perspective at all levels of health care. With regard to the primary level, two approaches were emphasized: the importance of the epidemiologist in the health area and of epidemiological training for the health team.

-To foster inter- and intrasectoral relations as a working strategy, taking into account:

a)Current government policies as a response not only to the particular period of time but also to ongoing action with regard to the Cuban health-disease profile.

b)Local initiatives which, when combined with multisectoral efforts, offer satisfactory responses to the health problems and constitute solutions which should be applied on a broader basis.

c)The need to enlist efforts and commitment within the health sector so as to achieve the integration that is needed in order to attain the targets of the strategy of health for all by the year 2000.

-To expand and systematize the evaluation of services and programs as a means of gaining knowledge about and improving the quality of health care at all levels.

-The specialty of comprehensive general medicine (CGM) should play a major strategic role in fulfilling Cuba's goals for health care. The remainder of the specialties should be integrated into the health strategy.

-To strengthen links between the primary and secondary levels and reinforce the criterion of territoriality. The project for the development of epidemiology in hospitals should be regarded as a means for achieving this objective.

-To strengthen the role of the health services in epidemiological surveillance, consolidating it in the area of communicable diseases and developing it for noncommunicable diseases.

-To alter the management style so that joint territorial analysis of problems and the search for solutions become integrating elements.

Training in Epidemiology

-To continue to improve the undergraduate teaching program in public health and epidemiology, taking into account its links with the Municipal Hygiene and Epidemiology Center and the Health Area.

-To continue to make adjustments to the hygiene and epidemiology residence program and take steps to ensure that it is updated regularly so as to keep pace with advances in this area.

-To increase dissemination and expand epidemiological knowledge in the area of Comprehensive General Medicine. Personnel working in the public health and epidemiology services should also be brought up to date on an intensive basis. For this purpose it is proposed:

-To take as the point of departure for epidemiological training, especially in the case of personnel working in the health area, the identification of current health problems.

-To ensure that training in epidemiology is based on what needs to be learned.

-To endeavor to modify the biomedical approach of health instructors and health professionals in the formation of general practitioners, by including concepts that stress health rather than cure.

-To bear in mind the importance of reaching the community through the mass media as a key to influencing health education.

-To train and update managers in the use of epidemiology to interpret and provide scientific solutions to health problems--an activity in which the Faculty of Public Health should play a leading role.

-To obtain up-to-date specialized and scientific information in the various fields of action that involve epidemiology.

Epidemiological Research

-Research should focus on seeking the knowledge required in order to act on a scientific basis.

-Greater importance should be given to the dissemination of research results in national journals, including CGM, assigning priority for publication on the basis of the importance of the results. Use of this information should be expanded and innovative means should be sought for promoting its dissemination, study, and analysis.

-The dissemination of research results in international journals should be increased.

-Research on the epidemiology of noncommunicable diseases should be promoted, with emphasis on the study of interventions in which Provincial Hygiene and Epidemiology Centers participate in close cooperation with the other health services.

-Family physicians and their teams should be given a greater opportunity to participate in the design and execution of research proposals and in the preparation of results.

-The incorporation of knowledge in the sciences and related areas should be increased with a view to developing a comprehensive body of epidemiological thought that will have greater analytical power and transforming capacity as a basic element for development of the Cuban School of Epidemiology.

Cholera Situation in the Americas

Since the previous issue of the *Epidemiological Bulletin*, the evolution of cholera in the Americas has been characterized by a pattern of intense transmission. Although there are no reports of new countries that have been affected, the following information has been received. In May, **Mexico** reported twice as many cases as the average for the previous months in 1992, and the states of Jalisco, San Luis Potosí, and Sinaloa registered cases for the first time. In Central America all the countries, with the exception of Costa Rica, saw a rise in the number of cases reported during the period from the end of April through May compared with the two previous months. In **Honduras** and **Nicaragua** the infected area increased in size. In **Costa Rica** an autochthonous case was identified as part of a limited outbreak in which nine other asymptomatic individuals were found to be infected with *V. cholerae* 01, El Tor biotype, Inaba serotype. In the Andean area, repeating the trend observed last year, **Ecuador** and **Peru** saw a reduction in the number of cases reported during the month of May. In **Brazil** the infected area continued to spread, and as of May 1992 cases had been reported from more than 300 municipalities in 14 states, 73% of them in the northeastern part of the country. The **United States of America** reported a total of 75 cases associated with an investigation of cholera among passengers on an Aerolíneas Argentinas flight between Buenos Aires and Los Angeles, California. No information has been provided on the probable source of the infection. According to the reports received from the countries, the trend appears to be one of continued cholera transmission in the Hemisphere with seasonal peaks in incidence (Figure 1). As of 6 June, the countries that had reported cases during 1992 were: Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, French Guiana, Guatemala, Honduras, Mexico, Nicaragua, Panama, Peru, Suriname, the United States of America, and Venezuela.

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

The recent publication of the World Health Organization, *WHO Guidance on Formulation of National Policy on the Control of Cholera* (WHO/CDD/SER/92.16), sets forth the Organization's position in several important areas relating to the control of cholera.

With regard to surveillance and reporting, the following case-definition criteria are recommended: ***suspected case**: (a) a patient 5 years of age or older who develops serious dehydration or dies from acute watery diarrhea in an area where the disease has not been reported; (b) a patient 5 years of age or older who develops acute watery diarrhea, with or without vomiting, in an area where an epidemic is occurring. **Confirmed case**: any diarrhea patient with isolation of* Vibrio cholerae *01.*

For reporting at the national level, collection of a minimum set of data elements is recommended. Information on sources and modes of transmission may be obtained through epidemiological investigation. With regard to international notification, it is emphasized that authorities in countries where the presence of cholera has been confirmed should report to PAHO/WHO on a weekly basis *and include at least* the number of new cases and deaths since the last report, together with cumulative totals for the year, by region or some other relevant geographical division. It is not necessary to distinguish between confirmed and suspected cases; *all cases should be reported as cholera.*

Regarding the use of the laboratory, it is emphasized that *in the event of a suspected case, a sufficient number of feces samples should be examined to identify the responsible agent and test its sensitivity to antibiotics. Once the presence of cholera in an area is confirmed, it is not necessary to examine samples from all, or even many, of the cases or contacts in the area, and in fact, it is better not to promote this practice since it places an unnecessary burden on the laboratories. The evolution of an epidemic in a given area should be followed through bacteriological tests of samples from a small number of patients.*

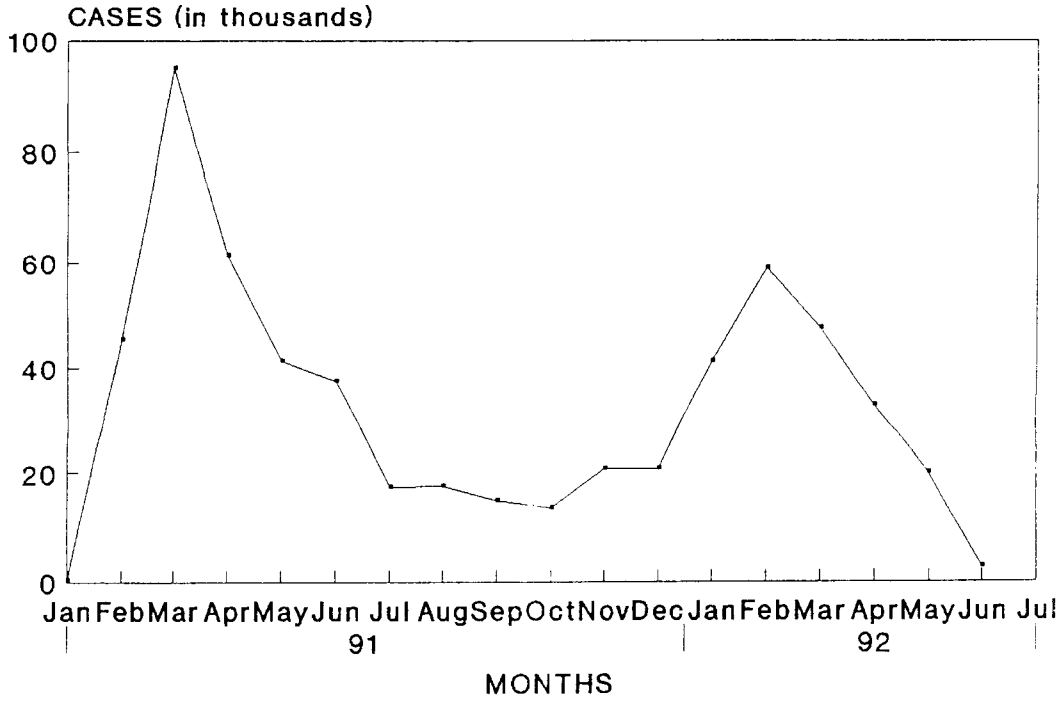
It is reiterated that *WHO does not recognize any situation in which the traditional cholera vaccine should be used.*

With regard to the international spread of cholera, it is pointed out that at the present time *no country requires that travelers entering its territory be vaccinated against cholera.* Furthermore, *WHO recommends that the countries should not implement any cordon sanitaire, quarantine, or control of their borders in their efforts to prevent the spread of cholera.*

In reference to chemoprophylaxis, attention is called to the fact that *mass prophylaxis should not be used in efforts to control cholera. Selective chemoprophylaxis may be considered, but only when surveillance has demonstrated that on the average, at least one of every five family contacts has become ill after the appearance of the first case.*

In view of the small risk of tourists becoming ill with cholera, the recommendation on this subject is that

Figure 1. Cholera cases reported monthly in the Americas, 1991-1992.



tourism should not be restricted in areas affected by cholera.

With regard to water supply and sanitation, it is emphasized that *cholera can only be reliably prevented by ensuring that all populations have access to adequate excreta disposal and drinking water systems.*

Since large-scale investments are needed in order to upgrade or build new environmental health infrastructure that is capable of providing such systems, priority should be given in the near term, to: **Drinking water**: *a) drinking water should be adequately disinfected; disinfection practices should be improved in distribution systems and in rural systems; b) chlorine or iodine tablets may be distributed to the population with instructions for their use; c) when chemical water treatment is not possible, emphasis should be placed on the need to boil water before it is consumed; d) water quality control should be improved, surveillance and control of residual chlorine should be intensified, and bacteriological tests should be implemented and analyzed at various points in the production and distribution systems.* With regard to **sanitation**: *a) quality control of wastewater treatment plants should be improved; b) the use of treated wastewater for irrigation should be carefully controlled, in accordance with national and international standards; c) large-scale chemical treatment of wastewater is rarely justified, even in emergencies, because of its high cost, unpredictable effects, and possible negative impact on the environment and health; d) health education should emphasize safe disposal of excreta.*

In reference to food and cholera, the following general recommendations are made:

When the physical or chemical characteristics or processing of food are such as to prevent the presence of V. cholerae, *there is no reason to expect any risk of cholera transmission, and hence there is no justification for actions that restrict the sale, transportation, or consumption of such foods as measures to control the disease.*

With regard to food in international trade, it is noted that *although in theory there is a risk of cholera transmission with some of the food products that are sold on the international market, this possibility has rarely proven to be significant, and hence authorities should seek more satisfactory mechanisms than the application of embargoes on imports.*

Finally, with regard to health education, it is recommended that *those responsible for the mass media should provide the health authorities with the necessary free time and editorial space to disseminate information and educate the public on cholera control.*

AIDS Surveillance in the Americas

Number of reported cases by year, and cumulative cases and deaths, by country and subregion. As of 10 June 1992.

SUBREGION / Country	Number of Cases: Through 1986	1987	1988	1989	1990	1991	1992	Cumulative total(a)	Total deaths	Date of last report
REGIONAL TOTAL	45,371	33,393	42,329	49,286	53,150	49,200	4,080	277,028	167,571	
LATIN AMERICA b)	3,193	4,495	7,056	8,891	12,116	11,850	865	48,673	20,211	
ANDEAN AREA	205	386	683	871	1,236	1,142	75	4,598	2,317	
Bolivia	3	3	10	2	7	16	2	43	37	31/Mar/92
Colombia	63	187	290	360	620	669	...	2,189	1,064	31/Dec/91
Ecuador	13	22	29	22	42	51	...	179	126	31/Dec/91
Peru	30	32	65	118	141	155	73	614	216	31/Mar/92
Venezuela	96	142	289	369	426	251	...	1,573	874	31/Dec/91
SOUTHERN CONE	118	133	204	231	588	616	33	2,112	766	
Argentina	72	71	103	108	383	373	...	1,298	401	31/Dec/91
Chile	36	48	69	82	117	147	...	500	196	31/Dec/91
Paraguay	2	5	4	3	12	10	...	36	30	31/Dec/91
Uruguay	8	9	28	38	76	86	33	278	139	30/Apr/92
BRAZIL	1,616	2,246	3,735	4,848	6,177	5,914	168	24,704	10,926	31/Mar/92
CENTRAL AMERICAN ISTHMUS	87	191	359	469	842	820	71	2,857	1,146	
Belize	1	6	4	0	1	...	...	12	8	31/Mar/90
Costa Rica	20	23	52	53	69	83	30	330	212	31/Mar/92
El Salvador	7	16	34	72	54	107	33	323	96	31/Mar/92
Guatemala	16	12	18	18	78	94	...	236	97	31/Dec/91
Honduras	17	103	189	247	569	453	...	1,595	491	31/Dec/91
Nicaragua	0	0	2	2	7	13	1	26	24	31/Mar/92
Panama	26	31	60	77	64	70	7	335	218	31/Mar/92
MEXICO	245	804	964	1,499	2,395	3,166	489	9,562	4,508	31/Mar/92
LATIN CARIBBEAN c)	922	735	1,111	973	878	192	29	4,840	548	
Cuba	3	24	24	12	10	30	9	112	54	31/Mar/92
Dominican Republic	124	234	356	508	238	162	20	1,642	197	31/Mar/92
Haiti	795	477	731	453	630	...	...	3,086	297	31/Dec/90
CARIBBEAN c)	465	374	489	725	702	843	129	3,739	2,249	
Anguilla	0	0	1	2	1	0	...	4	3	30/Jun/91
Antigua	2	1	0	0	3	...	...	6	5	31/Dec/90
Bahamas	86	90	93	168	162	235	...	834	498	31/Dec/91
Barbados	32	24	15	40	61	78	30	280	198	31/Mar/92
Cayman Islands	2	1	1	1	2	3	...	10	8	31/Mar/91
Dominica	0	5	2	3	2	...	...	12	11	30/Jun/90*
French Guiana	78	25	34	54	41	...	...	232	144	30/Sep/90
Grenada	3	5	3	8	5	7	1	32	18	31/Mar/92
Guadeloupe	47	41	47	47	...	...	...	182	85	31/Dec/89
Guyana	0	10	34	40	61	85	28	258	78	31/Mar/92
Jamaica	11	32	30	66	62	133	...	334	218	31/Dec/91
Martinique	25	23	30	51	45	26	8	208	126	31/Mar/92
Montserrat	0	0	0	1	0	0	...	1	0	31/Dec/91
Netherlands Antilles	9	12	9	16	31	...	...	77	16	31/Dec/90
Saint Lucia	4	4	2	8	3	7	5	45	22	31/Mar/92
St. Christopher-Nevis	6	4	9	5	8	1	0	33	20	31/Mar/92
St. Vincent and the Grenadines	2	5	8	6	4	14	0	39	25	31/Mar/92
Suriname	4	5	4	35	35	16	3	102	82	31/Mar/92
Trinidad and Tobago	151	85	160	167	173	235	54	1,025	673	31/Mar/92
Turks and Caicos Islands	3	2	6	7	1	2	...	21	18	31/Dec/91
Virgin Islands (UK)	0	0	1	0	2	1	0	4	1	31/Mar/92
NORTH AMERICA	41,713	28,524	34,784	39,670	40,332	36,507	3,086	224,616	145,111	
Bermuda	51	21	28	35	33	23	8	199	142	31/Mar/92
Canada	1,185	867	1,017	1,169	1,050	788	40	6,116	3,746	31/Mar/92
United States of America c)	40,477	27,636	33,739	38,466	39,249	35,696	3,038	218,301	141,223	30/Apr/92

a) May include cases for year of diagnosis unknown.

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

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

* Date Corrected.

Diseases Subject to the International Health Regulations

Yellow fever and plague cases and deaths reported in the Region of the Americas as of 31 July 1992.[1]

Country and administrative subdivision	Yellow fever		Plague
	Cases	Deaths	cases
BOLIVIA	*14*	*10*	
Cochabamba	1	1	-
La Paz	8	8	-
Santa Cruz	5	1	-

[1]For information on reported cholera cases and deaths, see article on cholera situation in this *Bulletin.*

During 1991, **Bolivia** reported a total of 82 cases of yellow fever and 52 deaths, from the Departments of Cochabamba (3 cases and 2 deaths), La Paz (15 cases and 15 deaths), and Santa Cruz (64 cases and 35 deaths). **Brazil** reported a total of 15 yellow fever cases and 8 deaths, from the States of Mato Grosso do Sul (6 cases and 3 deaths), Pará (2 cases and 2 deaths) and Roraima (7 cases and 3 deaths). **Ecuador** reported a total of 19 cases and 10 deaths from yellow fever, from the Provinces of Morona Santiago (2 cases and 2 deaths), Napo (9 cases and 5 deaths), Pastaza (4 cases and 3 deaths), and Zamora Chinchipe (4 cases and no deaths). In the **United States of America**, 11 cases of plague were reported, from the States of Arizona (one case), Colorado (3 cases), Idaho (one case), New Mexico (4 cases), Oklahoma (one case) and Utah (one case).

PAHO's *Epidemiological Bulletin* is published quarterly in English and Spanish.
It is catalogued and indexed by the United States National Library of Medicine.
Printed in acid-free paper.
ISSN 0256-1859

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