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Mortality Due to Intestinal Infectious Diseases in Latin America and the Caribbean, 1965-1990

The influences that have transformed the health situation in the countries of Latin America and the Caribbean in recent decades, especially with respect to mortality, have brought an increase in life expectancy at birth from 51.8 to 66.6 years in Latin America and from 56.4 to 72.4 years in the non-Latin Caribbean over the period from 1950-1955 to 1985-1990 (1). In general, the greatest impact of these forces has been seen in reduced mortality due to infectious and parasitic diseases; their second greatest impact has been on acute respiratory infections. According to McKeown (2), these effects are the result both of direct influences (improved nutrition, immunizations, availability of drinking water and waste disposal, and safer food handling) as well as indirect influences (control and lowering of the birth rate, increased literacy rates especially among women, mass outreach of the communications media, etc.). While these improvements have had an unquestioned impact, they have not been distributed equitably throughout the entire population. One need only point to the current epidemic of cholera and to the persistence of a problem which is one of the most preventable and yet still one of the most common: the intestinal infectious diseases—basically, the diarrheal diseases (3). While it

is true that in some places and times other problems have caused more deaths, in Latin America in both the recent and distant past such other problems have been far less important than the diarrheal diseases. The latter have killed and continue to kill, in particular, a serious proportion of children in their first years of life. Moreover, in many countries diarrhea has been and remains an important cause of death in other age groups as well.

Table 1 shows the evolution of mortality due to intestinal infectious diseases in most of the countries of Latin America and the Caribbean. The period under study has been divided into five five-year segments, and for each of these the average annual values for certain indicators have been estimated wherever the existing information permitted (4).

In nearly all the countries that have data available for more than one of the five-year periods there has been a decrease in the number of deaths from intestinal infectious diseases for all ages and for children under 5 (columns 1 and 3, respectively). The decline has been more pronounced in some countries than in others: in Costa Rica and Chile, for example, the number of deaths from intestinal infections decreased by approximately

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**Table 1. Changes in mortality from intestinal infectious diseases^a
in selected countries of Latin America and the Caribbean, 1965-1990.**

Country	Quinquennium	All ages		Children under 5 years of age			Rate per 1,000 children (6)
		Number (1)	% all causes (2)	Number (3)	% all ages (4)	% all causes (5)	
Argentina	1965-1970	5,250	2.49	4,880	92.9	14.6	2.03
	1970-1975	4,390	1.95	3,980	90.6	12.2	1.51
	1975-1980	3,350	1.40	2,960	88.4	9.8	0.98
	1980-1985	1,990	0.78	1,630	82.1	6.7	0.50
	1985-1990	1,330	0.49	1,000	75.5	4.5	0.31
Belize	1965-1970	120	12.89	90	76.1	24.0	2.82
	1970-1975	120	12.57	90	79.9	28.3	2.95
	1975-1980	110	11.66	90	81.8	26.8	2.86
	1980-1985	45	4.93	35	78.9	13.5	1.11
	1985-1990	35	3.80	30	82.9	12.9	0.86
Brazil ^b	1975-1980	83,400	8.18	77,400	92.8	26.6	4.82
	1980-1985	58,300	5.43	52,500	90.1	20.7	3.02
	1985-1990	42,800	3.80	36,000	84.2	17.2	1.94
Colombia ^b	1965-1970	24,380	12.19	20,830	85.4	24.5	5.84
	1970-1975	20,690	10.50	17,450	84.4	23.9	4.77
	1975-1980	17,320	8.93	14,840	85.7	23.6	3.98
	1980-1985	7,520	4.20	6,100	81.2	16.7	1.56
Costa Rica	1965-1970	1,590	13.28	1,470	92.0	28.8	5.22
	1970-1975	1,000	9.10	920	92.0	24.9	3.30
	1975-1980	360	3.28	350	96.1	13.7	1.16
	1980-1985	180	1.77	150	72.0	7.3	0.37
	1985-1990	160	1.48	100	63.2	6.1	0.27
Cuba	1965-1970	1,900	3.11	1,740	91.8	13.3	1.45
	1970-1975	1,180	2.04	1,030	86.6	10.8	0.87
	1975-1980	520	0.92	350	66.2	7.1	0.37
	1980-1985	400	0.64	190	46.7	5.4	0.24
	1985-1990	400	0.60	150	37.3	4.9	0.18
Chile	1965-1970	5,370	5.72	4,840	90.2	17.2	3.72
	1970-1975	4,100	4.65	3,570	86.9	15.2	2.79
	1975-1980	2,110	2.63	1,470	69.8	10.4	1.19
	1980-1985	790	1.08	400	50.0	5.2	0.31
	1985-1990	640	0.79	240	37.1	3.4	0.17
Dominican Republic ^b	1965-1970	10,530	21.05	9,470	89.9	36.0	12.29
	1970-1975	6,950	14.79	6,120	88.0	26.7	7.57
	1975-1980	4,770	10.59	3,930	82.4	22.8	4.73
	1980-1985	3,260	7.24	2,670	82.1	17.4	3.01
Ecuador	1965-1970	7,090	9.85	6,070	85.6	15.0	6.00
	1970-1975	10,800	14.80	9,390	86.9	24.9	8.20
	1975-1980	10,870	15.10	9,460	87.0	29.4	7.54
	1980-1985	7,820	11.17	6,620	84.6	25.7	4.85
	1985-1990	6,420	8.68	5,190	80.7	23.6	3.53
El Salvador ^b	1965-1970	9,850	24.02	5,950	60.5	37.9	9.76
	1970-1975	10,030	24.47	6,780	67.6	38.3	9.88
	1980-1985	4,600	9.21	3,230	70.1	21.6	4.09
Guatemala ^b	1965-1970	22,830	29.27	11,660	51.1	30.4	12.91
	1970-1975	17,800	23.73	11,150	62.7	29.6	10.90
	1975-1980	16,530	21.47	11,050	66.8	28.1	9.35
	1980-1985	15,690	20.12	10,080	64.2	27.3	7.46
Guyana ^b	1975-1980	475	7.91	365	77.1	25.7	3.10
Honduras ^b	1965-1970	9,320	23.89	5,410	58.0	36.7	11.28
	1970-1975	9,590	24.60	6,310	65.8	41.7	11.29
	1975-1980	7,370	19.40	5,420	73.6	38.4	8.57
	1980-1985	6,270	16.94	4,740	75.6	36.1	6.56
Jamaica ^b	1965-1970	1,070	7.12	920	86.5	25.5	2.89
	1970-1975	930	6.63	780	84.2	24.5	2.51
	1975-1980	780	5.60	580	74.1	26.1	1.99
	1980-1985	570	4.41	390	68.0	28.5	1.32

**Table 1. Changes in mortality from intestinal infectious diseases^a
in selected countries of Latin America and the Caribbean, 1965-1990.
(Continued)**

Country	Quinquennium	All ages		Children under 5 years of age			Rate per 1,000 children (6)
		Number (1)	% all causes (2)	Number (3)	% all ages (4)	% all causes (5)	
Mexico	1965-1970	90,550	18.22	68,010	75.1	27.6	7.46
	1970-1975	85,230	16.68	62,680	73.5	28.8	5.97
	1975-1980	62,580	13.23	46,230	73.9	28.3	4.25
	1980-1985	62,140	8.91	29,240	69.4	25.5	2.69
	1985-1990	37,480	7.68	24,740	66.0	24.7	2.17
Nicaragua ^b	1965-1970	7,100	25.37	6,370	89.7	48.2	17.27
	1970-1975	5,770	20.61	4,670	80.9	47.0	10.96
	1975-1980	5,530	18.42	4,780	86.5	44.6	9.83
Panama	1965-1970	1,000	8.34	730	72.6	17.2	3.04
	1970-1975	850	7.12	580	68.3	15.8	2.23
	1975-1980	570	5.14	390	69.3	14.3	1.45
	1980-1985	330	3.01	190	58.3	9.5	0.70
	1985-1990	330	2.76	190	57.9	9.4	0.66
Paraguay	1965-1970	2,310	13.61	1,810	78.1	29.0	4.66
	1970-1975	2,210	12.25	1,630	74.1	27.2	3.92
	1975-1980	2,650	13.23	2,050	77.4	32.3	4.50
	1980-1985	1,990	8.65	1,580	79.2	24.4	2.95
	1985-1990	1,820	7.00	1,450	79.8	23.0	2.35
Peru ^b	1965-1970	23,080	12.02	18,190	78.8	19.9	8.45
	1970-1975	24,180	13.36	19,660	81.3	23.2	8.28
	1975-1980	26,130	13.75	20,210	77.3	24.6	7.80
	1980-1985	20,850	10.86	15,030	72.1	19.9	5.50
Suriname ^b	1975-1980	95	3.47	65	67.0	10.4	1.30
	1980-1985	105	4.28	65	59.3	14.3	1.38
Trinidad and Tobago ^b	1970-1975	315	4.50	250	80.3	26.8	2.20
	1975-1980	270	3.85	220	81.6	29.2	1.90
	1980-1985	130	1.66	100	73.7	14.2	0.72
	1985-1990	50	0.59	20	40.0	4.1	0.13
Uruguay	1965-1970	460	1.77	360	78.3	11.0	1.34
	1970-1975	390	1.40	310	79.6	10.5	1.16
	1975-1980	400	1.37	280	71.3	10.0	1.03
	1980-1985	280	0.94	160	58.1	8.4	0.61
	1985-1990	190	0.61	80	42.6	5.2	0.31
Venezuela	1965-1970	7,750	10.33	6,850	88.4	24.8	3.90
	1970-1975	7,010	9.23	6,370	90.8	22.7	3.31
	1975-1980	5,430	6.62	4,850	89.4	20.1	2.27
	1980-1985	4,360	4.84	3,750	86.1	17.2	1.55
	1985-1990	3,500	3.47	2,870	81.9	13.6	1.08

^aIncludes categories equivalent to ICD-9: 001-009.

^bQuinquennia with no mortality data are omitted.

90% for all ages, and by 93% and 95%, respectively, for children under 5.

Inasmuch as the population in all the countries has grown considerably in the period analyzed, the trend toward fewer deaths from intestinal infections does in fact mean a reduced risk of dying from this cause. The falling trend is also seen indirectly in the decline of proportional mortality—that is, the relative importance of deaths from intestinal infections as a percentage of total deaths from all defined causes (column 2).

Moreover, since overall mortality from all causes has also gone down (5), it would appear that the downtrend in mortality from intestinal infections has been much greater than that seen for all other causes combined. If the remaining causes had declined to the same degree as diarrhea, the percentages of proportional mortality (column 2) would not have changed over the course of the five-year periods in question. From this it may be concluded that reduced mortality from intestinal infectious diseases has alone, as a single cause,

contributed substantially to the decline in mortality from all causes and therefore to the increase in life expectancy at birth.

The percentages of reduction have a different impact in terms of lowered rates, and thus increased longevity, depending not only on the age at which the deaths occur but also on the level at which mortality already stands. For example, in Chile the number of deaths in children under 5 decreased by 95% (from 4,840 to 240 deaths), resulting in a decline in the specific death rate for that age group of from 3.72 to 0.17 deaths for every 1,000 children under 5 (column 6), whereas a smaller reduction in Mexico had an even greater impact: in that country, the decline in deaths among children under 5 was less, 64%, but the rate fell from 7.46 to 2.17 per 1,000. The difference translates into the prevention of 355 child deaths per 100,000 in Chile versus 529 in Mexico. However, Mexico still has a long way to go, since the rate of 2.17 per 1,000, which represents 25,000 deaths each year in children under 5 during the last five-year period, is still excessive.

While the relative weight of deaths due to intestinal infectious diseases is greatest among children under 5, nevertheless some variations can be seen depending on the relative importance of this cause *vis-a-vis* total deaths for all ages (columns 2 and 4). When proportional mortality from diarrhea is very high for all ages—i.e. in excess of 20% of all deaths—mortality is high not only in children under 5 but in the other age groups as well. On the other hand, when the importance of diarrhea relative to all causes begins to decrease, then the deaths tend to occur more in infancy—which would suggest that gains from the reduction of deaths due to intestinal infections have been greater in the other age groups. And finally, when proportional mortality due to diarrhea is lowest, then mortality from this cause is mostly in the other age groups.

A study of changes in mortality due to diarrhea in the first 5 years of life both in the light of levels of proportional mortality (column 5) and age specific death rates for that group (column 6) shows the following: if the rates decreased while the percentages of proportional mortality remained relatively unchanged (as in Guatemala, Honduras, Jamaica, Mexico, Nicaragua, and Peru), then the reduction for the other causes taken together was of the same general magnitude as for intestinal infectious diseases. On the other hand, if the rate fell but proportional mortality increased, as in Ecuador, then the remaining causes decreased to an even greater extent. (The low figure for Ecuador in 1965-1970 suggests a problem with the underregistration of diarrhea during those years, which correspond to the changeover from ICD-7 to ICD-8.)

All this suggests that the death rate for intestinal infectious diseases in children under age 5 is the most

useful indicator for analyzing changes in mortality from these diseases.

In order to assess the trends over the 25-year period in terms of the reduction in death rates from diarrhea per 1,000 children under 5, a five-level scale has been established, Level 1 being the least serious and Level 5 the most serious, as follows:

Rate per 1,000 children	Category
Less than 0.5	Level 1
Between 0.5 and 2.0	Level 2
Between 2.0 and 5.0	Level 3
Between 5.0 and 10.0	Level 4
Higher than 10.0	Level 5

Note that the lowest category on the scale uses a rate of 0.5 deaths per 1,000 children under 5, which even so is seven times higher than the rates prevailing in the United States of America and Canada at the beginning of the period 25 years ago.

When the countries are grouped according to the progress in their rates between the first and the last of the five-year periods, the following distribution is seen:

Changes in rates	Countries
Level 4 to Level 1	Costa Rica
Level 3 to Level 1	Argentina, Chile, Trinidad and Tobago
Level 2 to Level 1	Cuba, Uruguay
Level 4 to Level 2	Colombia
Level 3 to Level 2	Belize, Brazil, Jamaica, Panama, Venezuela
Level 5 to Level 3	Dominican Republic
Level 4 to Level 3	Ecuador, El Salvador, Mexico
Level 5 to Level 4	Guatemala, Honduras, Nicaragua

The remaining countries with information for more than one five-year period (all except Guyana) stayed at the same level: Peru at Level 4, Paraguay at Level 3, and Suriname at Level 2.

A comparison with the situation in the United States of America and Canada between 1965 and 1970, where deaths from diarrhea stood at 0.07 per 1,000 children under 5, shows that none of the Latin American and Caribbean countries under study currently has a rate lower than the figure for these two countries 25 years ago. Moreover, from 0.07 the rate in these countries has continued to decline and is now close to zero (in Canada two children under 5 died from intestinal infectious diseases in 1987 and two in 1988, making for a rate of 1 per 1,000,000 children under 5). From this it can be said that it is possible to reduce all mortality from intestinal infectious diseases in the under-5 age group to zero, not only with the technology of today but even with the technology that existed more than two decades ago.

Despite the progress that has been made, it is evident that a very severe problem persists in the developing countries of the Americas. Between 1985 and 1990 these countries had approximately 130,000 deaths per year from diarrhea in children under 5. This number is several times greater than the 25-year cumulative total of 38,000 deaths from intestinal infections for all ages in the United States of America (5).

Based on the figures in Table 1, estimates of mortality from intestinal infectious diseases have been calculated for the entire 25-year period for the countries, both individually and as a group (6). These figures appear in Table 2.

Column 1 gives an estimate of total deaths from this cause; and column 2 gives the estimated proportional mortality from intestinal infectious diseases over total deaths from all causes. Column 3 shows the estimated number of deaths for children under 5; the percentages

in column 4 are derived from columns 3 and 1; and column 5 gives the relative importance of mortality due to intestinal infectious diseases in children under 5 expressed as a percentage of total mortality from all causes.

If the figures in Table 1 gave cause for concern, the estimate of 6 million deaths for 1965-1990 is a clear numerical expression of the serious problem that diarrheal diseases present for Latin America and the Caribbean. These 6 million deaths correspond to nearly one out of every 11 deaths from all causes—almost 9%—in the countries of Latin America and the Caribbean.

Almost 5 million of the deaths from diarrhea occurred in children under 5, amounting to 80% of all deaths from intestinal infections in all age groups and 7% of the deaths from all causes at all ages. This means that in the period studied, in the countries of Latin America and the

Table 2. Cumulative mortality from intestinal infectious diseases^a in selected countries of Latin America and the Caribbean, 1965-1990.

Country	All ages		Children under 5 years of age		
	Number	% all causes	Number	% all ages	% all ages and causes
	(1)	(2)	(3)	(4)	(5)
Argentina	81,500	1.4	72,500	89.0	1.3
Belize	2,150	9.3	1,675	77.9	7.2
Brazil	1,726,000	6.7	1,575,000	91.3	6.1
Colombia	390,000	8.1	328,500	84.2	6.8
Costa Rica	16,500	6.0	15,000	90.9	5.5
Cuba	22,000	1.4	17,500	80.0	1.1
Chile	65,000	3.1	52,500	80.8	2.5
Dominican Republic	144,000	12.4	124,500	86.5	10.7
Ecuador	215,000	11.9	183,500	85.3	1.2
El Salvador	181,500	16.4	120,000	66.1	10.9
Guatemala	442,500	22.9	269,500	60.1	13.9
Guyana	10,750	8.0	8,750	81.4	6.5
Honduras	195,000	20.4	133,500	68.5	14.0
Jamaica	19,600	5.7	15,300	78.1	4.4
Mexico	1,590,000	13.0	1,154,500	72.6	9.4
Nicaragua	145,500	20.2	125,500	86.3	17.4
Panama	15,500	5.3	10,500	67.7	3.6
Paraguay	55,000	10.6	42,500	77.3	8.2
Peru	571,000	12.2	437,500	76.6	9.3
Suriname	2,800	4.2	1,950	69.6	2.9
Trinidad and Tobago	5,400	2.9	4,200	77.8	2.3
Uruguay	8,500	1.2	6,000	70.6	0.8
Venezuela	141,000	6.7	123,500	87.6	5.9
Total	6,046,200	8.7	4,823,875	79.8	6.9

^aIncludes categories equivalent to ICD-9: 001-009.

Caribbean taken together, one out of every 14 deaths in the general population was from an intestinal infection in a child under 5. In some countries the proportion is even greater, reaching as high as one child death from diarrhea for every six deaths from all causes at all ages.

Mortality figures for the 25 years in the United States of America (7) show that the cumulative number of deaths from all causes before age 45 during the same period was 5.8 million; a figure that is lower than the 6 million deaths caused by intestinal infectious diseases alone in Latin America and the Caribbean. Moreover, the number of deaths from diarrhea among children under 5 in Latin America and the Caribbean, namely 4.8 million, was higher than all cumulative deaths in the United States of America in the population up to age 35 for the same period, which came to 4.1 million from all causes. And it was more than 100 times greater than all cumulative deaths in the United States from intestinal infections in all age groups, which was only 38,000 for the entire 25 years.

Notes and References

(1) *Health Conditions in the Americas, 1990*. Washington, D.C.: Pan American Health Organization, vol.1, p.28, based on estimates by CELADE and the United Nations.

(2) McKeown, Thomas, *The Origins of Human Diseases*. Barcelona, Critical Publishing House, 1990, p.251.

(3) The intestinal infectious diseases correspond to categories 001-009 in the International Classification of Diseases, Ninth Revision (ICD-9): cholera, typhoid and paratyphoid fevers, other salmonella infections, shigellosis, other food poisoning (bacterial), amebiasis, other protozoal intestinal diseases, intestinal infections due to other organisms (specified), and ill-defined intestinal infections.

(4) The figures in columns 2, 4, and 5 were calculated from data in the Technical Information System (TIS) of the Pan American Health Organization. Only deaths from defined causes were considered for this purpose. The percentages were calculated by averaging the percentages for the different years in each of the five-year periods, as long as there were at least two years. Once these annual averages were obtained (column 1), the number of deaths from intestinal infectious diseases was estimated by multiplying the figure in column 2 by the estimated average annual number of deaths in the five-year periods as calculated by CELADE (*Boletín*

Demográfico 23(45), Santiago, 1990) and the United Nations (*World Population Prospects, 1988, ST/ESA/SER.A/106*, New York, 1989). Once column 1 was obtained, column 4 was used to calculate column 3, namely deaths from intestinal infectious diseases in children under 5. These values were then combined with population estimates for children under 5, derived from the same publications, in order to obtain the specific death rate from this cause in children under 5. The latter figures appear in column 6. The numbers obtained for columns 1, 3, and 6 are, on the whole, higher than those registered and reported by the countries. This is due to the underregistration of deaths and causes of death. Accordingly, the calculated estimates do not necessarily reflect the reality, since it is not possible to know the distribution of causes for the deaths that were not registered. Given this fact, the estimated values may be regarded as minimum levels—and in fact they are intended to be such—since the real values, if they could be ascertained, would be still higher. The line of reasoning which supports this conclusion—valid for intestinal infectious diseases but not necessarily other causes—is that in any population the underregistration of deaths is greater in those subgroups for whom the necessities of life, above all the adequate supply and utilization of drinking water and sewerage services, are more precarious and in many cases nonexistent. Such subgroups, which may in fact correspond to the majority of the population, have higher mortality. In particular, the proportion of deaths due to intestinal infections is bound to be greater for such subgroups than it is for population subgroups for which deaths are registered. Therefore, in terms of the population as a whole, the real values of the indicators associated with these diseases should be at least equal to if not greater than those obtained using registered mortality.

(5) The figures for 1966 to 1988 were obtained from the PAHO TIS, and for 1989 and 1990 from estimates by the National Center for Health Statistics, *Monthly Vital Statistics Report* 40(1), May 1991.

(6) In order to estimate figures for those five-year periods for which information is not available, as shown in Table 1, calculations have been made using the percentages for the nearest five-year period and the CELADE and United Nations estimates of total deaths corresponding to that five-year period.

(7) *Ibid* (5).

(Source: Health Situation and Trend Assessment Program, PAHO.)

Scientific Meeting on Epidemiology and Health Care in Argentina

The first Panamerican Congress on Epidemiology and Health Care will be held from 30 October to 2 November 1991 in Buenos Aires, Argentina, at the headquarters of the Argentinian Medical Association (AMA). The meeting will comprise conferences, round tables, workshops with participation of experts in the field, short courses and contributed papers. The IV meeting on Hospital Administration will be held at the same time; this opportunity

will be taken to honor the AMA on its one-hundred year anniversary.

The Congress, organized by the AMA, and the Argentinian Society for Hospital Administration and Medical Care, will be cosponsored by the Pan American Health Organization.

Additional information may be requested from the meeting's Secretariat, Santa Fe 1171, primer piso, 1059 Buenos Aires, Argentina.

Surveillance of Living Conditions and the Health Situation

The profound social, economic, and political changes that have taken place in recent years at the international level and in Latin America in particular, coupled with the changes that have occurred in the organization, financing, and accessibility of the health services and the promotion, prevention, and restoration of health, have resulted in a marked deterioration of living conditions for broad sectors of the population, and a further deepening of inequality in terms of living conditions and health. In light of this situation, there is a growing need to develop procedures for evaluating the status of health and living conditions among the different sectors of the population, based on instruments that will be sufficiently sensitive to identify both long-term trends and short-term situational changes and at the same time assess the impact of various social responses.

The concern for reducing the excessive inequities in health and living conditions that are afflicting the peoples of the Americas is long-standing. In August 1961 the Charter of Punta del Este (1) affirmed the importance of achieving "maximum levels of well-being, with equal opportunities for all," and, accordingly, of setting targets that will take into account "not only ... average levels of real income and gross product per capita" but also a more equitable distribution of national income. To this end, it urged that development programs incorporate targets aimed at "improving living conditions ... including better housing, education, and health," and at the same time identify short-term measures designed "to concentrate efforts within each country in the less developed or more depressed areas in which particularly serious social problems exist."

In 1972 the Ministers of Health of the Americas, at their III Special Meeting, formulated the Ten-Year Health Plan for the Americas (2), whose principal goal was to increase the life expectancy of the Region's peoples. Accordingly, it was recommended that steps be taken to "begin installing mechanisms during the decade to make it feasible to attain total coverage of the population by the health service systems in all the countries of the Region." In 1977 the World Health Assembly (3) decided that "the main social target ... should be the attainment by all citizens of the world by the year 2000 of a level of health that will permit them to lead a socially and economically productive life." That same year, in their IV Special Meeting (4), the Ministers of Health of the Americas identified and defined primary health care as the principal strategy for achieving the targets that had been set within the intersectoral context of economic development.

Subsequently, at Alma-Ata in 1978, the International Conference on Primary Health Care (5) established that primary health care is "the key to attaining the target [of Health for All by the Year 2000] as a part of development in the spirit of social justice," and in 1979 the World Health Assembly (6) called for "the formulation and implementation of national, regional, and global strategies" for achieving this goal.

In 1980 the Pan American Health Organization (7) formulated strategies, targets, and specific objectives for the Region of the Americas and defined the minimum indicators for evaluating progress at the country level. These objectives were "aimed at ensuring the specific contribution of the health sector to reducing social and economic inequalities." The document states that the target and strategies of Health for All "involve the entire population," that priority should be given to "the population living in extreme poverty in rural and urban areas," and that "the improvement of national levels of well-being is a necessary condition for attaining the Goal."

Finally, at the XXIII Sanitary Conference (1990) (8) the Ministers expressed concern over "the disparities in the distribution of wealth" and the exclusion of broad sectors of the population from the most elementary levels of social well-being. The fight against inequality needs to be taken on as a fundamental component of development, with priority given to essential human needs, including health, and the elimination of extreme poverty. It is also urgent "to document and analyze the effects of stagnated growth, the general economic crisis, social inequities, and the spread of extreme poverty" on the health conditions of the population and therefore to develop the sector's capacity to apply an epidemiological approach to knowledge about the population's state of health.

In recent years, concern over the relationship between inequalities in the health situation, on the one hand, and living conditions, on the other, has been translated into numerous international studies. In the Latin American context there have been works on the seriousness of poverty in Latin America in the 1980s (9), essential health needs in Mexico (10), the social determinants of mortality (11,12), and, more recently, health inequalities in Ecuador (13). Another important undertaking was a project carried out by WHO on health inequalities in Europe (14). The Ottawa Charter (15) cites the close correlation between the health situation and the living conditions of different population groups and therefore the need to develop comprehensive multisectoral actions in order to bring about changes in living conditions and in health. It declares that "the

fundamental conditions and resources for health are peace, shelter, education, food, income, a stable ecosystem, sustainable resources, social justice, and equity.”

In the Americas, in addition to deep inequalities both between and within countries, the deterioration in the economic situation has meant that larger numbers are living in relative or extreme poverty. Despite considerable reduction in mortality that has been achieved in the last 35 years, mortality at early ages and morbidity and mortality due to diarrheal and acute respiratory diseases, and other communicable and preventable conditions continue to be major problems for many sectors of the population. In several instances, diseases that had declined significantly have now recrudesced, and there have been epidemics and serious problems with communicable diseases such as cholera and AIDS, which, in addition to violence and drug addiction, reflect the deterioration in living conditions (16).

In the context of the world economic crisis, most of the countries of the Region have seen their economies undermined and have had to resort to adjustment processes in an effort to combat inflation and stimulate growth while at the same time seeking new windows through which to become integrated into the international economy. But the adjustment policies have served to aggravate the social, political, and institutional breakdown which to a greater or lesser extent had begun to take place as far back as the 1970s (17,18). In most of the countries, public health services are deteriorating, the public sector's per capita expenditure on health is declining, with the limited and increasingly scarce resources being concentrated on curative actions (19). At the same time, within the framework of the adjustment policies, significant changes have been introduced in the organization of these services, especially in how they are financed, with a prevailing trend toward privatization and the transfer of operational costs to users.

With support from international agencies, governments have been devising intervention strategies to lessen the negative impact of the crisis afflicting the most impoverished social sectors. In several of the countries, social development funds have been created or are in the process of being created, and almost all of them have begun to define social intervention programs aimed at the most vulnerable sectors. In an effort to minimize red tape and reach the population more directly, most of these programs have been set up outside the traditional structures of the Ministries of Health using new, ad hoc institutions developed by the official sector, or nongovernmental organizations. In some cases, part of the financing previously allocated for official services has been diverted from traditional structures to support these new initiatives, thus adding

to the financial problems of the former. Most of these emergency or social investment programs focus on just a few lines of action and are directed toward a small number of specific problems in the population groups that are considered to be most affected by the crisis.

So far, there has not been enough knowledge or information available to document the relationship between the deterioration in living conditions and health services coverage and quality, on the one hand, and the health/disease problems, on the other. As a result, this information has had only a limited role in decision-making and the planning and evaluation of actions to promote health and well-being. It is therefore urgent that methods and techniques be developed that will measure the effect of the crisis on different sectors of the population, identify the main problems of these groups, and assess the impact of the social responses.

It is not enough to look only at the historical trends in living conditions and health at the national level. It is also necessary to evaluate the health of specific population groups, and, especially, to monitor the patterns of inequality in different groups. Moreover, it is essential to evaluate the impact of the actions taken, in terms of time units suitable for purposes of decision-making, so that the deployment of resources and actions can be confirmed, or rechanneled, so as to achieve the greatest possible impact. It is becoming increasingly necessary to develop the capacity to evaluate short term changes, to supplement medium- and long-term trend assessments.

It is not just a matter of finding a “new” group of indicators with greater or lesser discriminatory power, to be applied universally to all population groups and in every country: what seems to be needed is an entire conceptual redefinition of the field of health, the incorporation of more appropriate methodologies to capture the dynamics of the changes, and the acceptance and development of techniques for assessing the health situation which have not been widely used up to now.

Accordingly, it has been decided to encourage the development of national systems to evaluate and monitor health and living conditions in the different sectors of the population. Such systems should have the capacity to detect circumstantial differences and assess the impact of short-term socioeconomic changes and interventions on the health and well-being of different population groups, while at the same time enhancing knowledge on long-term trends.

The study of inequalities in the health situation and their relationship to living conditions poses major conceptual, methodological, and technical challenges that extend to the very concepts of health, living conditions, and inequality, which have already been examined in a variety of circumstances and contexts (20,21,22). This will require a critical review of the

different conceptual models that have been applied to date, including the ecological model proposed by Morris (23), and the models used by Blum (24), Lalonde (25), Dever (26,27) and others. It is necessary to move toward a reformulation within an integrative conceptual framework that will operationalize the study of the health situation, as part of the whole gamut of social reproduction processes that generate living conditions in their different dimensions (biological, ecological, psycho-cultural, economic) (28), and the different levels at which they manifest themselves, be it as individual phenomena, or those of groups, or society as a whole, without ignoring the wealth of the processes involved.

This entire undertaking—the reconceptualization of health in its relationship to the living conditions of each population group; the redefinition of analytic units, variables, and relevant indicators; and the articulation of the process of understanding the health situation with the processes of making decisions and assessing the impact of interventions—raises issues of great epistemological complexity that cannot be resolved by dealing with reality in compartmentalized and fragmented pieces and avoiding the full theoretical construct.

Different scientific disciplines have addressed the need to reduce complexity in their object of study to enable the cognitive and decision processes to meet; they have produced a number of conceptual and methodological approaches such as the notions of hierarchical and nearly descomposable systems (29,30), complex and ill structured problems (31), and latent structure (32). In the area of research methodology, renewed interest in the development of comprehensive methods has been translated into tools such as methodological triangulation (33,34) and data matrix systems (35), among others, which can be very useful for the articulation of units of analysis, variables, and indicators of different levels and for the integration of different quantitative and participatory methods within a single study.

Finally, in order to facilitate the design of specific projects in the countries, it will be important to include techniques such as the use of space-population units, which have been widely applied in geography for the stratification of the population according to living conditions. In addition, techniques based on the concepts of sentinel populations and tracer problems and indicators, adapted to the needs of the projects in each country, might help to increase the sensitivity of the surveillance system while at the same time reducing the number of indicators and the operational costs.

To facilitate the discussion and enrichment of these concepts, a working document, prepared by PAHO's Health Situation and Trend Assessment Program, summarizes many of the developments cited here. Based on this draft, specific operational proposals, geared to the national reality in each country, are being

promoted. The document does not mean to be prescriptive, nor does it call for a consensus; rather, it is hoped that it will contribute to the particular process in each country and facilitate local cooperation by PAHO, based on a participatory approach, leading to the design of systems that are suitable, feasible, viable, and capable of responding to needs defined according to national criteria. The first attempts at this process, which have been limited to four countries so far, have made it been possible to incorporate the scientific and technical capacity of the institutions involved, which is reflected in the particular characteristics of each undertaking, and has considerably enriched the initial working document, while at the same time facilitating evaluation of the proposals in terms of their feasibility and viability.

It is hoped that this effort will lead to relatively simple operational proposals, applicable to the countries' particular conditions in terms of technical and financial resources. Furthermore, it should be feasible to turn them into ongoing activities by the institutions involved, to complement and strengthen the existing information systems, closely tied to the decision-making processes at the point where the institutions of government and civilian society interact.

Note: The draft document may be requested from the Health Situation and Trend Assessment Program through the PAHO Representation.

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(Source: Health Situation and Trend Assessment Program, PAHO.)

Latin American Workshop on Strategies for Accelerating the Improvement of Civil Registration and Vital Statistics Systems

The Department of Technical Cooperation for Development and the Statistical Office of the United Nations are organizing a Latin American Workshop for Accelerating the Improvement of Civil Registration and Vital Statistics Systems. The National Institute for Statistics and Censuses (Instituto Nacional de Estadística y Censos) of Argentina will host the workshop in Buenos Aires, Argentina, from 2 to 6 December 1991. Organized in cooperation with PAHO/WHO, the International Institute for Vital Registration and Statistics, and the United Nations Economic Commission for Latin America and the Caribbean, the workshop is being sponsored by the United Nations Population Fund. Eleven countries of South and Central

America where registration coverage is above 80% will participate, and it will be in Spanish only.

The main purposes of the workshop are: a) to discuss ways and means of promoting awareness of the national vital statistics and civil registration systems in each participating country, b) to assess the adequacy of national registration and vital statistics processes, coverage, and reliability, and c) to suggest strategies for the improvement of vital statistics and civil registration systems for participating countries.

Additional information may be obtained by writing to Mr. William Seltzer, Director, Statistical Office of the United Nations, One United Nations Plaza, New York, N. Y. 10017.

Update: The Cholera Situation in the Americas

Since publication of the previous update, cholera cases have been identified in three more countries of the Region—Guatemala, El Salvador, and Bolivia (*Epidemiological Bulletin*, Vol. 12, No. 2, 1991).

From the beginning of the epidemic in Peru at the end of January, cholera has attacked a country a month: Ecuador in February, Colombia in March, Chile in April, Brazil in May, Mexico in June, Guatemala in July, El Salvador in August, and, most recently, Bolivia.

Table 1 shows the total number of cases reported to PAHO as of 14 September 1991 was 298,702, with 3,165 deaths. This number is more than four times the total number of cholera cases reported worldwide in 1990.

Guatemala. *Vibrio cholerae* 01, El Tor, Inaba, was isolated during the third week of July 1991 from the stools of a Guatemalan male from San Marcos Department, on the Mexican Border.

During the first three weeks of the epidemic the rural population was the most affected, as 98% of suspected and confirmed cases are from small villages in the west of the country. The first cases in the capital were reported during the second week of August.

From the start of the epidemic all ages were affected. At the Tecun Uman Health Center, San Marcos Department, during the first two weeks of the epidemic a total of 48 cases were registered, of which only 28 were over 5 years of age (58%). Twenty-one of the 48 cases (44%) were among females. The age and sex distributions were similar in the other three departments

affected. Clinical manifestations predominant among the first confirmed cases in the Coatepeque Hospital were liquid stools (93%), dehydration (80%), vomiting (73%), exhaustion (67%) and cramps (47%).

Preliminary investigations in relation to forms of transmission found *Vibrio cholerae* in the Suchiate River, on the southern Mexico-Guatemala border, and in food sold by street vendors, specifically beverages in Tecun Uman. Several case-control studies indicate that well water and foods for home consumption, cooked but eaten while no longer hot, might also have been sources of infection. Coliform contamination of the piped water supply available to affected populations has been shown, as well as insufficient concentration of chlorine in relation to recommended levels.

During the first two weeks of the epidemic, case management was primarily hospital-based, generally with use of intravenous fluids; 85% of the cases in San Marcos Department were hospitalized in Coatepeque Hospital. Tetracycline and trimethoprim/sulphamethoxazole have been the antibiotics most frequently used for treatment of patients.

Care was gradually decentralized by providing in-service training at other levels, and community centers are being organized. In addition, norms have been updated and technical documents and educational materials for the community have been prepared and distributed. Actions to guarantee a safe water supply and to promote healthy habits to prevent disease are being emphasized.

Table 1. Cholera cases and deaths reported in the Americas.

Country	First report	Total cases	Hospitalized cases	Deaths	Last report received
Peru	23 January	256,343	97,422	2,453	3 September
Ecuador	1 March	35,587	27,866	576	17 August
Colombia	10 March	5,605	3,690	119	14 September
United States	9 April	18*	10	0	14 September
Brazil	10 April	124	77	1	12 September
Chile	12 April	41	38	2	9 September
Mexico	13 June	806	84	9	10 September
Guatemala	24 July	115	115	2	24 August
El Salvador	19 August	43	30	1	7 September
Bolivia	26 August	20	6	2	9 September
TOTAL		298,702	129,338	3,165	

*15 related to travel to Latin America, 2 to travel in other regions, and one of undetermined origin, pending investigation.

Adoption of a clear definition of what constitutes a cholera case has been a concern of national authorities. This definition should be the basis of the system for case reporting, to collect data on the cholera situation in the different levels of the health services. In addition, efforts are being made to include data on cases attended outside the institutional health services system. This component is deemed to have sizable magnitude, given the characteristics of the clinical presentation of cholera and the low health services coverage in Guatemala.

A total of 115 confirmed cholera cases have been reported through the third week of August 1991. The affected departments are San Marcos, Suchitepéquez, Retalhuleu, Guatemala, Quetzaltenango, Sololá and Escuintla.

In **El Salvador** the first two cases of cholera were reported on 16 and 21 August. Both patients were indigent men living in Colonia Esmeralda, Barrio San Jacinto, in the capital city, San Salvador. Neither had a history of having traveled outside the area. The laboratory isolated *Vibrio cholerae* 01, El Tor, Inaba from the feces of both patients. Since the first reported cases, there have been a total of 43 cases and one death, all occurring in the metropolitan region (14 neighborhoods) and surrounding area (Zacatecoluca).

Bolivia reported the occurrence of four cholera cases confirmed by laboratory on 27 August. All the patients were adult residents of two communities located along the Choqueyapu River in the Río Abajo region, 20 km south of La Paz. As of 9 September, 20 additional cases had been reported, from the Río Abajo and El Alto regions, and one death in the El Alto region, near La Paz.

Peru. Until the end of August, the cholera epidemic had affected at least 1.5% of the country's population. During that month the incidence fell to 1,200 cases per week, as compared to 15,000 to 20,000 weekly cases reported in February 1991. Intense transmission of the disease is reported to continue in remote Departments, such as Loreto. Case fatality in this Department is 2.8%, compared to 0.5% in the areas of the Coast.

In **Ecuador** the provinces most affected during the month of August were Esmeraldas, El Oro and Guayas. The average number of reported cases per week in the country during July and August was 800 compared to 300 reported in the first 30 days of the epidemic.

In **Colombia** cholera has spread to the departments of Santa Fe de Bogota, Antioquia, Bolivar and Risaralda,

with 3,006 additional cases reported since the last update.

Mexico. The last report on the cholera situation covers the period up to 10 September. From 28 June to that date, 779 additional cases were reported by the states of Mexico, Hidalgo, Veracruz, Puebla, Chiapas, Campeche, Tabasco, and the Federal District.

Cholera in **Brazil** continues to be confined basically to the State of Amazonas. As of the last report received, cases had occurred in the municipalities of Jutai, Atalaia do Norte, and São Paulo de Olivença (in Medio Solimões), in addition to Tabatingá and Benjamin Constant. An isolated case was reported in the State of Mato Grosso and an imported case was registered in the city of São Paulo. No associated cases were registered. Brazil reported 106 cases during the period 30 June-12 September compared to 18 reported cases in the two previous months. In this country cholera cases are considered to be only those confirmed through laboratory identification of *V. cholerae* 01, El Tor, Inaba.

In the **United States of America**, four cases of cholera have been identified in addition to the fourteen previously reported in 1991. All were imported, two of them from other regions of the world (Cambodia and India) and two from Latin America (Ecuador). No secondary cases of transmission have been registered within the country.

In **Chile** the epidemic has ceased, the last case having been reported on 22 May of this year.

In assessing the situation in the Region on the basis of data reported by the aforementioned countries, it should be borne in mind that clinical manifestations of *V. cholerae* 01 infection have ranged from asymptomatic infections (75%) and mild diarrhea up to the severest clinically identifiable forms (5%).

Given the evolution of the cholera epidemic in Latin America over the past seven months, both in terms of its magnitude and the way in which it has spread, it is feared that the disease may extend to other countries in coming months and become endemic in some areas of the Region. It is therefore essential that all the countries take steps to prepare for a possible attack of cholera and formulate or review their national plans for contending with this disease.

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

Cholera Prevention and Control: Environmental Health Measures

Epidemiological surveillance for the early detection or follow-up of cholera cases in recently infected areas depends on information on case occurrence, laboratory confirmation and risk factors associated with the environment. Prevention and control of a cholera epidemic implies making the areas at risk of infection impervious to the penetration of cholera. This in turn entails setting in place barriers, namely environmental interventions, along the pathway of transmission of cholera, which will destroy, inactivate, isolate or otherwise diminish the number of *Vibrio cholerae* to such an extent that there is little, if any, chance for persons to be exposed to an infective dose of this pathogen. The most important interventions are summarized.

Water systems

1. Increase the minimum free chlorine residual to 0.2 mg/liter in distribution systems with 24 hour pressurization and to 0.5 mg/liter in those systems which are intermittently pressurized. Disinfect all water tank trucks to 1.0 mg/liter of free chlorine residual. Install and operate disinfection equipment in systems which lack this protection. Require the disinfection of water used for the production of ice.
2. Intensify monitoring and surveillance for water quality and increase efforts to control the quality of water produced by water treatment plants. Strengthen water quality control programs, including corrective actions. Strengthen the capacity of water and environmental laboratories. Develop and implement water source protection programs.
3. Issue orders to disinfect or boil water, directed to the general public when and where necessary, and carry out programs to promote, motivate and support the disinfection of water at the household level including, if necessary provisions to insure disinfectant availability at the community level.
4. Clean and disinfect the contaminated portions of water distribution systems and guarantee the integrity of water distribution systems through programs to repair leaks and to prevent back siphonage and cross connections. Increase water source capacity to permit 24 hour pressurization of water systems.
5. Connect unserved households to water distribution systems, where possible.
6. Stockpile disinfection chemicals and make arrangements for its distribution to high risk areas.

Sewage and excreta disposal

1. Assure the optimum operation and maintenance of the sewage treatment plants currently serving the municipal sewer systems.
2. Initiate or intensify programs for the construction of latrines in areas which lack either sewers or latrines and which are vulnerable to cholera.
3. Initiate or strengthen programs, and obtain financing for the construction of sewage treatment plants in areas where they are required.
4. Restrict the discharge of inadequately treated sewage into water resources, especially those which are used for water supply sources.
5. Prepare projects for deep submarine outfalls (50 meters depth) or for sewage treatment plants, to eliminate the discharge of raw sewage on the coastal beaches and shorelines.

Solid waste collection and disposal

1. In the areas served by sewer systems, promote that the toilet paper be discarded into the toilet bowl rather than a trash receptacle.
2. Where there are no sewer systems, require that toilet paper be burned and that disposable diapers be either burned or buried on a daily basis.
3. Strengthen programs and systems for solid waste collection and disposal to increase their dependability and efficiency. Intensify the collection of solid wastes in the areas most affected by cholera. Identify and either collect or burn clandestine deposits of solid wastes.
4. Where there are no sanitary landfills for final disposal of solid wastes, carry out programs to incinerate or burn the wastes.
5. Develop and disseminate preventive health instructions for workers in the solid waste sector.

Hospitals, clinics, schools and other public institutions

1. Provide a sufficient quantity of safe water for all of the need of the hospitals, clinics, schools and other public institutions.
2. In the areas of high vulnerability and risk, provide adequate treatment and disposal of the sewage or excreta and other wastes from the hospitals, clinics and schools.
3. Incinerate, on a daily basis, the paper which is soiled from cleaning the excretions of cholera patients and the areas soiled by them.

4. Prepare and disseminate special requirements for the sanitation of hospitals and clinics with cholera patients, including those for the management and treatment of excreta and vomit; for the washing of bedding and clothing; and for the cleaning and disinfection of contaminated areas.

5. Conduct special training of measures of precaution to be taken by health workers to protect themselves and patients from contacting cholera. Include personal hygiene education in public schools for the prevention of cholera.

Airports and harbors

1. Require the treatment and disinfection of the waste water and sillage in the airplanes and ships arriving from cholera affected countries and monitor the treatment process.

2. Incinerate or burn the solid waste from airplanes and ships arriving from cholera-affected countries.

3. Prohibit the serving of vegetables that are normally eaten raw on airplanes departing from cholera-affected countries.

4. Disseminate and enforce special requirements for the cleaning of the lavatories of airplanes and ships originating in cholera-affected countries.

Other important interventions

1. Prohibit fishing or collection of shellfish in areas contaminated with sewage.

2. Prohibit the use of untreated or inadequately treated sewage for the irrigation of food crops which are usually or frequently eaten raw.

3. Prohibit the use of inadequately treated sewage in aquaculture.

4. Provide safe water and excreta disposal facilities for large public gatherings or celebrations.

5. Restrict the use of beaches which are contaminated with sewage.

Interventions for the general public

1. Wash the hands with soap after defecating and before handling, preparing or eating foods. Eat only food which is well cooked and while it is still hot. Avoid eating raw vegetables. Avoid eating food from street vendors.

2. Disinfect household water and store it in containers which are designed to prevent recontamination.

3. Wash kitchen dishes and utensils with soap and rinse them with disinfected water.

4. Do not discard toilet paper in waste baskets but in the flush toilet or the latrine.

5. Bury excreta immediately after defecation where latrines are not available.

The communication media

1. Prepare and present public announcements and instructions to the general public concerning interventions which individuals and households should carry out to avoid contracting cholera.

2. Provide the channel of communication for "boil/disinfect water" advisories by the government.

3. Prepare and present special informational and educational programs to promote, motivate and enable the public to make or support the necessary interventions to prevent and control the spread of cholera.

4. Promote and motivate the public and officials to make commitments for medium and long term environmental improvements which are necessary to prevent and control cholera as well as other environmentally significant diseases.

5. Conduct special workshops and briefings to keep the media well-informed and advised, to prevent dissemination of misinformation, erroneous concepts or inappropriate reaction to cholera.

(Source: Environmental Health Program, PAHO.)

Seminar on Adult Mortality

A seminar on "Causes and Prevention of Adult Mortality in Developing Countries" will be held in Santiago, Chile, from 7 to 11 October 1991.

The primary focus will be on adult mortality in Latin America. One theme of the seminar will be the development of data sources and methods to study specific aspects of adult mortality. A second theme will be socio-economic differentials in mortality and how these differentials evolve

with the mortality transition. A third interrelated theme is the implication for adult mortality of recent social and economic trends in Latin America and other developing countries.

The seminar is sponsored by the International Union for the Scientific Study of Population, and co sponsored by the Center for Latin American Demography and the Pan American Health Organization. By invitation only.

AIDS Surveillance in the Americas

Number of reported cases by year, and cumulative cases and deaths, by country and subregion, as of 16 September 1991.

SUBREGION Country	Number of cases						Cumulative total (a)	Total deaths	Date of last report
	Through 1986	1987	1988	1989	1990	1991			
REGIONAL TOTAL	45,054	33,116	41,669	48,065	48,458	17,262	233,813	138,148	
LATIN AMERICA b)	3,129	4,440	6,964	8,832	11,029	3,940	38,511	14,871	
ANDEAN AREA	181	398	649	808	841	325	3,312	1,585	
Bolivia	3	3	10	2	7	3	28	24	31/Mar/91
Colombia	61	181	263	330	450	198	1,483	647	31/Mar/91
Ecuador	13	19	25	15	34	7	134	99	30/Jun/91
Peru	12	60	68	117	141	68	466	178	30/Jun/91
Venezuela	92	135	283	342	209	49	1,201	637	31/Mar/91
SOUTHERN CONE	112	126	264	335	523	167	1,527	479	
Argentina	73	72	169	229	377	99	1,019	280	31/Mar/91
Chile	29	40	63	65	58	25	280	78	30/Jun/91
Paraguay	2	5	4	3	12	2	28	18	31/Mar/91
Uruguay	8	9	28	38	76	41	200	103	31/Aug/91
BRAZIL	1,582	2,200	3,627	4,654	5,498	1,800	19,361	7,899	30/Jun/91
CENTRAL AMERICAN ISTHMUS	87	189	381	544	883	335	2,436	924	
Belize	1	6	4	0	1	0	12	8	31/Mar/90
Costa Rica	20	23	52	56	81	44	276	153	30/Jun/91
El Salvador	7	16	55	149	96	47	370	70	30/Jun/91
Guatemala	16	12	18	18	78	34	176	86	30/Jun/91
Honduras	17	102	189	244	559	178	1,306	418	30/Jun/91
Nicaragua	0	0	2	2	7	5	16	17	30/Jun/91
Panama	26	30	61	75	61	27	280	172	30/Jun/91
MEXICO	245	804	964	1,499	2,395	1,263	7,170	3,452	30/Jun/91
LATIN CARIBBEAN c)	922	723	1,079	994	889	50	4,705	532	
Cuba	3	24	24	12	10	11	84	47	30/Jun/91
Dominican Republic	124	222	324	529	249	39	1,535	188	30/Jun/91
Haiti	795	477	731	453	630	...	3,086	297	31/Dec/90
CARIBBEAN	465	374	489	725	699	219	2,983	1,692	
Anguilla	0	0	1	2	1	...	4	3	30/Sep/90
Antigua	2	1	0	0	3	...	6	5	31/Dec/90
Bahamas	86	90	93	168	162	60	659	296	31/Mar/91
Barbados	32	24	15	40	61	36	208	143	30/Jun/91
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	3	27	17	30/Jun/91
Guadeloupe	47	41	47	47	0	...	182	85	31/Dec/89
Guyana	0	10	34	40	61	32	177	59	30/Jun/91
Jamaica	11	32	30	66	62	15	216	137	31/Mar/91
Martinique	25	23	30	51	42	10	181	109	30/Jun/91
Montserrat	0	0	0	1	0	0	1	0	30/Jun/91
Netherlands Antilles	9	12	9	16	31	...	77	16	31/Dec/90
Saint Lucia	4	4	2	8	3	3	36	18	30/Jun/91
St. Christopher-Nevis	6	4	9	5	8	1	33	19	30/Jun/91
St. Vincent and the Grenadines	2	5	8	6	4	6	31	18	30/Jun/91
Suriname	4	5	4	35	35	...	83	65	31/Dec/90
Trinidad and Tobago	151	85	160	167	173	49	785	524	31/Mar/91
Turks and Caicos Islands	3	2	6	7	1	1	20	15	31/Mar/91
Virgin Islands (UK)	0	0	1	0	2	0	3	0	31/Mar/91
NORTH AMERICA	41,460	28,302	34,216	38,508	36,730	13,103	192,319	121,585	
Bermuda	51	21	28	35	33	10	178	135	30/Jun/91
Canada	1,199	876	1,007	1,135	868	161	5,246	3,039	31/Jul/91
United States of America c)	40,210	27,405	33,181	37,338	35,829	12,932	186,895	118,411	31/Jul/91

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.

Diseases Subject to the International Health Regulations

During year 1991, Ecuador has reported a total of 19 cases of yellow fever and 10 deaths, 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, three cases of plague have been reported, from the States of Arizona (one case) and Utah (two cases). For information on reported cholera cases and deaths, see article on cholera situation in this *Bulletin*.

Eighth World Conference on Tobacco Or Health

The 8th World Conference on Tobacco Or Health will take place in Buenos Aires, Argentina, from 30 March to 3 April 1992.

The Conference will devote special attention to four main themes: countering tobacco advertising, marketing and promotion; preventing tobacco use by children; obtaining clean indoor air policies, and building support for tobacco control. This will be the first meeting to highlight the needs of countries targetted by the multinational tobacco companies.

The meeting is sponsored by the American Cancer Society, the Unión Antitabáquica Argentina, the Latin American Coordinating Committee Against Smoking, and the Pan

American Health Organization. Honorary Chairperson of the Conference will be the Surgeon General of the United States Public Health Service, Antonia Novello, who will unveil the Report on Smoking in the Americas, the first Surgeon General's report to focus on the effects of tobacco outside the United States. Former USA President Jimmy Carter has agreed to deliver the farewell address. Official languages of the Conference are English and Spanish.

For further information, contact the Secretariat, 8th World Conference on Tobacco or Health, P.O. Box 3260, Buenos Aires, Argentina, or c/o American Cancer Society, 1599 Clifton Road NE, Atlanta, Georgia 30329, USA.

New Form of Membership in the International Epidemiological Association Membership

We have been requested to inform our readers that: "The International Epidemiological Association (IEA) has instituted a new form of membership to facilitate participation by epidemiologists from developing countries and countries with foreign exchange problems. Societies and associations committed to promoting epidemiology within these countries may apply for group membership. The annual fee for group membership is US\$80 per year. The group will receive two copies of the *International Journal of Epidemiology*, the *Dictionary of Epidemiology*, the membership list, and the annual IEA newsletter. Members of the group will have all the privileges of membership in the

IEA except that the group will have one vote in formal elections for officers and changes in the by-laws.

To apply for group membership the society or association must provide a copy of their constitution, a statement of the reason they are applying for group rather than individual membership, a current list of their members, and the name of the President and/or Secretary of the association including a mailing address. Inquiries and applications should be sent to Arpo Aromaa, Research Institute for Social Security, Social Insurance Institution, P.O. Box 78, SF-00381 Helsinki, Finland (Fax No. 358-0-434-3500).



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