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Health Situation in the Americas - 1992

Socioeconomic and Political Development

In 1992, for the second consecutive year, the overall economic activity in Latin America and the Caribbean experienced growth. The GDP increased 2.4% (compared to the 3.5% figure in 1991), an increase that outpaced population growth, and the per capita GDP rose 0.5%, again for the second consecutive year, although it is still 7% below the level reached in 1980. Variations in the performance of individual economies continue to be seen. Brazil's situation is particularly noteworthy, in that it exerts a major influence on the whole; thus, if Brazil is excluded, the regional GDP grew 4.3%. Inflation continued to drop in several countries, although Brazil's increase (more than 1,100%) brought the regional rate to a higher level than in 1991. The average increase in prices, weighted by population, declined from 1,200% in 1989 and 1990 to 200% in 1991, only to increase again to 410% in 1992. Of the other 21 countries for which data are available, by the end of 1992, 16 had inflation rates below 20%, 2 between 20% and 50%, and the other 3 between 50% and 70%.

The Region's external debt, increased by 2% in 1992, reaching a total of US\$450 billion, and the proportion that the accrued interest represents in

total exports of goods and services continued to decline, reaching 20%. This decline mainly was due to a drop in interest rates, since sales were somewhat flat. However, payments continued to represent an excessive proportion, which means that efforts to reduce them must continue to be pursued.

Foreign trade, which up to 1991 showed a surplus, posted a deficit both in overall terms and for most of the individual countries, because imports increased faster than exports; the former doubled between 1987 and 1992, while exports increased only slightly less than 50% for the same period.

Pro-market policies are the cornerstone of the economic strategies in almost all of the Region's. The reduction of bureaucratic controls, the introduction of new technology, the opening of markets, the promotion of exports through overall competitiveness, the lifting of exchange market controls, an end to price controls, the privatization of public companies, control of government spending, and the careful management of monetary policy are the key elements of the new economic policies in the Region.

Of 28 countries, 24 showed positive economic growth rates: Argentina, Chile, the Dominican Republic, Panama, Saint Vincent and the Gren-

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dines, Uruguay, and Venezuela had rates between 7% and 10%; Bolivia, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Guyana, and Honduras, between 3% and 5%; Dominica, Jamaica, Mexico, and Paraguay, between 1% and 3%; Bahamas, Grenada, Nicaragua, Suriname, and Trinidad and Tobago, under 1%; and Barbados, Brazil, Haiti, and Peru showed negative rates. In Cuba, the oil supply drastically dropped, and of 415 items considered essential for internal consumption, 226 were unavailable in 1992, as a result of the country's trade with Eastern Europe having shrunk by 85%. Canada and the United States of America, which had problems returning to sustained growth, grew by 1.5% and 3.2%, respectively, and maintained their unemployment levels at 10% and 7%. It should be noted that Canada's economic and social development levels ranked it as the country with the best human development index in the world in 1992.

The processes of market integration continued to intensify in 1992. One of the most obvious consequences of these integration processes has been the notable increase in intraregional trade; in 1991, trade within MERCOSUR increased 18%; in the Andean Pact, 33%; and within NAFTA, 10%. In 1992, trade between Argentina and Brazil grew 30%, exceeding \$4,000 million; trade between Colombia and Venezuela was about \$1,000 million.

Social tension and deterioration continue to frame economic policies; moreover, the extraordinary cutbacks in public spending, consumption, and social investment might not be easily sustainable and the current fiscal equilibrium a transitory one, unless a series of social justice initiatives are implemented. On the other hand, there are only a few countries whose fiscal budgets can be considered structurally balanced, in the sense that their current revenues are solidly backed by a stable tax base and are sufficient to maintain the level of current spending required for the normal operation of the public administration and the delivery of basic social services, as well as to provide for the necessary amounts of public investment needed to repair and develop the infrastructure required for economic growth and social improvements. The benefits from growth have been regressive: real average wages in 1992 were far below the 92.7% level attained by the per capita GDP in 1980. A series of economic conflicts are present in areas such as health, education, housing, public works, etc. The current economic policies have increased poverty, generated rising income inequity and unstable employment levels, leaving a limited

space for the development of fiscal policies to improve already deteriorated social services.

The policy agreements, as well as the sphere of action of the diverse powers, are provisional and are underscored by a new reality that has not recognized and defined the new rights and responsibilities of the various actors. These gaps or uncertainties have generated a variety of conflicts that are present in almost all of the countries that are experiencing conflicts between Powers of the State, weak judicial systems, fraudulent elections and corruption, all of which create a political impasse.

Economic policies remain the most important determinant of political evaluation in the countries of the Region. There is constant reduction of the operating capacity of the public health sector which is totally dependent on economic policy decisions.

This has contributed to the instability of the public health authorities which is reflected in the constant changes in the principal positions. These changes, with some exceptions, are unrelated to health issues and discrepancies, and occur when there is a crisis at the level of the executive cabinet.

Demographic Trends

According to the latest United Nations estimates, the population of the Americas in 1992 was 740 million (13.5% of the world population). This number breaks down as follows: 457.7 million in Latin America and the Caribbean (61.8%) and 282.7 million in North America (38.2%). Within Latin America and the Caribbean, 34.6 million live in the Caribbean, 118.6 million in Central America and Mexico, and 304.5 million in South America. With respect to 1991, the above numbers represent growth rates of 1.6% for the entire Region, 1.8% for Latin America and the Caribbean, and 1.4% for North America. The subregion with the fastest growth is Central America and Mexico, with 2.2%, followed by South America, with 1.7%, and the Caribbean, with 1.4%.

By the beginning of the second half of this century--with clear declines in mortality, a total fertility rate of 5.9 children per woman in Latin America, and birth rates of more than 50 per 1,000--population growth was striking, and an unprecedented demographic explosion was feared. Fertility and, more slowly, the birth rate began declining in the 1960s to a level in the early 1990s that may prove to be under 3, once the results of the censuses are adjusted. This decline has occurred in all countries, but it was most marked in those countries with the highest fertility rates. This fertility drop has begun to affect the number of

births. The new, 1992 United Nations estimates, make reference to 11.9 million births for 1990-1995, as compared to 13 million estimated in 1988 for the same period. The trend toward an increasing number of births that has been traditionally seen in Latin America is over.

In Latin America and the Caribbean, international migration reemerged as a major demographic phenomenon in the 1980s, and the process continues in the 1990s. The greatest population magnets, in order of importance, are the United States, Europe, and Australia. Economic stagnation and political instability have created conditions that make permanent settlement unattractive to the population, who, in turn, seeks alternatives, especially through emigration. Currently, this emigration differs from subregion to subregion. While emigration from the Southern Cone is split between Europe and the United States, Central American and Mexican emigrants almost exclusively move to the United States; in the Caribbean countries the situation is more complicated, and varies according to the country, its history, and its language.

In 1992, Haiti and El Salvador led the Region in terms of migration, albeit for different reasons. By the late 1980s and early 1990s the estimated annual number of officially admitted immigrants to Canada and the United States was 125,000 and 600,000, respectively. A significant percentage of them, 18%, were admitted as refugees: a category declining considerably as a result of the Region's improved political situation.

Urbanization, which is a distinctive feature of Latin American demographic trends in recent decades, has had a devastating effect on health and services. From 1975 to 1990, 123 million people migrated to urban areas, 44 million during 1985-1990. Estimates indicate that urban populations will swell by 91 million between 1990 and 2000, and that rural populations can be expected to decline. Regarding mortality, although there are few existing data for 1992, those for around 1990 make it possible to state that the general downward trend in the countries continues.

Whereas between 1965-1970 and 1975-1980 the infant mortality rate fell from 91 to 70 per 1,000 live births (23%), between 1975-1980 and 1985-1990 it dropped from 70 to 53 per 1,000 live births (24%). The estimated infant mortality rate of 47 per 1,000 live births for 1990-1995 is consistent with the trend observed in the past. Previous United Nations estimates, once they have been integrated and reconciled with the results of the most recent censuses and the findings of surveys, especially those of Demographic and Health Sur-

veys, could be lower still. For example, whereas the United Nations estimates an infant mortality rate of 88 for Peru in 1985-1990, the 1991-1992 demographic and family health survey found that for every 1,000 children born in Peru during 1987-1991, 55 died during the first year of life, as compared to 73 for 1982-1986, a decline of 25%. The decrease in mortality of children aged 1-4 would presumably be greater. Similarly, for the Dominican Republic, whereas the latest United Nations estimate of the infant mortality for 1985-1990 was 65, the findings of the 1991 demographic and health survey show a figure of 43, with the gains in the 1-4 age group also being proportionately greater. For northeastern Brazil (42 million inhabitants), the infant mortality rate reportedly declined from 125 per 1,000 in 1986 to 75 in 1991. Although there are no estimates of the infant mortality rate in Nicaragua, presumably it too has declined, given the striking drop from 1990 to 1991 in the number of reported infant deaths. Finally, in Cuba infant mortality decreased from 10.7 in 1991 to 10.2 in 1992. In the United States, preliminary estimates for 1992 yield an infant mortality rate of 8.5 per 1,000, as compared to 8.9 in 1991, and a total death rate, of 8.5 per 1,000 population, which has remained unchanged.

Health Situation

The **cholera** epidemic began in January 1991 in Peru and later spread to 15 more countries in the Region of the Americas, producing a total of almost 400,000 cases and 4,000 deaths, with a case-fatality rate of 1%. In 1992 the epidemic continued in the same countries, and spread to another 5, the total number of cases (354,000) decreased compared to 1991, as did mortality (2,440 deaths), and the case-fatality rate (0.7%). At the beginning of 1993 the first cases were detected in Paraguay, which up to then had been disease-free. Uruguay is the only country in the continental Americas that has not reported a single case and none have been recorded in the Caribbean as well. In 1992, 60% of the total cases in the Region were reported by Peru. That country, together with Bolivia, Brazil, Colombia, Ecuador, and Guatemala, accounted for 95% of all cases reported during the year. All the countries infected in 1991 except two reported a greater number of cases in 1992, in part because cholera was present in most of them for the entire year, following its introduction in mid- or late 1991. Peru and Ecuador continued to be the most heavily affected countries, with rates of 875 and 287 cases per 100,000 population, respectively. They were followed by Bolivia, with 279 per 100,000. Guate-

mala and El Salvador also had high rates. In many countries, rural areas were as badly affected as urban areas. In Venezuela, 35% of the cases occurred in indigenous populations. Despite the high number of cases and areas affected, the disease spread at a slower rate in 1992, especially during the second half of the year.

Mortality from **diarrheal diseases** has decreased in recent years in all the countries of the Region. In countries with low mortality from diarrheal diseases, the occurrence of cases of enteric disease declined. This reduction in both mortality and morbidity from diarrheal diseases is most likely due to the dissemination of information and the extension of cholera prevention measures.

In Venezuela the number of infant deaths from diarrheal diseases fell from 2,538 in 1990 to 1,674 in 1991 and 1,210 in 1992, which represents a reduction of 48% in only two years. In Guatemala mortality from intestinal infections decreased from 1.11 per 1,000 population in 1990 to 0.77 in 1991--a reduction of 33% in a year. In Nicaragua, the number of deaths registered from this cause dropped from 1,658 in 1990 to 847 in 1991 among children under one year of age and from 2,191 to 1,196 in all age groups, a reduction of almost 50%. Initial data for 1992 appear to indicate that this trend continued. With respect to morbidity, Panama, which reported increases in diarrheal episodes from 1986 to 1990, reported a smaller number of cases in 1991 and 1992. In Mexico reported cases of diarrheal disease decreased from 3.2 million in 1991 to 2.5 million in 1992. Colombia and Honduras showed similar trends.

Chile experienced reductions of 73.5% and 50% in the incidence of **typhoid fever** and **hepatitis A**, respectively, between 1990 and 1992. In the city of Montevideo, Uruguay, which is free from cholera, reported cases of hepatitis A rose from 3,000 in 1989 to 4,500 in 1991 and then dropped to 600 in 1992.

In reference to **poliomyelitis**, the last confirmed case of the disease caused by the wild poliovirus occurred in Junín, Peru on the 23 August 1991.

Since the introduction of the vaccine against measles in the Region, the total number of cases declined gradually although the disease still has the tendency to peak every two years.

In 1992, 97,367 cases of **measles** were registered, representing the lowest number of cases recorded. This is due to the high level of vaccination coverage achieved primarily through campaigns in Canada, Cuba, the English-speaking Caribbean, and Brasil, where 50 million children under the age of 15 years were vaccinated. In Chile

4 million children of the same age group were also vaccinated

In Mexico, after the serious epidemic that registered 84,000 cases in 1990, there were 5,000 cases in 1991 and only 734 cases in 1992. However, some countries still have high incidences of cases of measles.

The incidence of **neonatal tetanus** has gradually diminished in the population of the 1,500 municipalities that are considered at high risk in 16 Latin American countries; in 1992, a total of 896 cases have been registered. There were no recorded cases of neonatal tetanus in Chile, Cuba, Costa Rica, Uruguay, and the English-speaking Caribbean.

The number of cases of **whooping cough** notified in the Region has declined from 123,466 in 1980 to 15,984 in 1992. The vaccination coverage for children under 1 year old with three doses of DPT increased from approximately 38% to 77%. However, some countries, such as Brazil, Venezuela, El Salvador and Guatemala, still have coverage below 75%.

Tuberculosis has not shown uniform behavior in the countries of the Region. For example, in Panama, after a reduction during the period 1978-1984, the number of cases increased between 1985 and 1992, with the incidence rising from 18 to 33 per 100,000 population. In Bolivia the incidence doubled, going from 77 to 150 per 100,000 population during the period 1982-1992. In Brazil the incidence declined steadily between 1982 and 1991, falling from 63 to 36 cases per 100,000. In Ecuador, the incidence has shown a rising trend, with the rate currently standing at 52 per 100,000. In Venezuela the incidence of the disease has remained constant at around 25 per 100,000 in recent years. In Mexico, also, the number of reported cases has held steady at around 15,000 in recent years. It is estimated that 10% of those cases are associated with AIDS.

In the United States of America, where current estimates put the number of infected people at 15 million, following a reduction in the number of cases over several decades, the number began to rise in 1985. To date, 36 states have reported cases of tuberculosis resistant to various drugs. In New York, one third of the tuberculosis cases have shown resistance to one or more drugs. In this country, this disease is the principal cause of death of people with AIDS. Twenty percent of patients abandon treatment and fail to complete a full course of drug therapy.

With regard to **malaria**, in 1992, 39.9% of the population of the Region of the Americas lived in areas in which ecological conditions were propi-

tious for the transmission of malaria. During the year a total of 1,187,316 parasitoscopically confirmed cases were reported. That number represents a decline in morbidity compared to 1991, since the rate in malaria-prone areas decreased from 437.8 cases per 100,000 population in 1991 to 409.5 in 1992. Since 1974, 1992 was the first year in which the general epidemiological situation of the disease showed slight improvement. In countries or territories of the Region without evidence of transmission, where around 316.0 million inhabitants live, 1,263 cases of malaria were reported. The majority were imported, and 12 were introduced.

The 21 countries of the Region with evidence of malaria transmission together have a population of 207 million people living in originally malarious areas. Although complete information is not available for the entire year, the annual parasite index (API) registered in these countries was 5.7 per 1,000 population. This signifies a reduction compared to 1991, when the API was 6.2 per 1,000 population in the malarious areas. Of the total cases of malaria diagnosed and reported during 1992 in the various areas of the Americas, the largest proportion, 51.4%, occurred in Brazil, followed by the Andean area, with 27.5%, and Central America, Panama, and Belize, with 14.6%. However, the estimated risk of contracting malaria--that is, the API--showed a different pattern, with Guyana and French Guiana registering the highest API, 38.5 per 1,000 population in the malarious area, followed by Brazil, with 9.5; Central America, Panama, and Belize, with 8.5; and the Andean area, with 5.8 per 1,000 exposed population. It should be noted that Colombian scientists have made remarkable progress in developing a synthetic malaria immunogen called SPf66, which experimental results have shown to provide effective protection against infection by *P. falciparum*.

Dengue remained endemic, with no major epidemics occurring during 1992. In South America, the disease has become endemic in Colombia after the country was declared free from *A. aegypti* in 1967. Between 1990 and 1992 the cases of dengue hemorrhagic fever (DHF) increased from 31 to 493. The estimated total number of cases of classical dengue is 18,000, although laboratory confirmation of that figure does not exist. As a result of the reinfestation of Santa Cruz with *A. aegypti*, the disease continues to be an important problem in Bolivia, with risk of DHF. In Brazil, data for the first 8 months of the year appear to indicate a notable decline from 96,000 cases in 1991 to 31,000 in 1992. Venezuela, for the fourth con-

secutive year, reported a high number (649) of cases of DHF. That number represents an increase with respect to the period 1990-1991, during which there were 140 cases. With regard to Central America, during the second half of 1992 an epidemic outbreak occurred in Nicaragua, producing a total of 4,377 cases of classical dengue and 559 cases of DHF. Viral isolation revealed the circulation of serotype 4 for the first time.

Some 57 cases of **yellow fever** were reported. The incidence of the disease was the lowest since 1983, when 46 cases occurred. The countries reporting cases were: Bolivia (22), Ecuador (20), Brazil (12), Colombia (3), and Peru, for which exact figures are not yet available.

With reference to **Chagas disease** in man, *Trypanosoma cruzi* is transmitted principally through contamination by fecal waste from the insect triatomineous; it is estimated that 300,000 cases of the infection are produced through this mode of transmission in a year.

Blood transfusion ranks second among the more important modes of transmission. In Brazil, it is estimated that between 10 to 20 thousand cases per year of infection by *T. cruzi* originated in this manner. The third important mode of transmission is in-utero. In the Region, the prevalence of congenital Chagas disease is approximately 3%.

Despite migration of rural population to the urban areas and the consequent "urbanization" of the disease in some countries, the disease continues to be primarily a rural problem stemming from the precarious socioeconomic conditions of the population and the "domestic" nature of the vector. It is estimated that in the American continent, at least 16 to 18 million inhabitants are infected by *T. cruzi*. At least 10% of them will have the cardiac symptoms or problems of the digestive system that characterize chronic Chagas Disease. Also, it is estimated that more than 50 million persons are exposed to the risk of infection. The percentage of the population who are at-risk is 63% in Chile, 19% in Brazil, and 32%, 31% and 39% in Bolivia, Paraguay and Peru, respectively. The positive results of serology for *T. cruzi* in blood banks also vary from 5% in Buenos Aires and 2% in Sao Paulo, to approximately 50% in Santa Cruz, Bolivia. In Central America, it varies from less than 1% in Costa Rica to 6% in Guatemala and 8% in Honduras.

In regard to **Acquired Immunodeficiency Syndrome (AIDS)**, an estimated 2.5 million adults are infected with HIV in the Americas--1 million in North America and 1.5 million in Latin America and the Caribbean. In 1992, 75,730 cases of AIDS were reported in the Region, 8.4% more than in

the 1991. By the end of 1992 (the last year for which information is available) a total of 718,894 AIDS cases had been reported to the World Health Organization worldwide. Of those, 403,459 were reported from the Region of the Americas, including 315,390 in the USA, 39,500 in Brazil, and 14,280 in Mexico. Although those countries had the greatest number of cases, several other countries and territories in the Caribbean have incidence rates up to five times higher than the USA.

During the period 1988-1992, the greatest rise in annual incidence of AIDS cases was recorded in the Southern Cone (210%), followed by Mexico (206%), the Central American isthmus (189%), the Caribbean (94%), Brazil (82%), North America (38.5%), and the Andean Area (10.7%). The Latin Caribbean, which includes Cuba, Haiti, and the Dominican Republic, registered a significant decline in annual incidence during the same period, but that decline is attributed to reporting problems, not to a real reduction in the number of AIDS cases.

In Latin America and the Caribbean, the vast majority of reported cases occur through sexual transmission: 93% in Central America, 92% in the Andean Area, 90% in the Caribbean, 78% in Mexico, 70% in the Southern Cone, and 67% in Brazil. The relative importance of homosexual/bisexual transmission has been declining, while heterosexual transmission has been on the rise in practically all the countries. It should also be noted that in some countries close to 25% of reported cases are now linked to intravenous drug use (Brazil and Southern Cone). The increase in both heterosexual transmission and transmission through intravenous drug use have led to an increase in the number of AIDS cases among women. In the Southern Cone, for example, the male:female ratio of cases has gone from 13:1 in 1988 to 4.5:1 in 1992. That change explains the marked increase in cases due to perinatal transmission in the Region.

New cases of **leprosy** detected in 1992 in the Americas numbered 38,637, which represents 6% of the total new cases detected in the world. The total number of cases of leprosy registered in the Region in 1992 was 283,469, which is nearly 13% of the world total of cases. The average prevalence rate was 4.08 per 10,000 population.

Brazil accounted for 88% of the new cases detected and 78% of the total existing cases. The prevalence rate in that country is 14.3 per 10,000 population, the highest in the Region. Other countries or territories with high prevalence rates are Suriname, with 6.5 cases per 10,000 population; Guadeloupe, with 5.5; Colombia, with 4.6; Vene-

zuela, with 4.0; Saint Lucia, with 3.7; and Paraguay, with 2.8. Ecuador, Cuba, Uruguay, and most of the countries or territories of the English-speaking Caribbean have already achieved prevalence rates of under 1 per 10,000, and the Dominican Republic is expected to reach that level in the near future.

Multidrug therapy continues to constitute the principal tool for the elimination of leprosy. Coverage with MDT in the Region is 34.6%, compared with 48.7% at the global level.

As regards the situation of **rabies**, before the Regional Program for the Elimination of Urban Rabies was launched an average of 350 human cases occurred annually. Since the Program's inception the number of cases has declined. During 1992, 225 cases of rabies in humans were reported in the Americas.

At the beginning of the decade, of the 414 cities targeted by the Program, 74.5% of them, including the capital cities, were rabies-free. In the period 1990-1992, 50 of the 414 cities reported human deaths from rabies, which means that the percentage of cities free from rabies had risen to 87.9%. In 1992 only 4 of the capital cities had cases of rabies (Guatemala City, San Salvador, Quito, and Lima). The total human population living in major cities free from rabies in 1992 numbered 136.7 million.

Dogs continue to be the principal transmitters of rabies to man. In the period 1990-1992, dogs were identified as the source of infection in 84.0% of the 531 cases in which the attacking species was known.

A decline has been observed in the annual average number of reported cases of canine rabies, from 20,518 before the Program was launched to an average of 8,434 for the last two years. Despite this overall progress, the rabies situation has deteriorated in several countries, namely, Bolivia, Ecuador, El Salvador, Guatemala, Haiti, and Peru.

An **outbreak of epidemic neuropathy** was reported by Cuba, beginning in mid-1992. The epidemic started in the western region and had extended throughout the country by the beginning of 1993. As of 22 June 1993 a total of 46,030 cases had been reported, with a cumulative incidence of 422 per 100,000 population. The first reported cases occurred in the Province of Pinar del Río among adult males from rural areas who were engaged in tobacco-growing and had a history of moderate smoking and drinking. They exhibited symptoms of optic neuropathy. The disease has affected both sexes, the sex-specific rate being 510 per 100,000 population among women and 348

among men. The group aged 25-64 years has been most heavily affected, with the group aged 45-64 at greatest risk (a rate of 856 per 100,000 population). The disease is rare in children and adolescents. The neuropathy has presented three clinical pictures: one predominantly optic, another with symptoms of peripheral neuropathy, and a third that combines symptoms of the first two. The optic form predominates among men and the peripheral form among women. Peak incidence occurred between 28 March and 10 April 1993. The optic form was waning by the end of May, and the peripheral form began to abate in mid-June. The etiopathology of the disease has not yet been conclusively determined, but the prevailing multi-causal hypothesis points to toxic-nutritional factors and a possible viral association. Contagiousness has not been verified. All the patients have been treated parenterally with B vitamins, and the majority have shown significant neurological improvement. No fatalities have occurred.

With regard to other health problems, the importance of **chronic degenerative diseases** has increased, especially in those countries in which total mortality and fertility have declined appreciably. The rise in such diseases in those countries was foreseeable, given the aging of their populations. Mortality from external causes (accidents, homicides, suicides, etc.) is having an increasing impact on daily life, especially mortality from urban violence and homicide, in particular. It is in Colombia that this phenomenon has become most pronounced in recent years, causing as many deaths in that country as AIDS in the entire Region of the Americas over the six-year period from 1987 to 1992. The homicide rate doubled in three years, climbing from 36.1 per 100,000 population in 1987 to 72.8 in 1990, and then continued to rise to 81.2 in 1991 and 86 in 1992. Homicide went from being the ninth leading cause of death in the 1960s to the fourth in the 1970s. It had moved into first place by the late 1980s, claiming victims in increasingly younger population groups. In Medellín the rate in 1990 had reached 280 per 100,000 population. Annually, between 45,000 and 50,000 children are being orphaned and 13,000 women widowed as a result of the violence.

A number of **natural disasters** of varying types and magnitude occurred during the year, producing multiple material, economic, and human losses. The most serious in terms of sheer force was Hurricane Andrew, which ravaged several Caribbean islands and the southern states of the United States, especially Florida and Louisiana,

where material losses were huge. In Nicaragua, the Cerro Negro volcano erupted, but a more serious problem was the tidal wave that caused 105 deaths and demolished several coastal towns. Colombia also suffered an earthquake and volcanic eruptions. And in Panama an earthquake struck Bocas del Toro in April 1992, causing human and material losses.

Special mention should be made of the situation of Haiti in 1992 resulting from the coup d'état of September 1991. The country is immersed in a severe political, economic, and social crisis. National institutions are not functioning effectively, so it has fallen basically to international agencies to run the Program for Humanitarian Assistance, through which external food aid has been provided to some 2 million people. As for health services, in the current situation they are being delivered mainly by the private and semi-public subsectors (especially various NGOs).

Policies, Plans, Programs, and Service Development

In general, the response in Latin America to the cholera epidemic was the most important event of the year in terms of the various goods and services provided to the population. This response explains, in part, the lowered total death rate in the epidemic compared with 1991. The prediction that the disease could become endemic led almost all countries in the Region to implement special programs to combat cholera, with such efforts as interventions in medical care, public information, food protection, and disinfection of water for human consumption in the short term, and measures to overcome the shortfall in health services, drinking water supply, and basic sanitation in the long term.

The recent trend toward decentralization and the development of local health systems continues. All the countries include it among their priorities. Cuba is strengthening the development of its municipal health systems under the plan *Objectives, purposes, and directives to improve health in 1992-2000*. Bolivia has assigned priority to 11 health districts. In the Dominican Republic, the number of health zones that can be considered as local health systems, continue to increase in size. In Nicaragua, the regional health departments have been replaced, and a local system has been created in each of them to enable resources to be mobilized in an integrated fashion at that level. Mexico increased the number of jurisdictions operating as local systems to 136, out of a total of 234. In Paraguay, the new constitution provides for a National Health System under which the

departmental governments act as decentralized units at the local level.

The integration of health services and other social areas has received a special impetus in recent years, over and above the boost that came from the development of the local health systems, with the creation of mechanisms known as social emergency funds or social investment funds.

In 1991, commissions of interagency and inter-institutional coordination were created to support the implementation of the agreements of the World Summit for Children, signed by all the countries in the Region, except Haiti. As a preliminary step, the Interagency Coordinating Commission, which includes PAHO/WHO, UNICEF, UNFPA, USAID, and IDB, was established in May 1991. At the country level, national commissions were created, which in 1992 prepared National Plans of Action to achieve the Summit's goals, including control of the main childhood diseases, a 50% reduction in malnutrition and maternal mortality, a one-third reduction in mortality among children under 5, the provision of drinking water to all communities, universal access to services and information on family planning, and basic education for all children.

One of the elements that is receiving increasing emphasis in country policies is health promotion, and it has become a basic part of the plans of several countries. Canada continues to break ground in the Region in this regard. The declaration adopted at the International Conference on Health Promotion, held in Santa Fé de Bogotá in November, sets targets and identifies the challenges to be met, and the approaches to be pursued to bring about healthy behavior. One of the most effective tools being used for this increasingly important health promotion is education, especially through the appropriate use of the mass media.

The United Nations Conference on Environment and Development, held in Rio de Janeiro in June 1992, brought together the greatest number of statesmen in history. The final declaration that was adopted by the Conference contains a chapter on protecting and promoting health, which includes five program areas: meeting primary health care needs, particularly in rural areas; control of communicable diseases; protecting vulnerable groups; meeting the urban health challenge; and reducing health risks from environmental pollution and hazards. In addition to the areas traditionally included under the heading of environment, another area of rising importance in the Region is tourism, which is greatly influenced by environmental issues because of their ramifications and association. The

importance of the tourism industry has led to mounting interest in environmental protection as a vital element in attracting tourists. Moreover, ensuring visitors of the availability of certain basic, high-quality medical services in an efficient and timely fashion is a critical part of tourism. This is a new activity area in the Region, especially in the Caribbean countries.

With the end of Nicaragua's civil war, with El Salvador's conflict having been settled, and with peace talks in Guatemala at an advanced stage, these countries now face situations that involve millions of people--refugees, repatriates, disabled persons, relocated persons, displaced persons. This poses enormous challenges for the delivery of health services to these individuals and, as a result, for peaceful coexistence. These challenges are being met with hard work and great motivation. Guatemala has created a Fund for Peace that provides technical assistance, including health care, for refugees and repatriates. In El Salvador, where an estimated 1.8 million people have been uprooted (one-third of the population), the agreement between the Government and the guerrillas that has brought peace to the country, led to the development of a National Recovery Plan that includes a strong health services component, with various administrative arrangements which vary according to the area within the country. Decentralization is enabling Nicaragua to tackle the wide spectrum of problems of different population groups. A critical element to be addressed is the delivery of services to those who were disabled or wounded in previous armed confrontations.

Given the high mortality from cervical cancer and the high prevalence of diabetes in several countries, especially those of the English-speaking Caribbean, several countries have developed aggressive programs for the prevention and control of these diseases. However, the economic problems that have emerged as a result of adjustment policies have prevented or hindered several of them from carrying out their programs, as has been the case in Ecuador and Trinidad and Tobago.

The subregional integration processes have gone beyond purely economic and commercial issues. In addition to the ongoing projects for technical cooperation among countries, which in many cases address problems common to neighboring countries, advances have begun to be made in areas in which it is feasible to establish common guidelines and standards that go beyond the areas of production and marketing, on which the agreements initially focused. Thus, the Ministers of Health of MERCOSUR (Argentina, Brazil, Paraguay, and

Uruguay) continued to emphasize technical cooperation among countries. The most successful work to date has been the effort to contain and control Chagas disease. The Andean Area countries have proposed a common system for registering and marketing drugs, as well as an Andean Health Card, within the framework of the Andean agreement on social security. Efforts have continued under Project "Convergencia", which contemplates the regional integration of health technology development and technical cooperation among countries in this field. At a regional meeting in Chile in July 1992 eight regional projects on biologicals, drugs, rehabilitation, information systems, and others were prepared, in addition to several subregional bilateral projects and agreements. In addition to PAHO/WHO, this project involves LAES, ECLAC, CELADE, UNDP, and UNESCO.

It is in the area of health financing and expenditure that the current situation is most critical in all of the Region's countries. In Canada, Cuba, and the United States there are calls to curb expenditures, given the enormous resources absorbed by health care and its steady upward trend. The United States, which in 1965 spent 6.5% of GDP on health care, has increased its health expenditures to more than twice the rate of inflation, reaching 13.2% of the GDP in 1991, with almost 36 million people under the age of 65 uninsured, 30 million of them employed workers. In 1992, spending on health care in the United States was expected to rise to 14% of GDP. Canada, whose spending on health care was similar to that of the United States in 1971, saw it rise to 8.9% of GDP in 1989 and to 10% in 1991.

In Cuba, concern over spending on health stems from the high priority that health care has had up to now and from the costs entailed in maintaining that quantitative and qualitative level in the midst of a serious economic situation. In the rest of the countries, by and large, the problems have arisen as a result of certain fiscal adjustment policies, which have led to lowered public funding at a time of deteriorating employment, both in terms of the number of jobs and real wages. This has led to a deterioration of the quantity and quality of medical benefits under social security and, thus, to a heavier demand for public services among population groups that would have been covered by social security.

This shortage of economic resources, often accompanied by inefficiency and a lack of flexibility in allocating resources to programs or priority problems, is reflected in various ways. In Nicaragua, whose spending on health declined from

4.8% of the GDP in 1987 to 2.7% in 1991, the production of services declined between 1990 and 1991, with the exception of delivery care, which increased. Ecuador had problems regarding vaccinations resulting from failure to contribute to the Revolving Fund; the crisis in Guayaquil led to a deterioration in sanitation services and a consequent increase in urban rabies; and the suspension, in early 1992, of external support for the malaria program led to a shortage of supplies and medicines for the program that probably led, in turn, to an increase in cases and mortality. Owing to a lack of resources and regulation, difficulties have arisen in Colombia regarding the country's new Constitution, particularly as concerns social rights, and the establishment of a new Ministry of the Environment has consequently been delayed. In several countries the lack of budgetary planning and total dependency on external assistance will create serious difficulties for the development of the Expanded Program on Immunization once such donations begin to diminish. The Dominican Republic is having problems in supplying oral rehydration salts for diarrheal control and drugs for acute respiratory infections, in addition to carrying out canine vaccination programs. Several countries have experienced serious hospital crises occasioned by budgetary cuts; 40% of hospital equipment in Peru is in disrepair; in Argentina, budgetary restrictions on public sector expenditures and the development of MERCOSUR, have favored programs directly related to subregional integration at the expense of services for the population and with a notable weakening of the role of the central level; and in Panama, the economic crisis reduced the number of social security beneficiaries from 63% to 48% of the total population between 1987 and 1991, and the social security system discontinued providing drugs to nonmember patients in integrated hospitals. Several countries are negotiating loans with external financing organizations in order to strengthen, maintain, or expand basic health services in a time of restricted budgets, notably Chile, Ecuador, and Venezuela, in view of their great needs in this regard.

An indicator of the problems that hinder the development of health services is the fact that salaries, wages, and fees absorb an increasing percentage of the total budget. This percentage has been rising in almost all countries year after year, in some cases exceeding 80%. Amid cuts in government expenditures this means that the amounts allocated for supplies, maintenance, purchases, food, drugs, medicines, and other items are being reduced, and, thus, the quantity and quality of

services are diminishing. Another indicator is the ability of the public sector to attract workers, especially physicians. The work force in that sector is shrinking and moving to other subsectors, especially the private sector, and in some countries increasing numbers of professionals are emigrating.

A response that is being promoted in the countries to deal with the current crisis is privatization. Proposals range from systems in which the services obtained are directly related to the ability of the population to pay to systems in which emphasis is laid not on the origin of the funds, but rather on

the private nature of the institutions providing the services. As a natural reflection of this process, there are more and more countries in which the role of the Ministries of Public Health is being reduced, and proposals are being made to convert them into departments of more expanded Ministries, thereby diminishing not only their roles as providers of services but also as regulators of health services systems.

(Source: Health Situation Analysis Program, HDA.)

Outbreak of meningococcal meningitis in Chile

Starting in 1981, the number of cases of meningococcal infection began to rise, particularly in the northern regions of the country. In Iquique in 1986, a rate of 20 per 100,000 population was reached. Between 1982 and 1992, the rates in the country increased by a yearly average of 0.186 per 100,000 inhabitants. Children under 5 years of age accounted for 55% of total cases of which 21.9% occurred in infants younger than 1 year old (a rate of 28 per 100,000 population). The highest morbidity rates during this period were found in Iquique (19.1 per 100,000); Antofagasta (11.9 per 100,000); and the southern and eastern sector areas of the Metropolitan Region (4.7 and 4.5 per 100,000, respectively). The average case fatality ratio of the disease was 10.3% higher among children under one year of age, and 73.7% of all cases died within 24 hours. In 1982, an immunization campaign using a vaccine against serogroups A and C was carried out in the Metropolitan Region, reaching 95% of the population between 6 months and 25 years of age. Subsequently, the number of cases of types A and C meningococcal meningitis dropped. No study of vaccine efficacy was carried out.

In early 1993, cases increased throughout the country, a total of 367 cases being reported prior to week 38 (25 September). Regions I (Iquique) and II (Antofagasta) have been most affected, with 8.5 and 7.9 cases per 100,000 population, respectively. The rate in the Metropolitan Region is 4.8 per 100,000 population. Of total cases, 56.8% are in children under 5 and 18.6% in infants under 1 year of age.

The clinical manifestations were: 66.4% meningitis, 24.2% meningococemia, 8.5% combination of both, and 0.9% other. The highest case fatality ratio was 31%, recorded in March. The ratio has now stabilized at 11.8%, with a total of 49 deaths, 24.4% of which were in children younger than 1 year old. For 17.1% of the deceased and 31.2% of the survivors, a late diagnosis was made (more than 48 hours elapsed between appearance of symptoms and consultation). As the population has become better informed, health services are being sought earlier, contributing to the decline in case fatality ratios. Bacteriological confirmation has been made in 57.0% of the reported cases, 93.6% being type B, 1.3% type Y, 4% type W, and 0.4% type C. There are no differences according to age group. Variations in the number of cases occurring are related to the socioeconomic conditions of the population. An average of 3 cases were discovered in neighborhoods where the poor population is less than 10%, compared to 18 cases in neighborhoods where a larger proportion of the population is impoverished.

Currently, the epidemic has stabilized throughout the country, and it is hoped that as the summer draws near and the population and health care providers are alerted to the diagnosis of meningococcal infection, both the number of cases and deaths will subside during the next quarter.

(Source: Ministry of Health, and PAHO/WHO Representative Office, Santiago, Chile.)

Mortality Profiles Based on Living Conditions: A Venezuelan Experience

The development of systems for monitoring health situation based on living conditions is an attempt to strengthen the capacity for health situation analysis, with an emphasis on inequalities and inequities, in order to evaluate situational changes and long-term trends. Earlier issues of the *Epidemiological Bulletin* have presented some considerations regarding the conceptual, technical, and methodological features of these systems (1). Several studies in progress in the Region have begun to yield some preliminary results. Below are the results of one of those studies, done in Venezuela, which utilized pre-existing data and incorporated the health and living conditions methodology into its analysis.

In order to reevaluate the behavior of traditional health indicators in relation to the living conditions of the population, a working group was established with members from the Department of Preventive and Social Medicine, Luis Rasetti School of Medicine, Central University of Venezuela, and the PAHO Representative Office in that same country. In this first attempt, a cross-sectional mortality study, based on living conditions was carried out, exclusively using secondary data on population and mortality which was analyzed in terms of differentials in living conditions. The minimum unit chosen for the space-population analysis was the "parish" (until 1989, a geopolitical district in the country was divided into sub-units called "rural counties," or "parishes" in the major urban areas, which were broken down into political-administrative districts.) that were classified according to their living conditions, as defined by data from a survey of unmet basic needs (UBN)(2). In all the other studies conducted, the smallest units of breakdown had been states or regions in the country.

The UBN indicator uses the following variables to evaluate each home:

1. Presence of school-age children who do not attend school.
2. Presence of critical overcrowding (more than three people per room, including living room, dining room, and bedrooms).
3. Location of household in inadequate housing.
4. Location of household in dwelling without basic services. In the urban environment this category

includes homes without either running water or toilets and, in rural areas, those which lack both.

5. High level of economic dependency, defined as having more than three people per employed one, and a head of household with less than three years of schooling.

A home with UBN was defined as one presenting at least one of these five characteristics. Individuals were classified in accordance with the conditions in the home in which they lived.

Using this framework, the working group reprocessed data from the 1981 population and housing census. Each of the 746 parishes in the country was then classified into one of ten categories or strata based on the percentage of their population who had UBN. The first stratum comprised space-population units in which 0% to 9% of the population had UBN, the second stratum included parishes with 10% to 19% of the population having UBN, and so on, up to the tenth stratum, made up of parishes in which between 90% and 100% of the population had UBN (Table 1).

Estimates from the Central Office on Statistics and Data Processing were used to obtain figures for the population in each parish in 1989. The mortality data was that available at the Ministry of Health and Social Welfare.

Deaths were analyzed according to six broad groups of the table 6-61 and by PAHO (3): communicable diseases, malignant neoplasms, cardiovascular diseases, certain conditions originating in the perinatal period, external causes, and others. In order to be able to calculate the rates, deaths classified as "undiagnosed" were redistributed proportionately into the several groups of "natural" deaths (those not due to any external cause). In Venezuela until 1990, deaths certified by a "non-treating physician", those with ill-defined signs and symptoms, and deaths without any medical certification were classified as "undiagnosed."

The purpose behind establishing strata based on the percentage of the population with UBN was to highlight those population groups with extremely poor living conditions. Although the group in which 90% to 100% of the population have UBN includes only 31 parishes, containing nearly 116,000 inhabitants (0.6% of the total), and the group in which 80% to 89% have UBN encompasses 112 parishes, with 681,000 inhabitants (3.5% of the total), some mortality problems are

Table 1. Distribution of municipalities, population (1989) and deaths (1989) according to unmet basic needs (UBN).

NBI Groups	Municipalities	%	Population	%	Deaths	%
0 a 9%	5	0.7	369	1.9	1,626	1.9
10 a 19%	20	2.7	1,485	7.7	6,350	7.5
20 a 29%	40	5.4	4,002	20.8	17,036	20.3
30 a 39%	52	7.0	4,008	20.8	16,484	19.6
40 a 49%	95	12.7	3,928	20.4	17,284	20.5
50 a 59%	118	15.8	2,259	11.7	9,323	11.1
60 a 69%	136	18.2	1,415	7.4	6,715	8.0
70 a 79%	137	18.4	982	5.1	5,181	6.2
80 a 89%	112	15.0	681	3.5	3,406	4.0
90 a 100%	31	4.2	116	0.6	715	0.8
Total	746	100.0	19,246	100.0	84,120	100.0

critical in these groups. Interventions targeted at these parishes can produce a short-term impact.

The age distribution of the population is different in the ten living conditions strata. The populations are younger in the strata with the worst living conditions, while in the intermediate strata it is possible to see the effects of internal migrations, which have produced a significant decline in the middle-aged population and a corresponding increase in this group in the strata with better living conditions (Table 2). In the top stratum (0% to 9% with UBN), individuals from 45 to 64 years of age and those 65 years of age and over represent higher percentages of the population than in the strata with the worst conditions (from 35% to 75% higher). These differences in population structure cause the crude death rates to be similar in all the strata.

The greatest differences in mortality can be seen when the age-specific rates are compared. The age group with the steepest gradient includes children from 1 to 4 years of age and presents rates ranging from between 0.5 and 1 per 1,000 to nearly 2.5 per 1,000 moving from one end of the scale to the other. The rates for children under 1 year range from 12 to more than 30 per 1,000 in one of the strata with the worst living conditions. The fact that the gradient is steeper in children aged 1 to 4 may be due to the fact that in this age group, differences in living conditions have a more acute impact, and also to the fact that there may be more underreporting of mortality in children under 1 year. For all the age groups, mortality increases as living conditions deteriorate (Figure 1), but in the older age groups, the gradient is relatively small or almost imperceptible.

The percentage of "undiagnosed" deaths is higher in the strata with the worst living conditions (Table 3).

The estimated specific mortality rates for the six major groups of causes were calculated according

to the level of UBN. In the analysis of mortality by groups of causes, there was an increase in mortality from communicable diseases, which rose from 30 per 100,000 to almost 100 per 100,000; causes associated with the perinatal period had higher rates than external causes in the strata with the worst living conditions; and there were fewer deaths from cardiovascular diseases in the intermediate strata, probably associated with the population distribution, since the group comprising persons 65 years and over constituted a smaller percentage of the population within these strata. The analysis of mortality from cardiovascular diseases, specifically in the groups from 45 to 64 years of age and those 65 years and over, showed that mortality rates tended to rise as living conditions deteriorated.

Specific mortality rates for diarrheal diseases, acute respiratory infections, and tuberculosis showed very steep gradients across the strata for the population in general, and for specific age groups (Figures 2,3,4). There were possible problems with underreporting of mortality in the groups that had the worst living conditions, especially for mortality from diarrheal diseases and acute respiratory infections (ARI) in children aged 1-4. For diarrheal diseases in the overall population the rate ranged from nearly 2 per 100,000 to almost 40 per 100,000 (almost 20 times higher). The gradients for age-specific mortality from diarrheal diseases, ARI, and tuberculosis also present very steep increases with the deterioration of living conditions.

A regression analysis of the age-specific mortality in children under 1 year demonstrates the possibility of estimating the number of excess deaths. Having the adjusted rate in each stratum makes it possible to calculate the number of "possible" deaths, and the difference between the reported and "possible" values equals the deaths that could have been avoided if the living conditions in

Table 2. Population distribution by age group, according to living conditions.

NBI Groups	<1	1 - 4	5 - 14	15 - 44	45 - 64	65 and more	All ages
0 a 9%	1.62	6.56	15.97	52.66	17.88	5.29	1.92
10 a 19%	2.12	8.54	19.99	51.52	13.75	4.08	7.72
20 a 29%	2.54	10.34	22.59	50.54	10.80	3.21	20.80
30 a 39%	2.88	11.48	25.05	47.18	10.20	3.21	20.82
40 a 49%	3.24	12.89	27.45	43.35	9.76	3.31	20.41
50 a 59%	3.21	12.72	27.88	42.38	10.16	3.65	11.74
60 a 69%	3.19	12.99	29.15	40.41	10.48	3.78	7.35
70 a 79%	3.23	13.36	30.23	38.43	10.78	3.96	5.10
80 a 89%	3.25	13.70	30.29	37.67	10.98	4.10	3.54
90 a 100%	3.49	13.99	30.83	37.33	10.36	3.99	0.60
Total	2.90	11.65	25.58	45.63	10.76	3.51	100.00

Figure 1. Age-specific mortality rates, according to UBN, Venezuela, 1989.

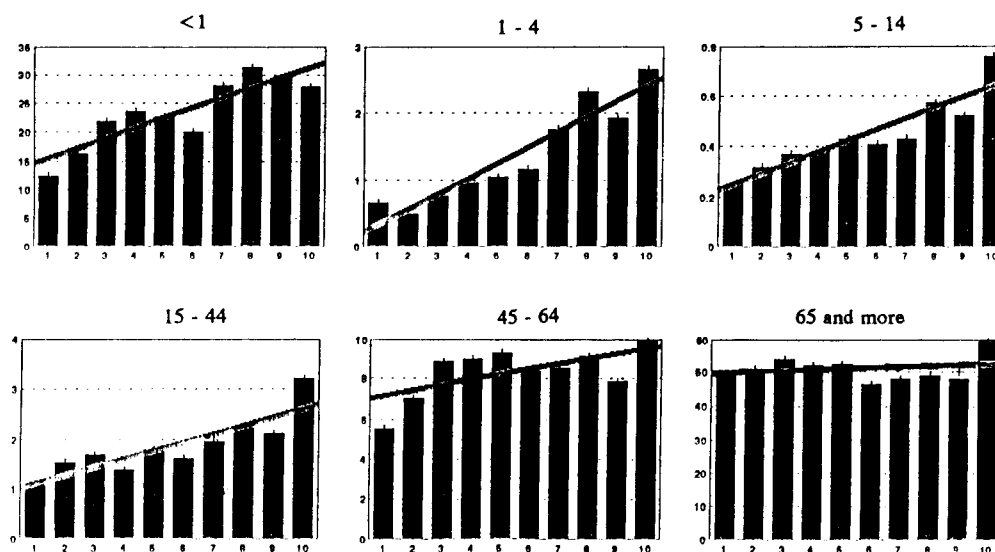


Table 3. Percentage of undiagnosed deaths by age group, according to living conditions.

NBI Groups	<1	1 - 4	5 - 14	15 - 44	45 - 64	65 and more	All ages
0 a 9%	0.0	0.0	0.0	1.9	0.5	0.7	0.8
10 a 19%	1.0	3.2	4.2	3.2	2.2	3.9	3.1
20 a 29%	1.8	8.4	7.5	5.8	4.7	6.4	5.3
30 a 39%	4.0	12.0	10.6	13.0	9.7	12.9	10.7
40 a 49%	6.6	19.2	17.9	15.1	16.0	20.1	16.0
50 a 59%	12.6	28.2	22.7	19.8	21.7	27.8	22.7
60 a 69%	16.9	30.6	34.8	25.9	25.2	32.3	27.0
70 a 79%	21.7	42.1	36.7	26.5	29.6	36.9	31.2
80 a 89%	22.3	38.5	31.8	31.2	30.1	37.3	32.1
90 a 100%	27.4	55.8	48.1	34.8	31.9	34.9	35.0
Total	8.8	23.4	18.8	14.2	13.4	17.4	14.9

Figure 2. Estimated mortality rates of diarrhea, all ages, according to UBN.

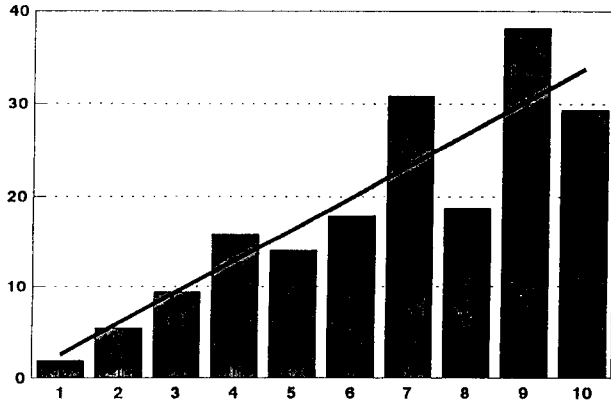


Figure 3. Estimated mortality rates of acute respiratory infections, all ages, according to UBN.

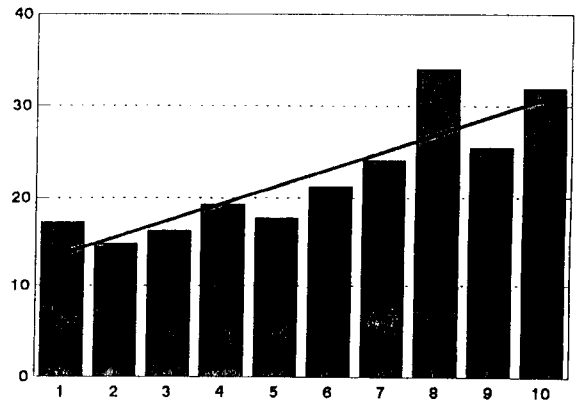
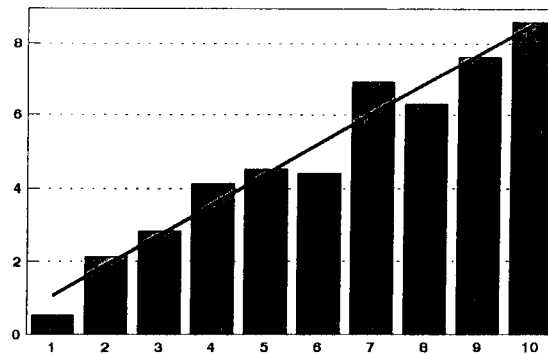


Figure 4. Estimated mortality rates of tuberculosis, all ages, according to UBN.



all the strata were similar to those in the top stratum. Based on this calculation, of a total of nearly 13,000 deaths in children under 1 year of age, more than 4,000 (or 34%) could be considered excess deaths.

Malignant neoplasms were the only group of causes that remained constant or showed only slight declines with the deterioration of living conditions. All the other causes, including cardiovascular diseases increased in the strata which had higher percentages of people with UBN. For external causes, the decline observed in the general rates for the entire population was due to the population age distribution. Children from 5 to 14 years accounted for nearly 16% in the stratum with the best conditions, and almost double that in the stratum with the worst conditions. The group of persons from 15 to 44 years of age showed the opposite scenario, declining from almost 53% to nearly 37%.

This study continues to be carried out in Venezuela with the objective of develop and implement a system of health situation surveillance based on monitoring living conditions at the national level. Similar projects are underway in the state of Lara and in Libertador county in the metropolitan area of Caracas.

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(Source: Department of Preventive and Social Medicine, Luis Rasetti School of Medicine, Central University of Venezuela, and PAHO/WHO Representative Office, Caracas, Venezuela.)

PAHO Advisory: *Aedes albopictus* in the Caribbean

Situation

In late May 1993, *Aedes albopictus* mosquitoes were discovered in Santo Domingo, Dominican Republic. Their detection constitutes the first reported focus of this species in the Caribbean Basin. Entomologic surveys are being conducted to determine the extent of its distribution. The origin and route of entry into the country remain uncertain.

Background

A. albopictus is indigenous to Asia. However, infestations were identified in Brazil and the United States of America in the mid-1980s. Extensive surveillance and monitoring has revealed that this species currently occurs in 5 states in Brazil and 23 states in the USA. From studies in the USA it was concluded that the mosquito probably entered the country in used tire consignments shipped by container from Asia. The likely events leading to infestation will have been as follows: in Asia, females *A. albopictus* deposited their eggs, which can remain viable for 12 months or more, on the inside surfaces of water-filled tires that were left outdoors. The tires were shipped to the USA for recapping as part of a major global trade in used tires. They were then stored or rejected by recappers and again left outdoors. Upon inundation by rain water, the eggs hatched and within a matter of days adult mosquitoes emerged and dispersed from the primary larval site or sites.

Given the extent of the international tire trade, the greatest risk for future introductions from infested to uninfested countries of the Americas appears to be through repetition of these or similar events. However, this mode of entry is by no means exclusive of other routes. Once established, the subsequent in-country dispersal of *A. albopictus* can also be facilitated by unregulated transportation of tires.

Public Health Implications

Aedes aegypti is recognized as the epidemic vector of dengue, dengue hemorrhagic fever (DHF) and urban yellow fever and is widely distributed throughout most urban areas of Latin America and the Caribbean. In Asia, *A. albopictus* is also a significant vector of dengue, but its potential role in the transmission of arboviruses under natural conditions in the Americas remains

unclear and to date no involvement in areas of Brazil where there is active dengue transmission has been demonstrated. However, laboratory studies of imported North and South American strains of *A. albopictus* have shown them both to be competent experimental vectors of dengue, yellow fever and several other arboviruses present in the Region. In 1991, eastern equine encephalitis (EEE) was isolated from *A. albopictus* collected in southeastern USA.

In contrast to *A. aegypti*, which has a strong preference for humans, the wide vertebrate host range of *A. albopictus* diminished its efficiency as a vector of dengue viruses. However, this behaviour, in combination with its sylvatic and peri-urban characteristics, may increase the risk for introduction of yellow fever virus from the sylvatic to the urban environment in areas of South America and Trinidad where the virus circulates in monkeys and forest mosquitoes.

A. albopictus is an aggressive, opportunistic daytime biter and can be a significant pest problem, especially in the vicinity of tire piles, cemeteries with flower vases and other sites where there are abundant larval habitats. In some areas of the USA it has become the most important nuisance species, prompting frequent public complaints to mosquito abatement districts.

Recommendations

Entomologic surveys: Surveys should be initiated to identify used tire importers and undertake systematic entomologic surveys of:

- a) the sites where the containers are opened for inspection by customs authorities, and
- b) where the tires are unloaded from the containers. If the containers normally remain unopened until they reach their ultimate destination, emphasis should be given to the latter rather than to ports of entry. Man-baited adult captures should be considered in addition to surveys of tire piles and other potential larval habitats.

Investigation of public complaints: Public complaints of daytime biting nuisance in areas not previously associated with mosquito pest problems may also indicate the establishment of this species in a neighborhood and should be appropriately investigated.

Species confirmation: In the event that infestations are found or suspected, national authorities

are requested to inform PAHO and to submit preserved specimens for independent taxonomic confirmation.

Follow-up: After the discovery of an infestation, decisions for follow-up action, such as feasibility of elimination or control, will be determined by a number of factors including extent and location of the infestation, larval habitat characteristics and the availability of resources.

Actions to reduce the risk of importation: The international used tire trade represents a significant risk for introducing *A. albopictus* into other

areas of the Americas: in recognition of this fact, several countries have adopted or are considering the adoption of legislation banning the importation of used tires. Sample copies of this legislation will be distributed to other Ministries of Health in the Region of the Americas for their consideration and possible implementation to reduce the risk of importation of this exotic vector species.

(Source: Communicable Diseases Program, HCT, PAHO.)

Central American Epidemiology Project

In Tegucigalpa on 2 September 1993, the Ministers of Health of Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama approved a subregional project for the development of epidemiology, upholding Resolution 42 of the Managua Presidential Summit, whereby Central American presidents urged the countries to coordinate epidemiological surveillance activities with the goal of improving results in the fight against cholera.

Through their technical groups, the countries of Central America undertook a truly joint endeavor to define the problem, specify objectives, and establish the proper channels to attain those goals. That task was accomplished through subregional workshops and national and local meetings. The work enabled each of the seven countries to initiate a process to intensify the strengthening of epidemiology and to prepare a project that would complement national initiatives and bolster the initial phase.

In its initial stage, the process has made it possible to evaluate the epidemiological surveillance systems of the countries in the subregion.

The project is planned to last three years, during which time it is expected to contribute to enhancing the ability of health services to describe and explain the health situation in each geographical/population context (locality, county, district, department, region, country) with the purpose of prioritize population groups, problems, and programs, and to supply decision-makers with crucial information for orienting equitable, comprehensive, effective, and efficient responses by means of policies, plans, and programs.

Specifically, this initiative is intended to support existing efforts to strengthen and broaden the surveillance of diarrhea and cholera, to foster timely actions to control the problem and to encourage multisectoral actions aimed at affecting the determinant factors.

The strategy is to promote the enhancement of epidemiological surveillance systems, with interventions that simultaneously strengthen measures against cholera and diarrhea and improve the conditions for monitoring other diseases.

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