

# SPECIAL REPORT

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## INFANT MORTALITY IN THE AMERICAS

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### Introduction

Approximately 700,000 infants die annually in the Americas from causes that could be prevented by low-cost interventions and technologies. This figure is appalling, both in terms of sheer number of lives lost and as an indicator of the poor quality of life endured by those infants who survive and their families. It is also a damning reflection of the ineffectiveness and inefficiency of the health services and of the deficiencies and inequalities of development patterns and progress in the Region.

The main determinants of infant mortality in the Americas are the socioeconomic status of the family, environmental factors, and some specific maternal and child health problems. These determinants are similar for all countries in the Region, although their relative importance varies from subregion to subregion, country to country, and even among population groups within a country.

What follows is a review of selected conditions and factors that determine infant mortality rates and an outline of some strategies that have been successful in reducing the number of deaths.

### Magnitude of the Problem

The biological and psychosocial wastage represented by the excessive number of infant deaths each year is unacceptable given the current state of knowledge and technological progress. Table 1 gives the estimated infant mortality rates for five-year periods from 1960 through 1985. The numbers show that progress has been made in all countries, but the rates as of 1985 are still high, with 12 out of 28 countries experiencing over 50 infant deaths per 1,000 live births. Furthermore, it must be remembered that even in countries with fairly low rates, the national estimates hide the enormity of the problem among high-risk, marginal population groups. Identifying these groups and applying the risk approach in local planning are essential to ensure that the countries' efforts and resource use will be effective.

**TABLE 1. Infant mortality rate per 1,000 live births in some countries of the Americas, 1960–1985.**

Country	1960–1965	1965–1970	1970–1975	1975–1980	1980–1985
Argentina	59.5	56.4	51.3	47.2	43.2
Barbados	60.8	46.4	33.8	27.0	25.5
Bolivia	163.6	157.5	151.3	138.2	124.4
Brazil	111.8	102.3	94.9	82.4	72.4
Canada	26.3	21.3	16.4	12.2	10.4
Chile	110.5	95.1	69.5	46.3	40.0
Colombia	84.5	74.2	66.9	59.4	53.3
Costa Rica	80.6	65.6	50.9	29.3	25.7
Cuba	59.6	47.8	33.8	22.5	20.4
Dominican Republic	110.0	96.3	83.6	73.1	63.5
Ecuador	132.3	114.5	100.1	86.0	77.2
El Salvador	128.0	112.0	101.0	84.8	71.0
French Guiana	... <sup>a</sup>	...	57.6	47.9	40.5
Guatemala	114.9	101.5	90.2	79.0	67.7
Haiti	170.5	150.2	134.9	120.9	108.2
Honduras	136.8	124.0	110.7	95.4	81.5
Jamaica	54.4	47.0	42.0	30.1	26.2
Martinique	47.7	42.5	34.8	23.0	21.0
Mexico	86.2	78.6	68.6	59.8	52.1
Nicaragua	136.4	122.2	108.9	96.5	84.5
Panama	62.6	53.9	43.8	36.2	32.5
Paraguay	80.6	66.9	52.6	48.6	45.0
Peru	152.2	132.8	106.5	93.5	81.9
Suriname	63.5	54.6	46.7	39.2	33.8
Trinidad and Tobago	48.0	45.0	40.4	34.6	29.9
United States of America	25.2	22.2	18.1	14.0	12.1
Uruguay	47.9	47.0	46.3	41.7	37.6
Venezuela	76.9	64.9	52.4	44.8	38.6

Sources: (1) Centro Latinoamericano de Demografía. Document CESA/ICP/1984/EGIV/12. Rome, April 1984. (2) The United Nations' projections, per country. *Popul Bull UN* 14, 1982.

<sup>a</sup> Data not available.

Progress in reducing infant mortality has varied widely among the countries. Between the periods 1960–1965 and 1980–1985, the infant mortality rate declined by 21% in Bolivia, while it fell by 64% in Costa Rica. Even in the most recent five-year period, two countries in the Region—Bolivia and Haiti—still had average rates higher than 100 deaths per 1,000 live births. Although infant mortality in the United States has declined dramatically since the turn of the century, that decline has slowed to practically a standstill. In the period 1950–1955, the U.S. had the sixth lowest infant mortality rate among 20 industrialized nations; for 1980–1985 it ranked seventeenth, tied for last place among those same countries, many of which are significantly poorer than the United States.

## Social and Economic Factors

Large numbers of our people are economically disadvantaged. Studies done by the Economic Commission for Latin America and the Caribbean (ECLAC) found that at the end of the last decade 19% of the population of Latin America was destitute and 40% lived in poverty. The situation has since become even more serious, aggravated by an economic crisis that has led to increased unemployment, reductions in national incomes, and diminishing expenditures on social and health services in many countries of the Region. It is in this context that children's health in the Americas must be considered.

Unfortunately, improvements in the health status of the population do not necessarily accompany or follow economic development. An increase in the gross national product does not automatically translate into greater expenditures on health or a more even distribution of resources. Economic development has a positive influence on the health status of the population when policies are geared toward improved education, a higher standard of living for the most disadvantaged groups, and better health care.

Conversely, significant improvements in the health of the population can be achieved in the absence of high levels of economic progress. Several countries in the Region—Costa Rica, Chile, Cuba, Panama, Venezuela, and countries in the English-speaking Caribbean—have achieved dramatic reductions in their infant mortality rates between the periods 1960–1965 and 1980–1985 even though their economic development has been uneven. The reductions resulted from political commitment to health and education for everyone, provision of adequate nutrition to pregnant women and to their children, community participation, and emphasis on health care for the most vulnerable groups in the population.

**Education.** Parental education, particularly that of the mother, is one of the most important of the social factors affecting infant mortality. The higher the parents' educational attainment, the lower the infant mortality levels. The beneficial effect of the parents' education is most marked for children under five years of age.

Better parental education affects infant mortality levels and the health of the family through several mechanisms. It allows greater access to information, provides the skills needed to use clinics and other medical institutions, produces a less fatalistic attitude about children's health, and helps the parents improve their economic status. It should be emphasized that "education" does not refer only to formal schooling but also to basic health knowledge that leads to a healthier lifestyle.

The importance of education has been clearly demonstrated, and women's education should be a priority. Regrettably, per capita public expenditure on education diminished between 1980 and 1984 throughout Latin America and the Caribbean.

**Migration.** The sizable migrations, both voluntary and involuntary, that have taken place in the Region in recent years have contributed to infant mortality. Migrations from rural areas to the cities are the result of a lack of opportunity in rural areas and the search for better jobs, better social services, and a better education. However, most of the migrants end up on the fringes of cities in areas that lack adequate health and sanitation services. Migration disrupts the familial and social structure. Inadequate support systems, insufficient income, unemployment, and overcrowding create serious nutritional and health problems in migrant families, especially among the children. In the case of immigration to the United States and other countries, an additional problem can be lack of legal status, which prevents families from using health services for fear of deportation or other penalties.

Another cause of recent migrations has been the serious political conflicts affecting several countries in the Region. Especially in Central America, war has led to the creation of huge refugee and displaced populations forced to live under deplorable conditions in makeshift settlements.

**Water supply and sanitation.** The lack of potable water and effective sanitation facilities contributes to the spread of disease and to high levels of infant mortality. Recent data show that only 45% of the rural population in Latin America and the Caribbean has ready access to potable water and only 15% has adequate sanitation facilities. It is clear that better access to clean water and to sanitation facilities is still a pressing need in the countries of the Americas.

### Principal Causes of Infant Mortality

The priority problems accounting for the largest portion of neonatal and infant mortality in the Americas fall within the following groups of specific causes of morbidity and mortality:

- perinatal problems and lack of prenatal care;
- intestinal and respiratory infections;
- vaccine-preventable diseases;
- malnutrition;
- high-risk fertility behavior.

Since the introduction of the Expanded Program on Immunization and the Program for Control of Diarrheal Diseases in the 1970s, the level and character of infant mortality have changed dramatically in the Region. Vaccine-preventable diseases are no longer among the five principal causes of infant mortality in most countries of the Hemisphere. The highly effective technologies used in the fight against diarrheal diseases have removed them from first place among causes of infant death in a large number of countries. As a result, perinatal problems have emerged as the leading group of causes and, according to recent information collected by the PAHO Maternal and Child Health Program, now rank first in 21 countries in the Region.

**Perinatal problems.** A major factor associated with perinatal and infant mortality is subnormal weight at birth. The incidence of low birth weight is 10.1% in Latin America, but the figure is higher than 20% in some countries. Studies carried out in Chile have found that mortality in the first three months of life was almost 50 times higher in children with insufficient birth weight compared with children of favorable weight.

When focusing on perinatal problems, emphasis is too often placed on high-cost curative measures rather than on much lower-cost preventive actions. While curative procedures have improved the survival of infants with perinatal problems—especially those with birth weights below 1,500 g—those actions do not lead to a decrease in the number of infants requiring such care. A more appropriate health policy for all the countries of the Americas would be to make available to women better nutritional opportunities both before and during their pregnancy and better pre- and postnatal care.

Smoking during pregnancy can double the probability of having a low-weight baby. Children of smoking mothers average 150 to 250 g underweight at birth, which can be a life or death difference for babies at the lower extreme of birth weight.

The nutritional status of the mother both before and during pregnancy has also been identified as a highly significant factor in determining a child's birth weight. Many women in developing countries do not have time to recover nutritionally from one pregnancy before the next pregnancy begins, a problem intensified by a heavy physical workload and several previous pregnancies with short birth intervals. All these circumstances are significant risk factors for low birth weight.

Poverty also increases the risk of poor birth outcomes, especially when associated with other health disadvantages. A recent study in New York City by the City Department of Health found that the infant mortality rate in New York City's welfare hotels was higher than the rates in the poorest neighborhoods of the city and more than double the national rate. These homeless women received significantly less prenatal care than other women, and gave birth to babies with lower average birth weights.

**Intestinal and respiratory infections.** Intestinal infections with diarrhea caused more than 500,000 deaths of children under five years old in 1980 in Latin America and the Caribbean, with substantial differences in rates in different countries. Table 2 shows the decline in death rates from diarrheal diseases from about 1970 to around 1983. This favorable trend has continued, but the problem is still of great importance and diarrheal disease control constitutes a priority for PAHO/WHO and the Member Countries.

**TABLE 2. Death rates from diarrheal diseases per 100,000 persons for children under 1 and 1-4 years old, around 1970 and 1983, in some countries of the Americas.**

Country	Year	Rates per 100,000 persons	
		Under 1 year <sup>a</sup>	1-4 years
Argentina	1970	880.5	38.5
	1981	215.3	17.6
Barbados	1969	365.7	8.8
	1984	... <sup>b</sup>	11.6
Belize	1970	823.6	86.7
	1984	227.6	32.1
Chile	1970	1,418.1	46.7
	1983	106.4	3.9
Costa Rica	1970	1,509.5	108.1
	1983	163.1	12.4
Cuba	1971	510.0	8.6
	1983	117.1	1.3
Dominica	1970	984.6	127.1
	1984	116.6	...
Dominican Republic	1970	1,177.9	111.1
	1981	342.6	33.8
Ecuador	1970	968.9	194.4
	1980	1,464.5	193.7
Guatemala	1970	1,817.8	807.6
	1981	1,128.0	370.2
Honduras	1970	792.7	299.5
	1983	541.5	106.3
Mexico	1970	1,802.1	274.0
	1982	743.1	62.4
Nicaragua	1975	1,224.8	109.1
	1977	1,229.0	103.7
Paraguay <sup>c</sup>	1971	1,971.8	293.8
	1984	700.5	104.4
Peru	1970	1,037.3	209.1
	1982	474.4	104.4
St. Vincent and the Grenadines	1970	1,080.4	118.6
	1983	593.8	50.0
Trinidad and Tobago	1970	710.0	25.5
	1979	548.0	50.2
Uruguay	1970	479.2	6.4
	1984	274.4	2.8
Venezuela	1970	874.7	94.2
	1981	566.9	35.0

Source: Pan American Health Organization *Health Conditions in the Americas, 1981-1984*, Volume 1 Washington, D.C., 1986.

<sup>a</sup> Rate per 100,000 live births.

<sup>b</sup> Data not available.

<sup>c</sup> Area of information.

In some countries, acute respiratory infections outrank diarrheal diseases as the leading cause of death in infants. Overcrowding and poor housing conditions greatly favor the spread of respiratory infections. Three important risk factors for child mortality from acute respiratory infections are young age, low birth weight, and poor nutritional status. For example, in Costa Rica, children with severe protein-calorie malnutrition were 19 times more likely to develop pneumonia than were normal children.

**Vaccine-preventable diseases.** According to a World Health Organization estimate, in 1980 more than five million children under five years old died worldwide from vaccine-preventable diseases. The United Nations Children's Fund (UNICEF) estimated that every six seconds a child dies and another is disabled by these diseases. In 1979 in our Region, 9,078 children under one year of age died of diphtheria, whooping cough, tetanus, measles, and poliomyelitis. Only nine of these deaths were in North America; the rest occurred in Latin America and the Caribbean. On the other hand, data from 1984 showed that the incidence of vaccine-preventable diseases had declined significantly. Indeed, 19 countries reported no cases of poliomyelitis, which raises hopes for the success of the program to eradicate transmission of wild poliovirus in the Americas by 1990, a goal endorsed by PAHO's Governing Bodies.

**Nutritional deficiency.** Malnutrition, a significant manifestation of poverty and lack of education in a population, is still prevalent in this Region. It is the basic or an associated cause of more than 50% of the deaths of children under five in Latin America and the Caribbean. During the first year of life, malnutrition in children is often caused by replacing breast-feeding with artificial milk. The risks of morbidity and mortality among babies fed artificial foods are from three to five times higher than those of breast-fed babies.

**High-risk fertility behavior.** Three conditions related to child-bearing that have a marked impact on infant mortality rates are the length of time between births, the mother's age at birth, and the number of children that she has previously borne. Children born shortly after a previous birth, who have numerous siblings, and who are born to mothers in the youngest and oldest child-bearing ages are at a significantly increased risk of dying.

Interventions directed toward individuals should focus on women in need of fertility regulation, underweight mothers, pregnant women with medical risks, and those affected by such behaviors as smoking, alcohol consumption, and the use of drugs. A critical problem, which is reaching epidemic proportions throughout the Americas, is unplanned teenage pregnancies. The risks they pose for the baby are more related to socioeconomic background and lack of prenatal care than to specifically biological factors. In the United States alone, one million adolescents between 15 and 19 years of age get pregnant annually, and 30,000 become pregnant while under 15 years of age. The tragic outcomes associated with

teenage pregnancies involve not only higher risk to the newborn but also the fact that increasing numbers of these pregnancies end in abortion.

**Lack of basic health services.** A common thread linking many of these determinants of infant mortality is the inefficiency, ineffectiveness, and unequal distribution of the basic health services. Approximately 30% of the population of Latin America has no regular access to health services, and many existing services are of questionable quality. This deficit in health services, and particularly the lack of infrastructural support for the services, essentially deny the population access to the most simple interventions, technologies, and care that might prevent problems before they occur or successfully treat the illnesses that contribute to infant mortality.

## Strategies

One of the most important means of reducing infant mortality is to improve the social and economic situation of families—for example, by educating women and providing the social support necessary for a healthy family. But implementation of this strategy is often difficult and long-term. Changes within the health services that will produce the most important and lasting benefits consist of strengthening infrastructure to permit increased efficiency and effectiveness, particularly in applying low-cost technologies of proven efficacy. The use of low-cost technologies must be emphasized since most of our countries cannot afford the widespread use of expensive technologies, which save few lives and can distort the distribution and utilization of scarce financial and human resources.

The use of appropriate technologies is especially significant in relation to prenatal care. Lack of prenatal care tends to be most prevalent among the most vulnerable and disadvantaged groups in a population. Adequate prenatal care involves not only monitoring the pregnancy but also giving the pregnant woman basic health education, promoting breast-feeding, treating underlying diseases, and identifying those women at higher risk, who are referred to the proper level of care.

Lack of trained personnel to care for pregnant women is still a serious problem in several Latin American countries, especially since professionals tend to work in the more affluent urban areas. The training of community volunteers, lay midwives, and primary health care personnel in the care of pregnant women and their children will substantially contribute to reducing the magnitude of infant mortality.

The legal framework within a country can also contribute to maternal and child health. Most countries in the Region have laws that give women paid maternity leave and allow them time to breast-feed their babies at work, but these laws do not reach the increasing numbers of women who are becoming part of the informal sector of the economy.



The wide application of high-impact technologies for the control of priority disease problems of infancy and childhood is not only an effective means of reducing mortality but also increases the quality of life for many children through preventing residual damage caused by disease. Immunization continues to be a powerful and cost-effective weapon for reducing infant mortality from diseases such as measles, diphtheria, pertussis, tetanus, poliomyelitis, and tuberculosis. Diarrheal disease control programs must include not only prompt oral rehydration therapy, but also measures aimed at reducing the incidence of these diseases, such as promotion of breast-feeding, improvements in water supply and sanitation, and education with regard to proper food handling and healthy child-rearing practices. Appropriate technologies and procedures are available for the management of acute respiratory infections.

Adequate epidemiologic surveillance of the health conditions of mothers and children is essential. The identification of high-risk individuals and groups allows the proper organization and use of health services and technological interventions. The application of the risk approach facilitates integral and comprehensive care.

The effectiveness of health services will be maximized if they are organized in different levels according to needs, available resources, and the degrees of complexity of the problems they must address. In addition to specific curative measures, health services should provide health and nutrition education and supplementary feeding activities.

The strategies discussed above must be applied comprehensively, must be flexible enough to be adapted to local circumstances, and must respect the values and beliefs of the targeted communities. The strategies do not have to be imposed from above to be effective. Although general directives should come from the central health authorities, the final strategies should be the result of the combined efforts of political and social community leaders.

The importance of community participation is also reflected in the increasing role played by community health workers in the Region. The duties performed by these workers—providing elementary medical care and education and keeping basic medical records—would be unthinkable for laymen in an industrialized country, but respond to the reality and needs of communities in many developing countries.

Mothers have a crucial role in ensuring that their children not only survive but have a high quality of life. They should participate in identifying their own, their families', and their communities' health needs, as well as in putting into practice and evaluating health improvement programs. To do these things, mothers need solid support from the whole society.

There is no doubt about the effectiveness of these strategies, but their success in reducing infant mortality depends upon all countries, rich and poor, accepting the health and development of children as a priority social goal that demands simultaneous multisectoral action to deal with the numerous biological, environmental,

economic, social, and cultural determinants of the problem. This goal requires policies that will help overcome inequities and that will respond to the needs of the vulnerable and disadvantaged segments of society.

Reducing the number of children's deaths will require refocusing our present strategies and goals. Every effort to improve the situation of the children in our societies is not only a step toward greater justice and equality, it is an investment in our future.

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*Source:* Condensed version of a report by Dr. Maccdo entitled "Infant Mortality in the Americas," Washington, D.C., January 1988.

## **Training Course on Tuberculosis Bacteriology**

In accordance with an agreement between the World Health Organization and the Laboratory Center for Disease Control (Canada), the Canadian Lung Association, and the Canadian International Development Agency (CIDA), the Fourth International Training Course on Bacteriology of Tuberculosis will be held in Ottawa, Canada, from 23 May to 30 June 1989. The training is designed for senior laboratory officers with experience in bacteriology. Participants will be selected from among candidates nominated by the ministries of health of their countries. The course will be limited to ten participants from ten different countries. Eight fellowships will be funded by the Canadian Lung Association and CIDA, and two by WHO.

Tuberculosis still constitutes a major health problem in developing countries, and organization of bacteriologic diagnosis has proved to be one of the most difficult of tuberculosis control activities. There is a need for persons at the central laboratory level who are acquainted with laboratory methods for culture, differentiation of mycobacteria, and drug sensitivity tests, and who can coordinate activities, collaborate in the organization and supervision of bacteriologic diagnosis and surveillance, and train personnel. The objective of this course is to provide both technical and managerial training.