The Millennium Development Goals in the Americas

In September 2000, at the United Nations Millennium Summit, world leaders of 189 states adopted a set of timebound and measurable goals and targets for combating poverty, hunger, disease, illiteracy, environmental degradation, discrimination against women, and commiting to principles of human rights, good governance and democracy. They were outlined in the Millennium Declaration, which since then has been summarized and operationalized as a package of 8 goals, 18 targets, and 48 indicators, commonly referred to as the Millennium Development Goals (MDGs) to be reached by the year 2015 (Box 1).

Country ownership of the MDG process is essential and in the Americas was addressed at a high-level conference in Brasilia in November 2003[1]. The Brasilia Declaration is a call to action and implementation that reinforces the partnership principle inherent in the Millennium Declaration and prior agreements of previous Summits of the Americas.

Three of the eight MDGs explicitly refer to health issues: reducing child and maternal mortality, and combating HIV/AIDS, malaria, tuberculosis and other diseases. Further, seven of the 18 Targets are directly related to the responsibility of the health sector – Target 2 for malnutrition, Target 5 for child mortality, Target 6 for maternal mortality, Target 7 and 8 for HIV/AIDS, malaria and other diseases, Target 10 for safe drinking water, and Target 17 for essential drugs. The 18 targets may also be seen as macro determinants from different layers that have traditionally been defined as impacting health, from very proximal to more distal levels. This clearly gives health a high profile within the global development agenda and provides the health sector with great opportunities for political commitment to advancing the health and welfare of the populations of the world.

Situation in the Region

The world has been making progress towards the MDGs but this progress has been very uneven and, in many countries, too slow to reach the 2015 Targets. In the Americas, some of the greatest challenges lie within the health area. Presently, the situation varies markedly between the countries of the Region and different population groups, as well as between the targets indicators. As data below suggest, it is difficult to say that the Region as a whole will reach the ambitious health targets.

In 2003 in the Region, the infant mortality oscillated between 5.3 per 1,000 live births in Canada to 80.3 per 1,000 in Haiti[2]. Although this indicator has been improving over the past decade, a PAHO case study has shown that if current trends continue, the reduction in infant and under-5 mortality in the Region would reach 54%, well below the two-thirds established in Goal 4. The situation of another MDG indicator for Goal 4[3], measles vaccine coverage, is also varied, with a regional average of 91%. Estimates for the indicators of Goal 5 reflect that the situation of maternal mortality is also extremely varied. In 2000, the maternal mortality ratio was estimated at 34.1 per 100,000 live births in Cuba and 523.0 per 100,000 live births in Haiti. In addition, over the past decade, some countries saw an increase in maternal mortality and some others a significant decrease. Further, other estimates show that the annual reduction needed between 2000 and 2015 to reach the target varies from a low rate of 1.6% in Uruguay, to 15.1% in Panama[4].

The HIV/AIDS epidemic is well established in the Americas, with a national HIV prevalence of at least 1% in 12 countries, all of them in the Caribbean, and with HIV prevalence among pregnant women exceeding 2% in six of them[5]. In most of the other countries of the Region, the epidemic is more concentrated in certain areas or population groups. The deceleration needed to halt and reverse the epidemic by 2015 and reach Goal 6 is currently not seen in the Region. The incidence of malaria also varies greatly in the countries of the Region, but it is estimated that in 2002 31% of the population of the Americas lived in areas with some potential risk of transmission of the disease, with 80% of the reported cases originating in the nine countries that share the Amazon rain forest in South America[6]. Given the wide variations in incidence over the last decade, it is difficult to say whether the goal of reversing the epidemic as defined in Goal 6 is under way. In 2002, there were 223,057 cases of tuberculosis in the Americas, 50% of them in Brazil and Peru. The total of cases in the Region decreased 11% between 1999 to 2002[7].

The water and sanitation evaluation carried out by PAHO

showed that water supply and sanitation coverage in Latin America and the Caribbean were 84.6% and 79.2%, respectively, around 2000. In total in the Region, more than 76 million people have no access to a water supply, and 103 million are without any sanitation facilities for the elimination of wastewater and excreta. In 1995, only 23 countries reported that water supplies in urban areas met the WHO safety guidelines, but this is not applicable to rural areas. There are severe inequalities in access to water in the Region, usually linked to income and place of residence[8].

Finally, only five countries (Brazil, Chile, Honduras, Nicaragua, and Panama) have policies specifically dealing with pharmaceuticals. Twenty-one countries have basic drug lists and have incorporated the concept of essential drugs. However, access to medicines continues to be limited, with, for example, only 31% of the population in Brazil having access[6]. In the Americas, only 53% of the population in need of HIV/AIDS treatment has access to it.

The role of PAHO in achieving the MDGs
As shown above, for the Americas a focus on the reduction of inequalities, particularly in health, is of particular importance in order to reach the MDGs. Indeed reaching the goals is not limited to attaining the level of indicators as a regional or even national average, but looking at what is happening at lower levels of disaggregation. This is particularly important and relevant in a Region as unequal as the Americas, where some of the Gini coefficients for income inequality in 1999 were 0.5 in Peru, 0.6 in Bolivia, 0.59 in Nicaragua, and 0.64 in Brazil[9], and where the regional Gini coefficient for infant mortality in 1997 was 0.33[6].

In this context, PAHO has decided to put the MDGs at the core of its technical cooperation, and has defined a series of strategic objectives to assist countries in reaching them. At the center of this action lie the strategic dimensions defined as the Organization's guiding principles: to reduce inequalities by addressing the unfinished health agenda in the Region, preserving the progress made so far, and reacting to new and emerging health issues. PAHO's strategy relies on: advocacy to raise awareness on the health priorities set by the MDGs; supporting progress towards the MDGs through health policy initiatives in the context of national health development; integration of the MDGs with other existing national and regional health targets; increasing cooperation with different ministerial, legislative, and other partners involved in working towards the goals; ensuring that communities are empowered and involved in the processes in place to reach the MDGs, particularly ethnic groups, indigenous populations, and women; monitoring progress towards the MDGs; and initiating research to strengthen the evidence base and generate new knowledge for reaching the goals.

These lines of action reflect that the MDG process will require support from reliable epidemiological systems, particularly in the measurement of progress towards the targets. Just as the goals themselves must be adapted and led by the countries, the process and product of monitoring the MDGs must be country-owned and driven. It includes the definition of how the MDGs apply to the country's current situation and how their achievement needs to be addressed through national development strategies, policies, and programs. In many countries of the Region, the follow-up of the health

MDGs requires the development of sustainable statistical systems and skills to analyze and use data for policy-making and programming. The PAHO Core Data Initiative and other cooperation strategies in support of the development of national health information systems will provide great input to the monitoring effort. The measurement and follow-up of the MDGs also reflect the particular importance of quality disaggregated data at regional, sub regional, and country levels.

The MDGs underline the need to have clear, measurable goals for global challenges and give a clear message of the priority needed to invest in people through health and other dimensions of development. PAHO is committed to tackle the challenge to guarantee more equity among the peoples of the Region of the Americas.

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Box 1: Millenium Development Goals, targets and indicators

GOALS and TARGETS	INDICATORS
Goal 1 Eradicate extreme poverty and hunger	
Target 1: Halve, between 1990 and 2015, the proportion of people whose income is less than $1 a day	1a. Proportion of population below $1 a day 1b. National poverty headcount ratio 2. Poverty gap ratio at $1 a day (incidence x depth of poverty) 3. Share of poorest quintile in national consumption
Target 2: Halve, between 1990 and 2015, the proportion of people who suffer from hunger	4. Prevalence of underweight in children (under five years of age) 5. Proportion of population below minimum level of dietary energy consumption
Goal 2 Achieve universal primary education	
Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling	6. Net enrollment ratio in primary education 7a. Proportion of pupils starting grade 1 who reach grade 5 7b. Primary completion rate 8. Literacy rate of 15 to 24-year-olds
Goal 3 Promote gender equality and empower women	
Target 4: Eliminate gender disparity in primary and secondary education preferably by 2005 and in all levels of education no later than 2015	9. Ratio of girls to boys in primary, secondary, and tertiary education 10. Ratio of literate females to males among 15- to 24-year-olds 11. Share of women in wage employment in the nonagricultural sector 12. Proportion of seats held by women in national parliament
Goal 4 Reduce child mortality	
Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate	13. Under-five mortality rate 14. Infant mortality rate 15. Proportion of one-year-old children immunized against measles
Goal 5 Improve maternal health	
Target 6: Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio	16. Maternal mortality ratio 17. Proportion of births attended by skilled health personnel
Goal 6 Combat HIV/AIDS, malaria, and other diseases	
Target 7: Have halted by 2015 and begun to reverse the spread of HIV/AIDS	18. HIV prevalence among 15- to 24-year-old pregnant women 19. Condom use rate of the contraceptive prevalence rate 19a. Condom use at last high-risk sex 19b. Percentage of population aged 15-24 with comprehensive correct knowledge of HIV/AIDS 19c. Contraceptive prevalence rate 20. Ratio of school attendance of orphans to school attendance on non-orphans aged 10-14
Target 8: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases	21. Prevalence and death rates associated with malaria 22. Proportion of population in malaria-risk areas using effective malaria prevention and treatment measures 23. Prevalence and death rates associated with tuberculosis 24. Proportion of tuberculosis cases detected and cured under directly observed treatment short course (DOTS)
Goal 7 Ensure environmental sustainability	
Target 9: Integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources	25. Proportion of land area covered by forest 26. Ratio of area protected to maintain biological diversity to surface area 27. Energy use per unit of GDP 28. Carbon dioxide emissions (per capita) and consumption of ozone-depleting chlorofluorocarbons 29. Proportion of population using solid fuels
Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation	30. Proportion of population with sustainable access to an improved water source, urban and rural 31. Proportion of population with access to improved sanitation
Target 11: Have achieved, by 2020, a significant improvement in the lives of at least 100 million slum dwellers	32. Proportion of households with access to secure tenure
Goal 8 Develop a global partnership for development	
Target 12: Develop further an open, rule-based, predictable, nondiscriminatory trading and financial system (includes a commitment to good governance, development, and poverty reduction—both nationally and internationally) **Target 13:** Address the special needs of the least developed countries (includes tariff-and quota-free access for exports enhanced program of debt relief for HIPC and cancellation of official bilateral debt, and more generous ODA for countries committed to poverty reduction) **Target 14:** Address the special needs of landlocked countries and small island developing states (through the Program of Action for the Sustainable Development of Small Island Developing States and 22nd General Assembly provisions) **Target 15:** Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term	<u>Official development assistance (ODA)</u> 33. Net ODA total and to least developed countries, as a percentage of OECD/DAC donors gross income 34. Proportion of bilateral, sector-allocable ODA of OECD/DAC donors for basic social services (basic education, primary health care, nutrition, safe water, and sanitation) 35. Proportion of bilateral ODA of OECD/DAC donors that is untied 36. ODA received in landlocked countries as proportion of their GNI 37. ODA received in small island developing states as proportion of their GNI <u>Martket access</u> 38. Proportion of total developed country imports (excluding arms) from developing countries and least developed countries admitted free of duties 39. Average tariffs imposed by developed countries on agricultural products and clothing from developing countries 40. Agricultural support estimate for OECD countries as a percentage of their GDP 41. Proportion of ODA provided to help build trade capacity <u>Debt sustainability</u> 42. Total number of countries that have reached their HIPC decision points and completion points (cumulative) 43. Debt relief committed under HIPC initiative, US$ 44. Debt service as a percentage of exports of goods and services
Target 16: In cooperation with developing countries, develop and implement strategies for decent and productive work for youth	45. Unemployment rate of 15- to 24-year-olds, male and female and total
Target 17: In cooperation with pharmaceutical companies, provide access to affordable, essential drugs in developing countries	46. Proportion of population with access to affordable, essential drugs on a sustainable basis
Target 18: In cooperation with the private sector, make available the benefits of new technologies, especially information and communications	47. Telephone lines and cellular subscribers per 100 population 48a. Personal computers in use per 100 population 48b. Internet users per 100 population

Infant mortality situation in the Americas, 1990 - 2002: monitoring progress towards MDG's

Among the Millennium Development Goals, the infant mortality rate is an indicator of child mortality reduction between 1990 and 2015, and it is one that countries routinely evaluate. An analysis of information on this indicator shows that the rate per 1,000 live births ranges between 5.3 for Canada and 63.2 for Haiti. When progress of the indicator towards its 2015 target is reviewed at the country level, 21 of 37 of them have advanced less than 50% of the goal between 1990 and 2002 (which is about half of the observation period). Progress has varied from 38.1% in Belize to 98.2 in Guadeloupe, suggesting that some countries should make additional efforts to reach the goal.

Infant mortality rate estimated in the Americas, 2002

Infant mortality in the Americas, % of progress of the 2015 Goal in 2002 with respect to 1990 baseline
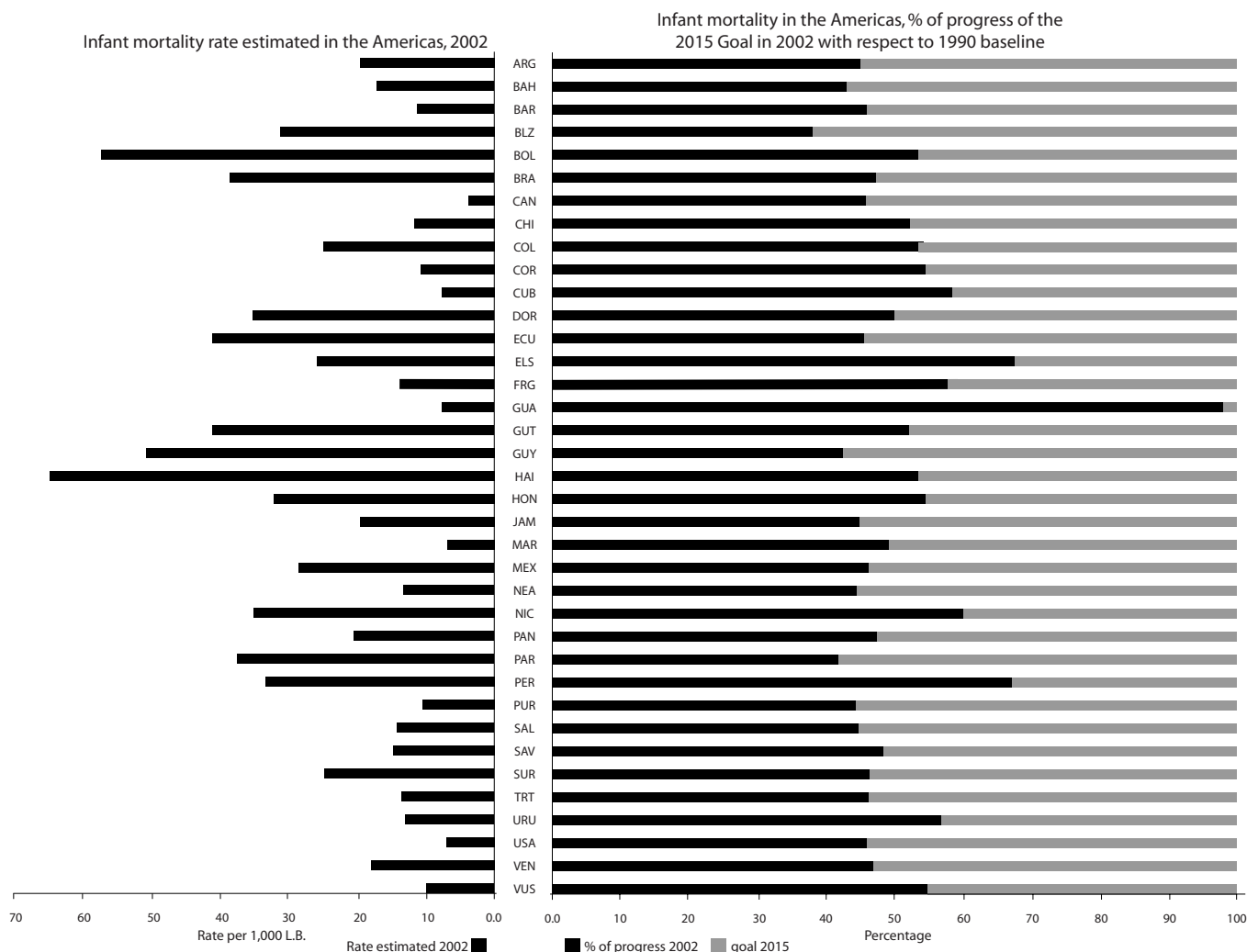
Note: Argentina (ARG), The Bahamas (BAH), Barbados (BAR), Belize (BLZ), Bolivia (BOL), Brazil (BRA), Canada (CAN), Chile (CHI), Colombia (COL), Costa Rica (COR), Cuba (CUB), Dominican Republic (DOR), Ecuador (ECU), El Salvador (ELS), French Guayana (FRG), Guadeloupe (GUA), Guatemala (GUT), Guyana (GUY), Haiti (HAI), Honduras (HON), Jamaica (JAM), Martinique (MAR), Mexico (MEX), Netherlands Antilles (NEA), Nicaragua (NIC), Panama (PAN), Paraguay (PAR), Peru (PER), Puerto Rico (PUR), Saint Lucia (SAL), Saint Vincent and the Grenadines (SAV), Suriname (SUR), Trinidad and Tobago (TRT), Uruguay (URU), United States of America (USA), Venezuela (VEN), Virgin Islands US (VUS)

Source: Core Health Data System - table generator http://www.paho.org/English/SHA/coredata/tabulator/newtabulator.htm

Country Profiles

Since the 1950's, the publication Health in the Americas, a two volume publication, has given a general overview of health and wellbeing in this Region. Volume II traditionally includes country chapters that detail the principal achievements and progress, as well as problems facing the country. Taking these country chapters as a base, a summary is created with the most salient information and placed on the PAHO Web under the title Country Health Profiles. Realizing that the Organization's strategic programming contemplates targeting technical cooperation to priority and key countries, and given the Epidemiological Bulletin's wide dissemination, it was decided last year to publish the country health profiles of the priority countries through this medium. Consequently the profiles for Bolivia, Guyana, Haiti, Honduras, and Nicaragua were published. In this issue the profiles are published for three key countries, Ecuador, Guatemala, and Paraguay. The following issue will publish the profiles for Peru and Venezuela, which will give our readers a summarized version of the characteristics and conditions of these countries.
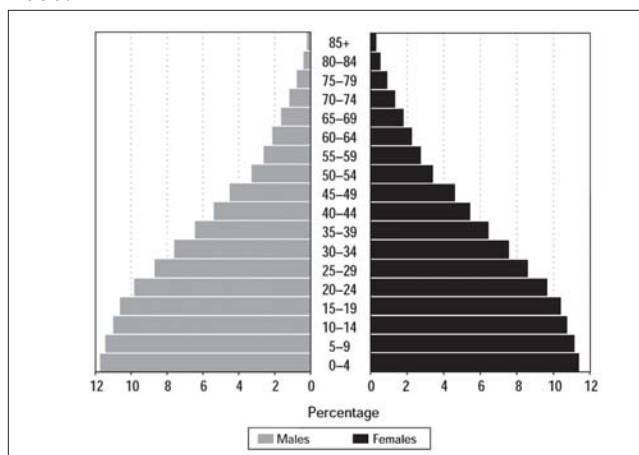
Ecuador

General situation and trends

In the year 2000 the estimated population was 12,645,495, with average density of 49.3 pop./km2. The country is formed by 22 provinces, 215 cantons, and 1,149 parishes (361 urban and 788 rural) and indigenous and Afro-Ecuadorian districts established by law. Urban areas include 63% of the population; of this, 46% is concentrated in Quito and Guayaquil. The deepening of the political, economic and social crisis between 1997 and 2000, the economic impact of El Niño 1997-1998, and the sharp fall of the price of oil in 1999 negatively affected the scope of the goals toward modernization of the State, decentralization of the public management, political democratization, and social equity.

The annual population growth rate 1995-2000 was 1.9%. In 2000, 34% of the population was under 15 years (39% in 1990) and 4.7% over 64 years of age (4.1% in 1990) (Figure 1). The total fertility rate declined from 4.0 children per woman in 1985-1990 to 3.3 in 1994-1999 (2.6 urban; 4.4 rural; 5.5 in women without formal education.) Since 1997 intense migration has been observed toward urban areas and to the exterior.

Growth of GDP fell 3.4% in 1997 to -7.3% in 1999, rising to 2.0% in 2000 (Figure 2). In 1999 hyperinflation (63%) led to serious economic recession and a drop in real income. Between 1997 and January 2000 the currency was devalued more than 800% in relation to the American dollar, in the process of "dollarizing" the monetary system. In December 2000, inflation reached 96%. Urban unemployment increased from 9% in 1998 to 17% in 1999; in December 2000 it lowered to 9%, attributed in part to the massive emigration of unemployed population. In 1999 the living conditions of 69% of the population were poor (urban 55% and rural 88%). Between 1995 and 1999 the Gini coefficient increased from 0.54 to 0.59. In 1998, the richest decile of population comprised 41% of the national income, 68 times that of the poorest decile (0.6%). In 1999, illiteracy was 8% in males and 12% in women; 30% in the indigenous population.

In 1999 the crude death rate was 5.9 per 1,000 pop. (6.8 in males; 4.9 in women). Underregistration is estimated at 25%; 13% of deaths do not have medical certification and 14%

Figure 1: Population structure, by age and sex, Ecuador, 2000.

Figure 2: Gross domestic product, annual growth (%), Ecuador, 1990-2000.
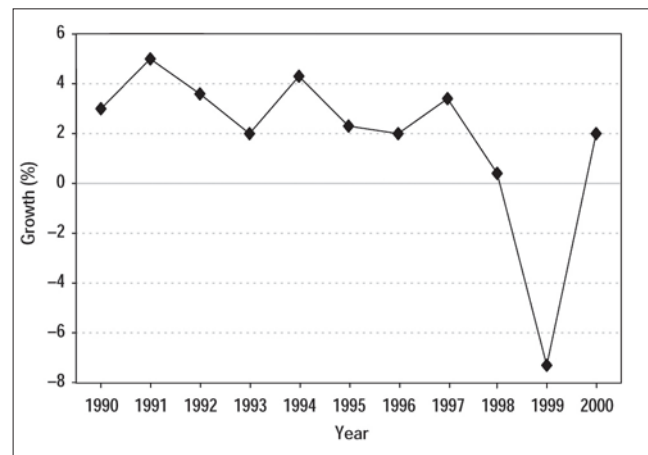
have signs/symptoms and ill-defined as an underlying cause of death. In 1999 mortality (per 100,000) from circulatory diseases was 155; cancer (85); external causes (82); communicable diseases (79); diseases originating from the perinatal period (28). The Figure 3 shows the estimated mortality by groups of causes and sex . Life expectancy at birth was estimated at 69.9 years (67.3 in males; 73.5 in women), 1995-2000.

Specific health problems
ANALYSIS BY POPULATION GROUP
Health of the children (0-4 years) and schoolchildren (5-9 years): The estimated infant mortality rate was 30 per 1,000 live births (22 urban; 40 rural); 63% in its neonatal component; 26% due to communicable diseases, 1994-1999. The prevalence of low birthweight was 16% (rural 19%). In 1999, mortality in children from 1-4 years was 354 per 100,000; comprising 47% of deaths from communicable causes, respiratory infections (21%) and acute diarrheal diseases (16%). The prevalence of chronic malnutrition in children under 5 was 26% in 1998. In the group 5-9 years, mortality was 92 per 100,000 (31% external causes and 24% communicable diseases), 1999.

Health of the adolescents (10-14 and 15-19 years): Among those 10-14 years of age, external causes were the leading cause of death, 340 per 100,000 pop. and 634 among those 15-19 years of age. Sexual activity was reported by 25% of women 15-19 years of age (average inception age: 16.6 years) and 11% described use of contraceptives, 1994-1999. The age specific fertility rate was 91 per 1,000. The prevalence of illegal drug use was 6% at the national level in 2000.

Adults (20-59 years): Of the population 20-59 years, 63% reported using some contraceptive method. In 1999, 81% of pregnant women had at least one prenatal check-up, 43% made 5 visits; the institutional coverage of deliveries was 69% (86% urban; 49% rural); maternal mortality was estimated at 91.7 per 100,000 live births.

Health of the adults (20-59) and elderly (60 years and older): External causes are a leading cause of death, 107 per 100,000 pop. Violence and motor vehicle accidents were especially important in this category. Among older adults neoplasms are the first leading cause of death, 685 per 100,000 pop. The prevalence of disability was 13%, 1994-96.

Analysis by type of health problem
Diseases preventable by vaccination: The country has been declared free from measles since 1997. Monitoring of acute flaccid paralysis remains active. Neonatal tetanus declined from 24 cases in 1998 to 6 in 2000. Since the diphtheria epidemic in 1994-95, there have been no confirmed new outbreaks. Between 1999 and 2000 outbreaks were reported of whooping cough in children less than 5 years from indigenous communities, including more than 80 cases in less than 6 months. The national immunization coverage in 2000 was 100% for BCG, 83% for OPV3 and 89% for DPT3 in children under 1 year and 89% for anti-measles in population from 12 to 23 months (Figure 4).

HIV/AIDS and sexually transmitted infections: As of 2000, Ecuador had accumulated 1,561 cases of AIDS and 1,559 cases of HIV; in 2000 there were 315 cases of AIDS reported

and 348 cases of HIV. The incidence by sex is shown in Figure 5. In 95% of cases, sexual transmission was reported as heterosexual, 62%; those 20-39 years of age accounted for 64% and women accounted for 20%.

Vector-borne diseases: Malaria went from 11,991 to 104,598 cases, including 50,000 cases of *P. falciparum* in 1999 (case-fatality 3.2 per 10,000), being associated with El Niño. The malaria risk area included 133 cantons and 6.6 million pop. In 2000 there were 22,958 cases of dengue reported, in contrast to 6 thousand annual cases between 1997 and 1999, including suggestive cases of hemorrhagic fever. The 4 serotypes of dengue virus were in circulation. Yellow fever declined from 31 cases in 1997 to 4 in 1998 and 2 in 2000, associated with yellow fever vaccination in endemic areas.

Zoonoses: Three cases of human rabies and 82 of canine rabies were reported in 2000, in contrast to 65 and 1,175, respectively, in 1996. After 12 years without plague, 13 cases were reported in 1998 and 8 in 1999 in Chimborazo. In January 1998 an outbreak of leptospirosis occurred with 160 cases in Guayas (case-fatality 10%).

Chronic communicable diseases: The number of cases of tuberculosis recorded and treated declined from 7,214 in 1997 to 5,064 in 2000. There were 194 new cases of leprosy reported in 2000, in contrast to 129 in 1997.

Nutritional and metabolic diseases: In 1999 mortality from diabetes mellitus was 27 per 100,000 (30 in women); 19% of schoolchildren of Quito were obese and 22% presented dyslipidemias. Cardiovascular diseases: Mortality (per 100,000) from cerebrovascular diseases was 36, ischemic of heart (31) and hypertensive disease (23), higher in males.

Accidents and violence: Motor vehicle accidents produced a mortality rate of 19 per 100,000 pop., homicide (20) and suicide (6.5).

Oral Health: In 1996, the prevalence of caries in children by age 12 years was 85%; the DMF index-D was 3.0 in contrast to 5.0 in 1988.

Figure 3: Estimated mortality, by broad groups of causes and sex, Ecuador, 1999.
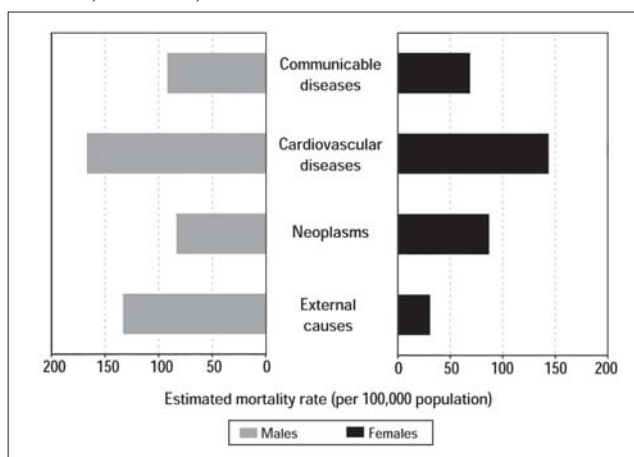
Natural disasters: Damages associated with El Niño were estimated at US$ 2,869 million (17% of the GDP of 1997). The volcanic activity of the Pichincha induced the fall of 1,131,000 tons of ash on Quito in 1999 and that of the Tungurahua the evacuation of 25,000 people between 1999 and 2000. The rupture of the pipeline in Emeralds (1998) and in Sucumbíos (2000) caused human losses and considerable material and ecological damage.

Response of the health system
NATIONAL HEALTH POLICIES AND PLANS
The national consultation of 1997 established four roles of the State in health: steering role, health promotion, guarantee of equitable access to care and decentralized delivery of services; and three levels of political action: intersectoral (health promotion and social participation); sectoral (system and health insurance, sectoral regulation, allocation and use of resources, medical practice, science and technology and legal reform); and institutional (essential public health functions and coordination of international cooperation). In the legal field, decentralization comes under the special State Decentralization and Social Participation Act, which has been in effect since October 1997 and sets guidelines for transferring social and economic competencies and resources to the provincial councils and municipalities.

HEALTH SECTOR REFORM
Since 1994 sectoral reform focused on the development of a model for provision, financing, and management of decentralized health services that combine equity with efficiency and a common plan of action among providers.

INSTITUTIONAL ORGANIZATION
The functions of the health sector include management, regulation, planning, insurance, human resources development, and services provision; the latter is undertaken through the MPH, the Ecuadorian Social Security Institute (IESS), the Armed Forces, municipalities, and private institutions, whether for social or commercially profitable purposes. Lack of coordination is more accentuated among the institutions that provide services, which are governed by different type of policies, health care models, and financing schemes, with the resulting duplication of investments.

Figure 4: Vaccination coverage among the population under 1 year of age, by vaccine, and tetanus toxoid coverage for women of childbearing age, Ecuador, 2000.
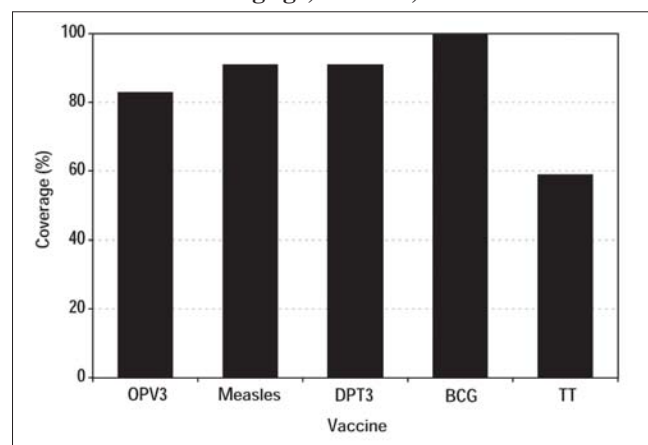
Figure 5: AIDS incidence, by sex, with male-female ratio, Ecuador, 1990-2000.
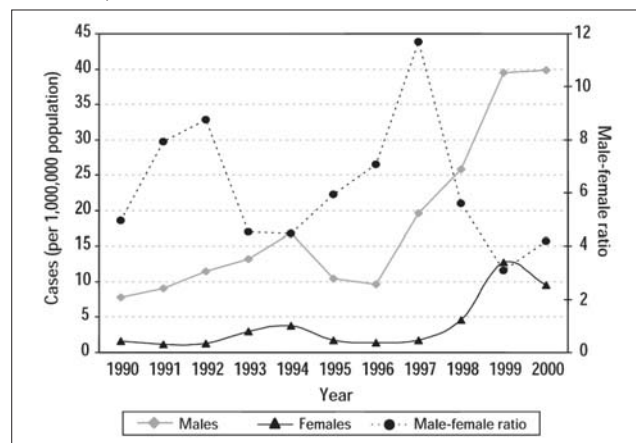
ORGANIZATION OF REGULATORY ACTIONS
The Ministry of Public Health regulates the provision of health services, especially as regards the development of infrastructure and the endowment of outpatient and hospital services. These regulatory activities are based on health laws. The Ministry of Industry and Trade regulates the price of drugs and the MPH maintains the health registry, quality control, marketing and sales. The Ministry of Foreign Trade regulates food quality control; the MPH performs the sanitary control of food production and consumption.

ORGANIZATION OF PUBLIC HEALTH CARE SERVICES
Activities of the Expanded Program on Immunization have existed and have a high priority in the plan of action 2001-2005. Since 1997 the strategy of the Integrated Management of Childhood Illness is carried out nationally and has been used to coordinate efforts and integrate actions of intergovernmental agencies providing child health care. Since 1995 the MPH has carried out a program of micronutrient deficiency control. In 1999 malaria control was strengthened with financing of the World Bank; in 2000 the DOTS strategy for tuberculosis control was implemented. In 1999 the law that creates the National AIDS Institute was promulgated. The national laboratory network of public health was expanded for surveillance of rubella, measles, hepatitis B, influenza, meningitis, bacterial pneumonia, rabies, plague, congenital syphilis, yellow fever, diseases of food transmission and quality of water for human consumption. An integrated national health information system did not exist and there was a lack of human resources trained in statistical and epidemiological analysis. The delivery of water and sanitation services is a municipal responsibility. In 1988 there were 214 systems of urban potable water supply and 3,500 rural; the population without access to services of water was 30% and without disposal of excreta services, 42%.

ORGANIZATION OF INDIVIDUAL HEALTH CARE SERVICES
In 1999 there were 2,825 establishments in existence providing outpatient care and 541 providing hospital care. The country had 19,083 hospital beds in 1999 (1.5 per 1,000 pop.) and there were 635,766 hospital discharges; the average length of stay was 5.2 days. There were 38 blood banks that collected 82,237 units of blood in 2000. The national system of civil defense operates throughout the country. The National Council on

Disability created a register in 1996 which includes the whole country and in 2000 the National Committee for the Elderly.

HEALTH SUPPLIES
In 1998 there were 6,903 registered drugs; 28% generic drugs; 80% imported. The pharmaceutical market value was US$ 344 million.

HUMAN RESOURCES
In 1999 there were 13.8 physicians per 10,000 population, 1.6 dentists, 5.0 nurses, 0.8 midwives, and 10.7 nursing auxiliaries. In 1999, 2,800 physicians migrated from the country (10% of the total membership of the Ecuadorian Medical Federation). Lower wages, labor instability, and unemployment are persistent problems among health workers.

HEALTH EXPENDITURE AND FINANCING
Between 1997 and 2000 the per capita health expenditure declined from US$ 52 to 26. The public spending in health fell from 1.1% of the GDP in 1995 to 0.5% in 1999. The poorer quintile had 7.6% of the health expenditure; the richest (38%). For the private sector, 88% of expenditure is out of pocket.

SECTORAL FINANCING
Sources of financing include: households (49%); State (24%); employers (13%); international cooperation (9%) and National Lottery and municipal income (5%). The contribution of international cooperation amounted to US$ 60.5 million in 1997. Contributions went to the MPH (26%), health of armed forces (25%); for-profit private sector (21%); IESS (11%); private pharmacies of the Welfare Board of Guayaquil (4%) and other health providers (13%). The greatest amount is provided through credits from the World Bank: Project Fasbase 1993-2000 (US$ 70 million), Project Modersa 1999-2003 (US$ 45 million), Project Health and Development 1998-2001 (US$ 20,2 million) and Project Roll Back Malaria (US$ 3 million).
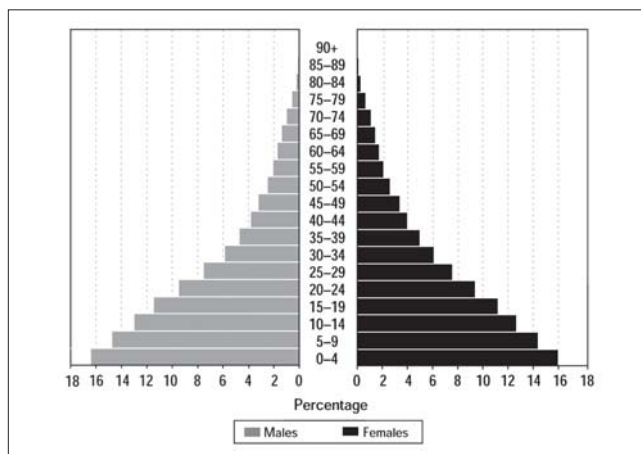
Guatemala

General situation and trends
Its land area of 108,889 km2 is divided administratively into 22 departments and 331 municipalities, which in turn have a total of 20,485 communities. In 2000, the country had an estimated population of 11,433,694; 65% lived in rural area. The average density was 102 inhabitants per km2. The indigenous population represents 48% of the total. In 2000, the annual population growth rate was 2.9%. In terms of age distribution, 44% of the total population was children and adolescents under 15 years old and 5.3% were 60 or older (Figure 1). Life expectancy was 67.2 years (64.7 years for men and 69.8 years for women).

Agricultural activity accounted for 26% of GDP and generated 60% of employment. In 1998, the Guatemalan economy grew 5%. In 1999 and 2000, GDP grew 3.6% and 3.3%, respectively, and per capita GDP at 1995 prices was 0.9% and 0.8%, respectively. The growth of GDP is shown in Figure 2. In 1998, the net tax burden (not including returned tax credit) came to 8.9% of GDP. The internal debt as a proportion of GDP was reduced from 10.6% in 1990 to 5.2% in 1998, and the foreign debt went from 18% in 1990 to 10% in 1998. In 1998, 91.3% of the indigenous population was living below the poverty line. Open unemployment rose from 3.7% in 1995 to 5.6% in 1999. In 1999, the illiteracy rate was 31.7% (39.2% for women and 26.3% for men). In 1999, the birth rate was 34 per 1,000 population.

A total of 53,486 deaths were registered in 1999, for a mortality rate of 4.8 per 1,000 population. For both sexes, the leading causes of mortality were pneumonia and diarrhea, which in 1999 represented 22.3% and 6.0% of all deaths, respectively. According to data from the National Statistical Institute, the distribution of proportional mortality for the six broad groups of causes in 1997 was as follows: communicable diseases, 13%; external causes, 13%; diseases of the circulatory system, 12%; certain conditions originating in the perinatal period, 8%; tumors, 7%; and all other causes, 47%. Physicians certified 59.8% of all deaths. The underregistration is around 56%.

Specific health problems
ANALYSIS BY POPULATION GROUP
Health of the children (0-4 years) and schoolchildren (5-9 years): In 1997 and 1999, the infant mortality rate was 37.7 per 1,000 live births, and 40.5 per 1,000 live births (Figure 3). The rates for neonatal and postneonatal mortality were 15.4 and 22.3 per 1,000 live births, respectively. The National Maternal and Child Health Survey conducted in 1998-1999 (ENSMI 98-99) estimated infant mortality at 45 per 1,000 live births. In 1999, acute respiratory infections accounted for 40% of all deaths in children under 1 year, acute diarrheal

Figure 1: Population structure, by age and sex, Guatemala, 2000.

disease claimed 12%, and perinatal causes, 11%. The mortality rate in children 1-4 years old was 14 per 1,000; 9 per 1,000 in the cities and 20 per 1,000 in rural areas. In 1999, a total of 1,027 deaths were registered in the 5-9 years age group, for a rate of 0.6 per 1,000. Cases of acute diarrheal disease rose from 16,015 in 1997 to 43,119 in 1998 and 50,799 in 1999.

Health of the Adolescents (10-14 years and 15-19 years): In 2000, Guatemala had a population of 2,752,924 adolescents, who comprised 24% of the national population. In rural areas adolescents comprised 51% of the population. The fertility rate in girls aged 15-19 was 123 per 1,000. According to data from the National Statistical Institute, in 1998 the leading cause of death in youths aged 15-19 was gunshot wounds, followed by pneumonia and influenza and intestinal infections.

Health of the adults (20-59) and elderly (60 years and older): In 1999, the population of adults between the ages of 20 and 59 numbered 4,116,147 and corresponded to 39.3% of the total. According to the findings of ENSMI 95, maternal mortality during 1990-1995 was estimated at 190 per 100,000 live births. The Ministry's Health Management Information System gives maternal mortality rates of 98 per 100,000 live births in 1997, 100.2 in 1998, and 94.9 in 1999. The use of family planning has been on the rise, from 31.4% in 1995 to 38.2% in 1998 and 1999. In 1999, the proportion of the population aged 60 and older was estimated at 5.3%.

Health of the workers: National Statistical Institute data for the period 1989-1999 indicate that women constitute 24% of the economically active. In the group of children and adolescents 7-14 years old, 34.1% were working. The Guatemalan Social Security Institute (IGSS) covers only 17% of the national population. In 1998, there were 1,131 cases of pesticide poisoning in six departments in the country, and in 1999 there were 754.

Health of the indigenous Groups: Guatemala is one of the Latin American countries with a high percentage of indigenous population (48%). In 1998, illiteracy in the departments with 75% to 100 % indigenous population was 52.2%. Of the indigenous population 67.8% suffered from chronic malnutrition.

**Analysis by type of health problem**
Natural Disasters: In 1999 and 2000, a series of tremors caused damage in 12 departments. In November 1998, Hurricane Mitch caused heavy damage in 14 of the country's 22 departments, causing 106,000 people to be evacuated and taking the lives of 268. Heavy rainfall in 2000, double the level in the winter of 1999, caused rivers to rise and cause damage along the southern coast and in the west.

Vector-borne Diseases: In 1999, a total of 101,326 cases of malaria were reported and the annual parasite index was 12.2 per 1,000 population. Of the confirmed cases, 92% were attributed to *Plasmodium vivax*, 3.2% to *P. falciparum* , and 5.3% to 12 associated cases. In 2000, there were 109,874 reported cases of malaria (95.9%, *P. vivax* ; 4%, *P. falciparum*; 0.1%, mixed). In 1999, a total of 3,617 cases of dengue were reported (incidence: 931.7 per 100,000 population, recorded two cases of hemorrhagic dengue and one death. In 2000, there were 10,083 reported cases, 9,006 of which were clinically diagnosed as classical dengue (1,035 of them confirmed) and

42 were hemorrhagic dengue, leading to 9 deaths (case-fatality rate was 21.4%).

Diseases preventable by immunization: The last case of poliomyelitis was reported in 1991. Epidemiological surveillance for the occurrence of acute flaccid paralysis continued during 1996-2000, when the system reported 49, 77, 51, 56, and 87 cases in those five years; none of them was confirmed to be polio. In 2000, the overall rate of acute flaccid paralysis was 1.7 per 100,000 in the population under 15 years. In 1996, there were no reported cases of measles; one isolated case occurred in 1997, but since then there have been no further cases. In the five years 1996-2000 there were reports of 128, 303, 171, 291, and 904 cases, respectively, of unconfirmed measles. The numbers of reported cases of neonatal tetanus in the four years 1996-1999 were 17, 7, 5, and 2, respectively. In 2000, there were 6 cases and 3 deaths. Cases of pertussis increased during the period 1996-1999: 40 in 1996, 131 in 1997, 441 in 1998, and 268 in 1999. The 194 reported cases in 2000 represented 28 % fewer than the year before. The last case of diphtheria was recorded in 1997. In 2000, there were five reported cases of tuberculous meningitis, with four deaths. All areas had over 90% BCG coverage (Figure 4).

Figure 2: Gross domestic product, annual growth (%), Guatemala, 1990-2000.
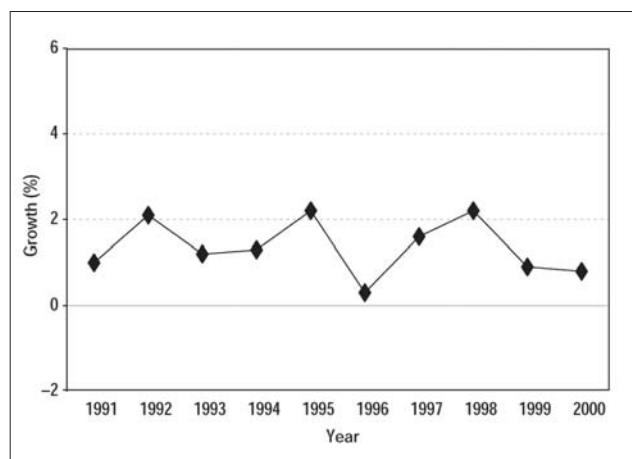
Figure 3: Infant mortality trend, Guatemala, 1986-2000.
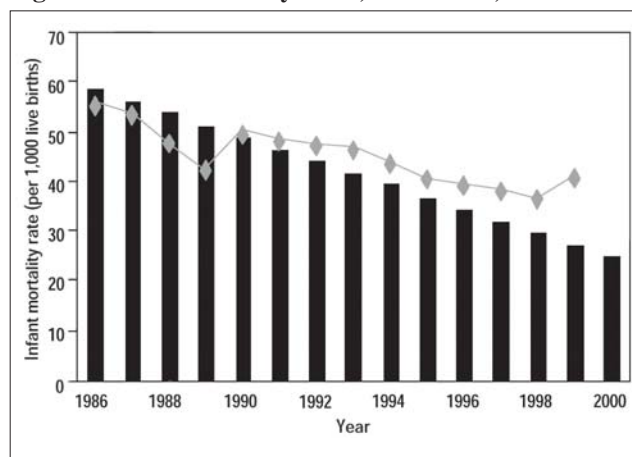
Intestinal infectious diseases: In 1999, there were a total of 385,633 cases of acute diarrheal disease (incidence: 3,470 per 100,000 population) and 3,244 deaths from this cause (29.2 per 100,000). In 2000, morbidity was up 21.6% from that in 1999, with 468,981 reported cases (4,220 per 100,000). In 1999, children under 5 years old were most affected, with 238,434 cases, or 61.8% of the total. Cholera cases doubled from 1,008 in 1997 to 2,077 in 1999. In 2000 the number dropped to 790. The case-fatality rate has been declining: in 1999 there were 18 reported deaths, and in 2000 there were 6, with corresponding fatality rates of 0.9 and 0.8.

Chronic communicable diseases: In 1999, a total of 2,820 cases of tuberculosis were reported, 2,597 (87.1%) of them pulmonary; of the latter number 2,264 were diagnosed by positive sputum smear. Adults 25-34 years old were the group most affected, representing 21% of all cases in 1999. In 2000, there were 2,274 registered cases of tuberculosis, 46.6% in women, and 324 of them in children under 10 years of age. In 2001, only 27 cases of leprosy were registered at the national level, and the patients were undergoing treatment.

Acute respiratory infections (ARIs): ARI's are the leading cause of morbidity and mortality in the country. In 1999, a total of 1,019,247 cases of ARI and 228,762 cases of pneumonia were reported, with 11,082 deaths. Pneumonia was the leading cause of mortality in infants under 1 year (10.6 per 1,000 population), while 63% of the cases and 50% of the deaths were in children under 5 years old.

Zoonoses: Two cases of human rabies were reported in 1999 and six in 2000. A total of 13,207 persons were bitten by suspected rabid animals in 1999, and in 2000 the number was 15,053.

HIV/AIDS: The epidemic has been concentrated in urban populations and groups traditionally regarded as being at high risk. As of 30 June 2001, a total of 4,197 cases had been reported officially (35.9 per 100,000 population), and underregistration is believed to be as high as 50%. Seventy-four percent of the affected individuals are males; the 15-49 years age group is most vulnerable, accounting for 87% of the cases. In 2000, the male-female ratio was 2.1:1 (Figure 5). As of 1999, there were 141 known cases of mother-to-child transmission. A total of 266 cases of AIDS were reported in 1999 and 316 in 2000.

Nutritional diseases: Forty-six percent of children under 5 years old have some degree of chronic protein-energy malnutrition. The prevalence of global malnutrition (as measured by weight-for-age) is 24% in children under 5 years of age. The vitamin A deficiency (serum retinol = 20 µ/dL) affected 15% of preschool children. Iron deficiency (Hb =12 g/dL) affected 35.4% of women of reproductive age, 39.1% of pregnant women, and 34.9% of non-pregnant women. The prevalence of anemia (Hb = 11 g/dL) in children 1-5 years old was 26%.

Malignant neoplasms: Cancers of the reproductive system account for 42% of all neoplasms in both sexes. In 1999 there were 452 cases of cervical cancer and 240 deaths. Breast cancer is the third leading cancer and the second most frequent site for women.

Accidents and violence: In 1999, a total of 2,741 deaths were caused by accidents (5.1% of all deaths), with a rate of 16 per 100,000 population. There were 384 suicides (0.7% of all deaths) and 1,774 homicides (3.3%).

Response of the health system

NATIONAL HEALTH POLICIES AND PLANS

The Constitution of the Republic recognizes health as a fundamental right. The Peace Agreement constitutes another public policy instrument that supports health sector reform and extended coverage. The Health Code approved in November 1997 stipulates that the Ministry of Public Health and Social Welfare (MSPAS) is formally responsible for leadership of the health sector. As defined in the Code, leadership includes the guidance, regulation, surveillance, coordination, and evaluation of health actions and institutions at the national level. This definition constitutes the legal basis for a sectoral reform that has the capacity to transcend the public institutions. The Code also obligates the Ministry to provide free health care to persons without means. The instrument Health Policies 2000-2004 calls for development of the following: (a) integrated health care for families; (b) health care for the Mayan, Garifuna, and Xinka peoples, with emphasis on women; (c) health care for the migrant population and strengthening of integrated health care for other groups; (d) broader basic health service coverage with quality and sustainability; (e) basic and environmental sanitation; (f) access to essential drugs and traditional medicine; (g) strategic distribution of human resources; (h) institutional development, deconcentration, and decentralization; (i) intra- and intersectoral coordination; (j) improvement and optimization of external cooperation; and (k) expansion of health sector financing.

HEALTH SECTOR REFORM STRATEGIES AND PROGRAMS

The objective of health sector reform is comprehensive transformation of the social health production model, including improvement of the efficiency and equity of service delivery. In addition, it has the following specific objectives: (a) extension of basic health service coverage with emphasis on the poorest segments of the population; (b) increased public expenditure on health and mobilization of financial resources to ensure sustainability of the sector; (c) redirection of resource allocation; (d) increased efficiency of the public sector in the performance of its functions and the production of services; and (e) generation of an organized social response, with a broad base of social and community participation. Emphasis is placed on the organization of publicly financed services to extend coverage to the rural population that currently has no access to health care. In 1996, the population without health service coverage was estimated at 46%; between 1997 and 2000, coverage was increased to include an additional 35% of the total population. The strategy used was based on a partnership between the Government, represented by the Ministry, and nongovernmental organizations.

ORGANIZATION OF PUBLIC HEALTH SERVICES

The health system is composed of three large sectors: private for-profit, private nonprofit, and public, which in the past have functioned independently. Heading up the public sector is the MSPAS, which, as pointed out earlier, is responsible for leadership of the sector and is also one of the main direct

providers of services to the open population. Other public providers take care of specific groups that serve the State, including the health services of the armed forces and the national police. IGSS has its own service network, which covers workers affiliated with its regime. The private nonprofit sector consists of some 1,100 nongovernmental organizations, 82% of them national; of those, 18% carry out preventive health activities (80%) and provide clinical services (20%). The private for-profit sector provides services through insurance programs, prepaid medical services, medical centers or hospitals.

ORGANIZATION OF REGULATORY ACTIONS

The regulatory role of the Ministry in the private sector is especially important in ensuring the quality control, efficacy, and safety of drugs and related products. The Department for the Regulation and Control of Drugs and Related Products was created within the Ministry to enable it to exercise control in this area, and the Department is supported, in turn, by the National Health Laboratory, where physical, chemical, and microbiological analyses are performed. The water supply

Figure 4: Vaccination coverage among the population under 1 year of age, by vaccine, and tetanus toxoid coverage for women of childbearing age, Guatemala, 2000.
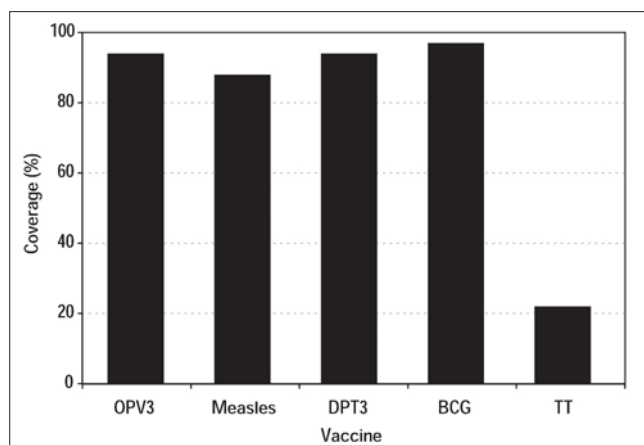
Figure 5: AIDS incidence, by sex, with male-female ratio, Guatemala, 1994-2000.
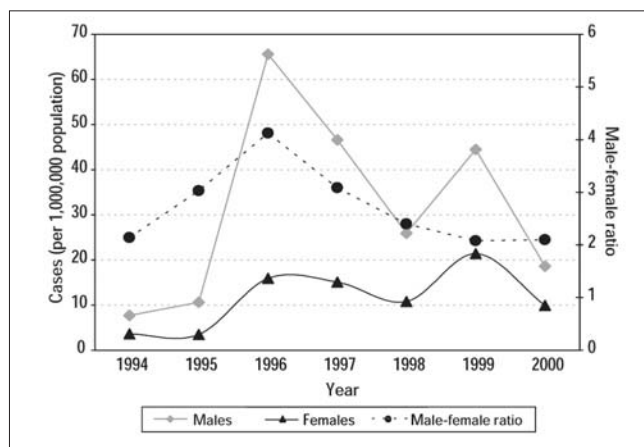
coverage reached 92% of the population in urban areas and 54% in rural areas, while sanitation coverage was 72% and 52%, respectively. In urban areas, 47% of the population disposes of solid waste through collection services.

ORGANIZATION OF INDIVIDUAL HEALTH CARE SERVICES

In 1999, the Ministry of Public Health and Social Welfare had 1,352 health establishments, 43 of which were hospitals (17 at the department level, 10 at the district level, 7 regional, 6 specialized and 3 general hospitals that receive referrals). There were 29 type A health centers, 234 type B health centers, 973 health posts, 48 peripheral emergency centers, and 15 maternity centers at the canton level. The bed-population ratio was 1.0 per 1,000 in the country. IGSS has 24 hospitals, 30 consultation offices, 18 primary care posts, and 5 services attached to national hospitals; 6 of the hospitals and 11 of the consultation offices are located in the department of Guatemala. There are 2,447 available beds, for a ratio of 1.4 per 1,000 beneficiaries. There is a 360-bed Public Psychiatric Hospital in Guatemala City, and six other national hospitals have mental health units. IGSS has a 30-bed psychiatric unit and is working on creating a mental health program.

HEALTH SUPPLIES

Drugs are sold through a network of public and private pharmacies. There are 85 national and 2 foreign laboratories that manufacture drugs. In 1999, the Ministry spent US$ 17,073,649 on drugs, IGSS spent US$ 24,000,000, and the private sector spent US$ 129,803,326. In 1997, a system was established for the joint negotiation of drug purchase prices with participation by the Ministry, IGSS, and the Military Medical Center.

HUMAN RESOURCES

The ratio of physicians to total population is 9 per 10,000. For every 3 physicians there is only 1 professional nurse; for each professional nurse there are 14 nursing auxiliaries. Health human resources tend to be concentrated in urban areas: the ratio of urban to rural physicians is 4:1, and for professional nurses it is 3:2. Guatemala has 80 specialists in public health with a master's degree.

HEALTH SECTOR EXPENDITURE AND FINANCING

In 1999, health expenditure represented 2.8% of GDP. Households were the most important source of health financing (42.9%), followed by the Government (27.3%), businesses (22%), and external cooperation (7.8%). The annual amount spent on health came to US$ 630 million.

EXTERNAL TECHNICAL COOPERATION AND FINANCING

In the last five years, Guatemala's technical and financial cooperation amounted to US$ 2,386.6 million. Of this total, 37.3% corresponded to nonreimbursable cooperation and 62.7% of it was reimbursable. 75.2% was intended to support the peace process, 21.7% was for other programs, and 3.1% was allocated for the Hurricane Mitch Reconstruction and Transformation Program. The total amount disbursed during the five years came to more than US$ 1,600 million, of which 55.3% corresponded to reimbursable and 44.7% to nonreimbursable cooperation.

# Paraguay

General situation and trends

After a long period with authoritarian regimes, an incipient democratic system is finally in place in Paraguay, but there are still difficulties that undermine effective exercise of the constitutional state, including the capacity to address social and economic issues and to embark on an institutional reform process aimed at streamlining public administration.

The country's population in 2000 was estimated at 5,496,450, with an annual growth rate of 2.6%; 41% were estimated to be less than 15 years old, and 7.3% were 60 years or older (Figure 1). The population density in 2000 was 13.5 inhabitants per km². Urban development has not occurred in a balanced way, with a large urban population concentrated in a small land area (65% of the urban population occupying only 5% of the national territory). The estimated crude birth rate was 34.1 per 1,000 population in 1990-1995 and 31.3 in 1995-2000. Life expectancy at birth increased from 66.3 years for men and 70.8 years for women in 1990-1995 to 67.5 years and 72.0 years, respectively, in 1995-2000. According to the Bureau of the Census, Statistics, and Surveys (DGEEC), the estimated total fertility rate was 4.6 children per woman in 1990-1995 and 4.2 in 1995-2000.

In the past decade, the Paraguayan economy has been unable to find an alternative to primary production, which is currently facing a crisis, especially in the area of cotton growing, or to develop a model that will enable the national economy to compete in the MERCOSUR regional integration initiative. In the 1970s and 1980s, the country's GDP grew at an average annual rate of 8.1%, but in the 1990s, the rate dropped to 2.3% (Figure 2). The per capita GDP was US$ 1,634 (in constant 1982 U.S. dollars) in 1996 and US$ 1,535 in 1999. In that year, it was estimated that 33.7% of the population was living below the poverty line, representing 1.9 million people (46% of whom lived in extreme poverty). Open unemployment in the population aged 10 and older is 6.8%.

The estimated crude death rate was 6.0 per 1,000 population during 1990-1995 and 5.4 in 1995-2000. The DGEEC estimates the number of deaths based on data from the census;

Figure 1: Population structure, by age and sex, Paraguay, 2000.
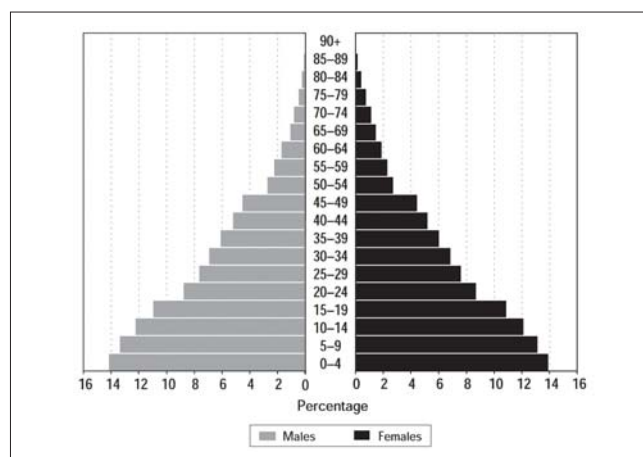
estimates of underregistration for the period 1996-1999 range from 37% to 41%. Between 46% and 48% of registered deaths were not medically certified, and 16.7% of them were due to signs, symptoms, and ill-defined causes, with a range from 10% in 1996 to 20% in 1999. The Figure 3 is shown proportional mortality by broad groups of causes and sex.

Specific health problems

ANALYSIS BY POPULATION GROUP

Health of the children (0-4 years): In 1999, there were 90,007 registered live births and 1,749 deaths among children under 1 year of age, for a registered infant mortality rate of 19.4 per 1,000 live births, down slightly from 19.7 in 1995. In 1999, registered neonatal mortality was 10.7 per 1,000 live births, up from 9.8 in 1995. The rate in 1999 represented 55% of all registered deaths in children under 1 year of age, compared with 50% in 1995. In 1999, the population of children aged 1-4 years was estimated at 607,389, or 11.3% of the total. That year there were 458 deaths, for a mortality rate of 75 per 100,000 children between 1 and 4 years old. The leading causes were communicable diseases, with a rate of 39.5 per 100,000. The mortality rate for children under 5 years was 24.5 per 1,000 live births in 1999.

Health of the schoolchildren (5-9 years): As of 1999, the group of children aged 5-9 years was estimated to number 716,471, or 13.4% of the total population. This age group had a mortality rate of 26 per 100,000. External causes headed the list and were responsible for 37.8% of the deaths in this age group.

Health of the adolescents (10-14 and 15-19 years): In 1999, the population 10-14 years old was estimated at 655,917, and that of adolescents aged 15-19, at 576,090. The group aged 10-19 years represented 23% of the total population. One-third of the population between 13 and 18 years (44% in rural areas) received no formal education in 1999. In 1999, the mortality rate was 32 per 100,000. External causes headed the list for both sexes (15 per 100,000).

Health of the adults (20-59): In 1999, adults represented 44% of the population and accounted for 26.5% of all registered deaths. The risk of dying was 1.8 times greater for men. Among 20-39-year-olds, external causes were the most common cause of death, representing 47.8% of all deaths in that age group; mortality rates were 52 per 100,000 for both sexes (90 per 100,000 men). In the 40-59 age group, diseases of the circulatory system were the most frequent causes of death, with an overall rate of 107.2 per 100,000 (122.7 per 100,000 men). Maternal mortality registered a rate of 114.4 per 100,000 live births in 1999, a reduction of 23.8% with regards to 1990.

Health of the elderly (60 years and older): In 1999, the population aged 60 and older was estimated at 283,663 and represented 5.3% of the total. This group had 56.7% of all registered deaths and 51.4 % of those medically certified. The specific mortality rate for this age group was 3,630 per 100,000.The leading cause of death was diseases of the circulatory system, with an overall rate of 1,226.2 per 100,000.

Health of the workers: Because Paraguay is an agricultural country, one of the main health risks for workers is exposure to pesticides. Before the National Toxicology Center (CNT) was created in July 2000, there was no registry of poisoning cases. In the last six months of 2000, the CNT registered 500 cases, most of them in agricultural workers exposed to pesticides. In 2000, there were 2,500 work-related accidents.

ANALYSIS BY TYPE OF HEALTH PROBLEM

Vector-borne diseases: The period 1993-1997 had an annual average of 624 reported cases of malaria, but in 1998 the number rose to 2,091, and the Annual Parasite Index (API) was 0.5 per 1,000 population. Then, in 1999-2000, an important epidemic occurred, with 9,946 reported cases in 1999 (API 2.2 per 1,000); in 2000, there were 6,853 cases (API 1.4 per 1,000). Most of these cases-82% in 1999 and 80% in 2000-occurred in the three departments at highest risk: Alto Paraná, Caaguazú, and Canindeyú. After a decade of epidemiological silence, dengue transmission was detected in February 1999, and an epidemic ensued affecting a large part of the country. During 1995-1998, the annual incidence of cutaneous leishmaniasis ranged from 105 to 175 reported cases. In 1999 the program was re-structured; that year the number of cases to 409, and in 2000 there were 562 cases. Visceral leishmaniasis has been rare in Paraguay. The last two documented cases occurred in 1995 and 2000.

Diseases preventable by immunization: Pursuant to its commitment to eradicate measles, the country has significantly reduced the incidence of this disease. A total of 69 cases were reported in 1995, 14 in 1996, 200 in 1997, and 70 in 1998, when a successful campaign was undertaken to vaccinate the population under 15 years of age. The circulation of measles has been interrupted since November 1998. The last case of polio was reported in 1985; in 2000, the rate of flaccid paralysis was 0.9 per 100,000 population less than 15 years of age. The last case of diphtheria was recorded in 1995. In 2000, there were 24 reported cases of pertussis. There were 7 reported cases of neonatal tetanus in 2000. It is estimated that 70% of children under 5 years old have been vaccinated against measles, 82% against polio, and 83% against tuberculosis (BCG) (Figure 4).

Intestinal infectious diseases: Since 1997, there have been no reported cases of cholera. Diarrhea was the third leading cause for outpatient consultations in the health services of the Ministry of Public Health and Social Welfare (MSP y BS), ranging from 8% to 12% in the different age groups. The mortality rate for acute diarrheal disease (ADD) in the general population was 8.3 per 100,000 in 1996 and 6.4 per 100,000 in 1999.

Chronic communicable diseases: The high annual incidence rates of tuberculosis (ranging from 35 to 42 per 100,000 population during 1995-1999) show that this disease continues to be a major public health problem. The mortality rate from tuberculosis was 4 per 100,000 population during that period. In 2000, the national prevalence rate for leprosy was 1.1 per 10,000 population.

Acute respiratory infections (ARI): ARI continue to be the leading reason for outpatient consultations. They account for 36% of all consultations in the general population and 50% of consultations for children under 5 years old. During 1996-1999, ARI were responsible for 6% of all deaths in the general population, with mortality rates of 22.3 per 100,000 population in 1996 and 19.1 per 100,000 in 1999.

Zoonoses: During 1995-2000, 34.3% of the human cases were reported in the central region, with a rate of 1.0 per 100,000 population. In 1999, national authorities began to update control activities; as a result there has been a significant drop in the number of canine rabies cases (from an average of 34 cases a month in 1998 to 4.3 in 2000), and there were no cases of human rabies between May 1999 and October 2000, when the last case was reported.

HIV/AIDS: The cumulative number of AIDS cases diagnosed between 1986 and January 2001 was 584, and the number of deaths from AIDS during the same period was 293 (for a case-fatality ratio of 51%). The prevalence is low in the general population; cases continue to be found predominantly among urban men; and incidence among drug users is still quite low. The incidence rate by sex is shown in Figure 5.

Diseases of the circulatory system and malignant neoplasms: Diseases of the circulatory system were the leading cause of

Figure 2: Gross domestic product, annual growth (%), Paraguay, 1991-2000.
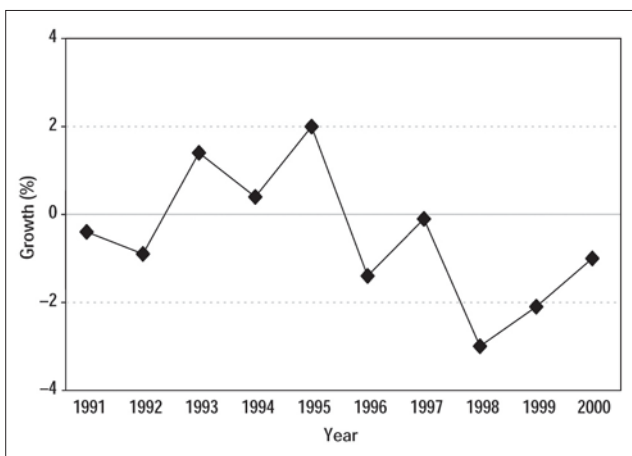
Figure 3: Mortality (%), by broad groups of causes and sex, Paraguay, 1999.
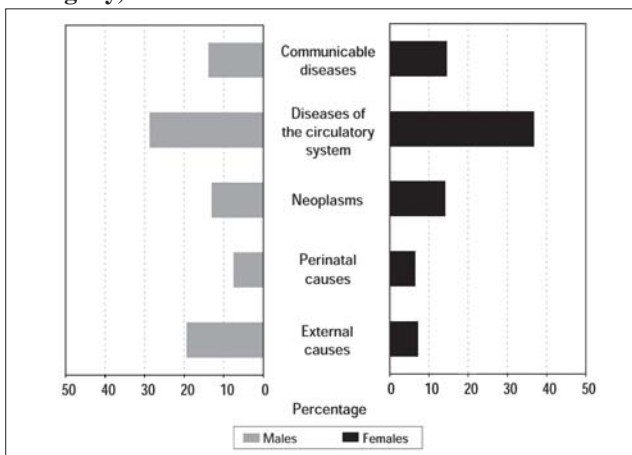
death in the country during the 1996-1999 period, representing an annual average of 33% of all deaths in both sexes. The mortality rates for malignant neoplasms in the general population remained stable over the 1996-1999 period, fluctuating between 42 and 45 per 100,000 population. This group of diseases ranked third as a cause of death during the period (14% and 16% of the total).

Emerging and re-emerging diseases: The first serologically diagnosed cases of hantavirus pulmonary syndrome appeared in 1995. Between 1995 and 2000, a total of 60 laboratory-confirmed cases were diagnosed, with an average case fatality ratio of 23.8%.

Response of the health system

NATIONAL HEALTH POLICIES AND PLANS
The National Constitution of 1992 declares that health is a fundamental right and entrusts the State with its protection and promotion in the interest of the community. In addition, it charges the National Health System with the execution of integrated public health actions and the formulation of policies that will permit the concentration, coordination, and complementation of programs and resources in the public and private sectors. The National Health System was created in 1996 when Congress enacted Law 1,032.

HEALTH SECTOR REFORM STRATEGIES AND PROGRAMS
The health sector reform process began with the enactment of Law 1,032, based on the principles of equity, quality, efficiency, and social participation. The Government has created the Secretariat of State Reform, in which the health sector participates in the definition of policies on some of the issues of sectoral reform.

INSTITUTIONAL ORGANIZATION
According to Law 1,032, coordination of the sector is the responsibility of the National Health Council, which represents its key institutions and is chaired by the Minister of Health. The Council is legally responsible for coordinating and monitoring the plans, programs, and activities of public and private health institutions. However, it does not currently exercise this coordination function, which has been assumed by the MSPyBS. Two sectors are responsible for health care delivery. The public sector comprises the MSPyBS, the Social Security Institute (IPS), the Armed Forces Health Service, the Police Health Service, the National University of Asunción, the department-level and municipal governments, and several autonomous agencies and decentralized state enterprises. The private sector, in turn, is made up of private universities, nonprofit groups (NGOs), and for-profit entities, including hospitals and private clinics. Insufficient coverage is a serious problem in Paraguay: only 58% of the population is covered by the public sector and 15% by private services. Hence, about 27% of the population has no access to a health system.

ORGANIZATION OF PUBLIC HEALTH CARE SERVICES
Disease prevention and surveillance systems: Disease prevention and control is the responsibility of the MSPyBS, and in particular, the General Office of Health Surveillance and the General Office of Health Programs. Responsibility for health information and trend analysis is shared by the Office of Planning and Evaluation and the Office of Health Surveillance.

POTABLE WATER, EXCRETA DISPOSAL, AND SEWERAGE SERVICES
As of 2000, an estimated 44% of the Paraguayan population had access to potable water. With regard to basic sanitation, 45% of the population has sanitary excreta disposal systems, and 92% (99% of the rural population) has an adequate arrangement in situ.

FOOD SAFETY
The National Food and Nutrition Institute is currently guided by the Strategic Food and Nutrition Plan 1997-2000, through the Departments of Prevention and Control of Malnutrition, Prevention and Control of Micronutrient Deficiencies and the Food and Nutrition Surveillance System. Since 1999, the Institute has coordinated the development of food guidelines for Paraguay with the participation of several other institutions.

ORGANIZATION OF INDIVIDUAL HEALTH CARE SERVICES
Public subsector: The MSPyBS provides services in the 18 health regions at three levels of care. Its actions include prevention and health promotion, curative care, and rehabilitation. It also provides emergency care and ambulance service, and it makes drugs available at its establishments or in local dispensaries at subsidized prices. The IPS provides benefits for salaried workers in the event of disease, disability, old age, survival, and death. Its activities are financed by contributions based on the taxable income. The employer contributes 14%; the worker, 9%; and the State, 1.5%. The Armed Forces Health Service treats active and retired military personnel and their families as well as the civilian population in those regions where no public or private health care is available. The Police Health Service takes care of present and former police personnel and their families as well as prisoners. The National University of Asunción provides health care services, which are partially free, at the Clinical and the Neuropsychiatric Hospitals, both of which are in Asunción. In the departmental governments, the Secretary of Health is by law the highest authority on the Regional Health Council and works in coordination with the municipalities of the department, on the one hand, and the central government, on the other. They offer prevention programs and medical care for the entire population of the dams' areas of influence. There are 30 NGOs in the country providing direct health care to the most needed populations.

Figure 4: Vaccination coverage among the population under 1 year of age, by vaccine, Paraguay, 2000.
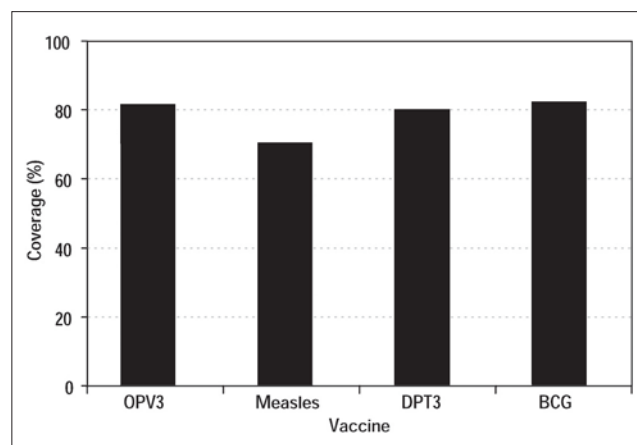
Private subsector: This for profit subsector includes not only medical offices, but also 33 companies that provide prepaid medical services through hospitals and private clinics, most of them in the Asunción area and the Central Department. The Paraguayan Red Cross has a 125-bed maternity hospital that is financed with contributions from a private nonprofit foundation.

HUMAN RESOURCES
In 2000, the MSPyBS had 3,427 physicians, 439 dentists, 350 biochemists, 1,567 licensed nurses and midwives, 1,035 technicians, 241 other professionals, 4,542 nursing auxiliaries, 3,852 administrative employees, and 3,474 support staff. There are 6.4 physicians per 10,000 population, 0.8 dentists, 0.7 biochemists, 2.9 licensed nurses or midwives, 1.9 technicians, and 8.5 nursing auxiliaries.

HEALTH SECTOR EXPENDITURE AND FINANCING
The public sector's sources of financing are mixed: funds come from the national budget, worker and employer contributions, premiums, direct payments for services, fees, and external cooperation. There is little control over the processes or the results. The public establishments charge fees that are unrelated to real costs, and their revenues are remitted to the Ministry of the Treasury. Per capita spending on health in 1999 was US$ 105.30.

EXTERNAL TECHNICAL COOPERATION AND FINANCING
The Government has entered into bilateral and multilateral international agreements for technical and financial cooperation with a view to expanding the coverage of health services and improving the quality of care provided to the population.

Figure 5: AIDS incidence, by sex, with male-female ratio, Paraguay, 1994-1999.
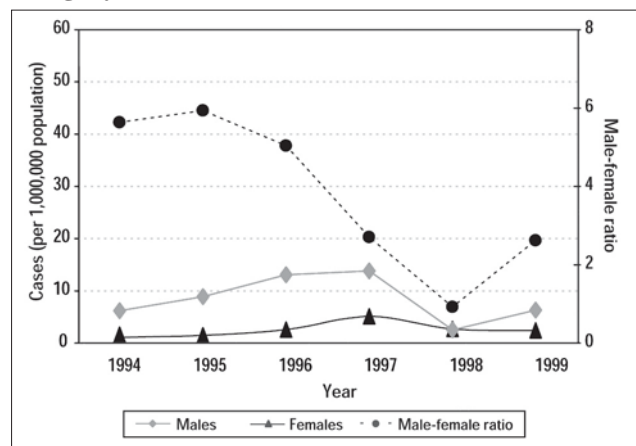
Case Definitions
Schistosomiasis

Rationale for surveillance
Schistosomiasis is the second most prevalent tropical disease (following malaria) and a leading cause of severe morbidity in large parts of Africa, Asia and South America. 600 million are at risk; 200 million are infected, of whom 20 million are severely ill.

The main goal for WHO is to control the disease, to reduce and even (in some countries) eliminate the risk of schistosomiasis through strong surveillance and control programs.

There are 2 types of clinical disease: urinary schistosomiasis (*S. haematobium*) and intestinal schistosomiasis (*S. mansoni*, *S. japonicum*, *S. intercalatum*, *S. mekongi*).

Recommended case definition: Intestinal schistosomiasis

Endemic areas
Suspected: A person with hepatosplenomegaly.
Probable: Not applicable.
Confirmed: A person with eggs of *S. mansoni* or *S. japonicum* in stools (microscope).

Non-endemic areas and low-prevalence zones
Suspected: Not applicable.

Probable: Not applicable.
Confirmed: A person with eggs of *S. mansoni* or *S. japonicum* in stools (microscope).

Recommended case definition: Urinary schistosomiasis (this type is not present in the Americas)

Endemic areas
Suspected: Not applicable.
Probable: Not applicable.
Confirmed: A person with visible haematuria or with positive reagent strip for haematuria or with eggs of *S. haematobium* in urine (microscope).

Non-endemic areas and low-prevalence zones
Suspected: A person with visible haematuria or with positive reagent strip for haematuria.
Probable: Not applicable.
Confirmed: A person with eggs of *S. haematobium* in urine (microscope).

Recommended types of surveillance
Surveillance of schistosomiasis must be incorporated into the primary health care system.

For low-prevalence zones, and where elimination is targeted

Routine monthly reporting of aggregated suspected or confirmed cases from peripheral level to intermediate and central level.

International. Yearly reporting from central level to WHO.

For endemic zones

If no integration of surveillance is possible in the primary health care system: ad hoc surveys to evaluate the prevalence of infection in the community. Children of school age have been identified as a good indicator of prevalence in the general population and therefore an appropriate group for investigation.

Yearly reporting of aggregated data from peripheral level to intermediate and central levels.

Note

• Data from general health statistics often underestimate prevalence but may nevertheless indicate a relatively high prevalence in a particular area.
• Surveillance has to take into account the distribution of the disease in geographical foci. Adjacent areas may have very different prevalence rates.

Recommended minimum data elements

For low-prevalence zones, and where elimination is targeted

INDIVIDUAL PATIENT RECORD FOR INVESTIGATION:
Identification number, age, place of infection, date of diagnosis, village.
Number of eggs per gram of stools or ml of urine.

AGGREGATED DATA:
Number of cases by age group and village and month.
Number of cases with >1 egg/10 ml of urine and / or visual haematuria (*S. haematobium*).
Number of cases with >1 egg/g of stools (*S. mansoni* or *S. japonicum*).

For endemic zones

AGGREGATED DATA:
Number of cases by age group and village.
Number of cases with >1 egg/10 ml of urine and/or visual haematuria (*S. haematobium*).
Number of cases with >1 egg/g of stools (*S. mansoni* or *S. japonicum*).

Recommended data analyses, presentation, and reports

• Incidence (if passive reporting or passive surveillance) monthly and yearly by age group and village

• Point prevalence (if active finding)
• Mapping

For school-age children [1]
• Prevalence of infections (percentage of infected individuals) in a population
• Proportion of heavily infected individuals

Principal uses of data for decision-making

• Assess the magnitude of the problem
• Plan drug distribution: select cost effective strategy for chemotherapy (universal-targeted-selective)
• Evaluate the need for snail control
• Evaluate the need for improved water supply and sanitation
• Evaluate the need for health education activities
• Evaluate the impact of intervention

Special aspects

• Diagnosis: quantitative diagnostic methods (Kato-Katz technique for intestinal forms, urine filtration for *S. haematobium*) are very important in surveillance; they indicate the public health relevance of the infection.
• Collection of data immediately relevant to management decision (e.g., treatment frequency and resource allocation) should be encouraged.
• Intersectoral efforts, emphasising school education, safe water supply and sanitation, environmental management and community participation are important.
• Rectal biopsy is usually not used for surveillance purpose.

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[1] For additional guidelines for the analysis, see "Helminth control in school-age children – A guide for managers of control programs" WHO, Geneva 2002.