



AMERICA
ARCTICUS
TERRA ESONIS
SEPTENTRIONALIS
Moosemleck Regio
NOVA FRANCIA
TERRA FRIGIDA
AUSTRALIS
REGIONES
AUSTRALES
Venti variables
COLUMBUS SOLSTITICUS
MARE CHINENSE
MARE MAJELLANICUM
ZELLANDIA
Cap Maria van Diemen
Abel Tasman's Rihde
Bartho S. Philijge

Preventing and Controlling Diseases



At the core of the establishment of the Pan American Sanitary Bureau in 1902 is the determination to stamp out infectious disease epidemics in the Western Hemisphere. Over the decades, preventing, controlling and—in some cases—eradicating diseases has been a major thrust of the Organization's program of technical cooperation with the countries of the Region. The targets have ranged from yellow fever, malaria, Chagas' disease, tuberculosis, and leprosy to diseases preventable by vaccination, HIV/AIDS, and noncommunicable diseases.

Food protection is among the earliest interests of the Pan American Sanitary Bureau. Governing body recommendations aimed at promoting a safe milk supply, for instance, date as far back as 1927, 1934, and 1938.

Veterinary public health becomes an increasingly important component of the work of the Organization. In 1947, the Pan American Sanitary Conference adopts a resolution proposing an inter-American commission for the study of brucellosis and calls attention to the need to control rabies transmitted by stray dogs. In 1949 veterinary public health becomes an official part of PAHO's institutional structure, with the hiring of the first consultant in veterinary medicine. In 1983 the countries set the goal of eliminating rabies from 414 cities in 20 countries of Latin America; by 1989, 364 of those cities are rabies-free. The need for international cooperation to limit the spread of foot-and-mouth disease spurs the Organization of American States, in 1950, to request that PAHO develop a program to fight the disease; the following year the Pan American Foot-and-Mouth Disease Center opens near Rio de Janeiro.

In 1975, the Caribbean Epidemiology Center is established in Port of Spain, Trinidad. Two years later, PAHO launches the Expanded Program on Immunization in the Americas; at the time, only 25-30% of the children in the hemisphere are covered by vaccines against measles, diphtheria, pertussis, tetanus, tuberculosis, and poliomyelitis.

Today, the successes in eliminating smallpox and poliomyelitis are well known. Soon measles, rubella, neonatal tetanus, human rabies, onchocerciasis, and leprosy will be among the vanquished threats to regional public health—the results of PAHO's effective partnership with the countries of the Americas.





Leading the Region and the World in Life-saving Immunization Programs

Working together, the countries of the Americas and the Pan American Health Organization have achieved a decades-long track record of success in saving lives through vaccination. Immunization programs have long been the backbone of preventive, primary health care services in the Region, benefiting large sectors of the population—from urban slums to the remotest of rural areas. Vaccinators—who have been known to work seven days a week, for little pay, travelling treacherous roads and crossing rivers in search of that last child to be immunized—have been major contributors to the breakthroughs in disease prevention achieved by all the countries of the Americas. Most notable of these breakthroughs have been the eradication of smallpox in 1971 and poliomyelitis in 1991—the Americas was the first region in the world to accomplish these feats—and interruption of indigenous measles transmission, now underway.

How immunization programs are built varies from country to country. In some, emergency strategies have initially been required. In others, critical information regarding disease burden is already being developed that clearly shows the potential impact of a new vaccine. The key component of paho's partnership with the countries is the securing of a steady flow of epidemiological information to monitor progress and inequities in immunization.

With the goal of attaining 95% coverage of all antigens included in national immunization programs, paho and the countries are striving to reach the as-yet unvaccinated, who generally live in out-of-the-way rural and socially marginal urban areas. To reach them, paho promotes a many-pronged approach: crafting national policies, tapping mayors to carry out local campaigns, working with preschools and schools to establish vaccination requirements, involving community members and local health workers, and educating mothers about the importance of completing their children's vaccination schedules.

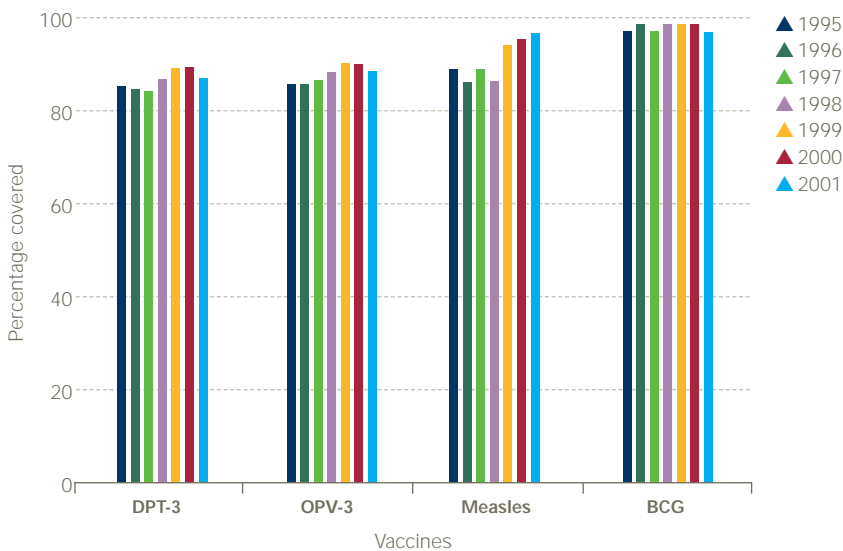
To assure success, paho carries out periodic evaluations of national immunization programs, promotes the use of five-year plans and interagency coordinating committees, and advocates the passage of immunization laws and policies.

paho also takes advantage of joint interventions such as the administration of vitamin A supplements and the treatment of parasitic diseases during national immunization days—resulting in

Vaccines in use in the Americas

BCG	Tuberculosis
DPT, DT, and TT	Diphtheria, pertussis, tetanus
Hep A and Hep B	Hepatitis
Influenza	Influenza
OPV and IPV	Poliomyelitis
Polysaccharide and conjugate pneumococcal	Pneumococcal disease
MMR, MR, M	Measles, mumps, rubella
Meningococcal A, B, C, W 135, Y	Meningococcal disease
Yellow fever	Yellow fever
Varicella	Chickenpox
Hib conjugate	<i>Haemophilus influenzae</i> type b

Vaccination coverage of children* in the Americas**, 1995-2001***



* Coverage for BCG, OPV-3 and DTP-3 among children <1 year of age. For measles, coverage among children 1 year of age.

** Canada administers DTP/IPV/Hib, data for year 2000 only. Data for the United States for years 1999 and 2000 and polio coverage is for two doses of IPV, third dose generally given during second year of life. The United States and Canada do not vaccinate with BCG.

*** 2001 data provisional.

increased coverage of those programs. A major benefit of such cross-fertilization is better planning and information management. In Bolivia and Nicaragua, programs to integrate management of childhood illnesses collaborated to strengthen vaccination at health services, particularly incorporation of the pentavalent and MMR vaccines. During national immunization campaigns in Ecuador and Nicaragua, immunization programs collaborated in delivering vitamin A supplementation and monitoring vitamin A and iron coverage among pregnant women and children under 1 year of age as well as vaccination coverage of children under 1 and among pregnant women.

Quality Vaccines for Quality Immunizations

On a single National Immunization Day, the same lot of vaccines can

be administered to several hundred thousand children. paho works with countries to make sure that they can attest to the quality of vaccines being used on a daily basis in the Americas. Toward that end, the focus is on strengthening national regulatory authorities' compliance with the six basic regulatory functions, developing a regional system for quality testing of vaccines, and assuring that local vaccine producers comply with good manufacturing practices and national and international requirements. The countries of Central America and the Dominican Republic are developing common regulatory procedures and formulating a unique subregional licensing process.

Concurrently, work is underway to implement a regional database for vaccine lot release. Developed by paho, the database allows for the registration of all



■ Vaccination coverage of children under 1 year of age in the Americas has progressively increased over the years, reaching levels above 90% for most antigens.

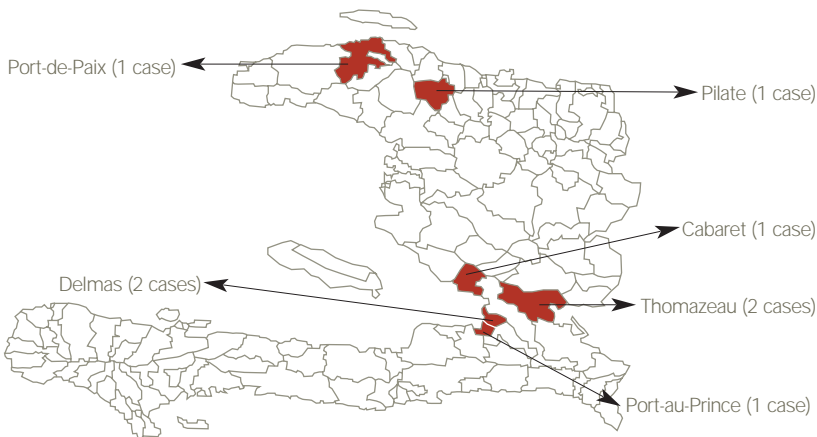
PAHO cooperates with Haiti to quash outbreaks of polio and measles



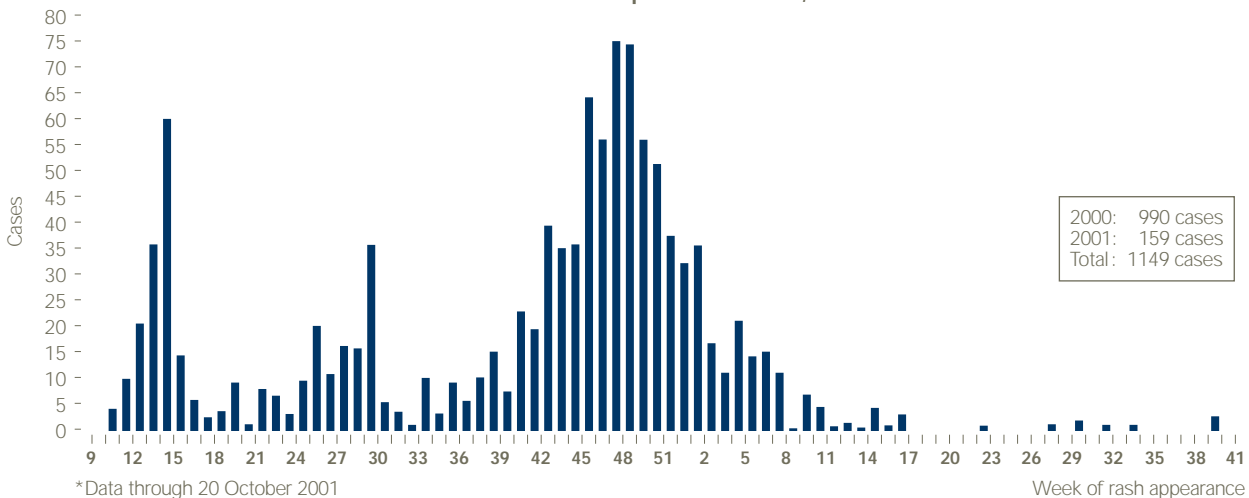
Haiti's government has been determined to overcome a myriad of obstacles to carry out immunization campaigns, and the country's health authorities have shown unwavering commitment to ensuring adequate planning and implementation of the campaigns. For its part, PAHO—convinced that Haiti could carry out immunization activities and that a national program could be built—assembled a team of national and international experts with the support of Canada, UNICEF, Rotary International, WHO, and the World Bank. The team's remit was to ensure sufficient resources for and careful execution of the campaigns. The international community raised over US\$4 million in 2001 to support Haiti's efforts. In addition to accomplishing their primary objective, Haiti's vaccination campaigns have resulted in overall improvements in the managerial capacity of health professionals at the central, departmental, and local level. The country's cold chain is being strengthened through rapid assessment of the equipment and swift repair of broken refrigerators and solar equipment. Local

health workers have been trained in conducting complete field investigations of suspected cases of measles and acute flaccid paralysis. Hundreds of health workers have learned the methodology for monitoring coverage in the field—a tool to validate reported coverage. This experience, in turn, is providing a number of best practices for replication by other health programs.

Cases of polio in Haiti, 2000-2001



Evolution of the measles epidemic in Haiti, 2000-2001*

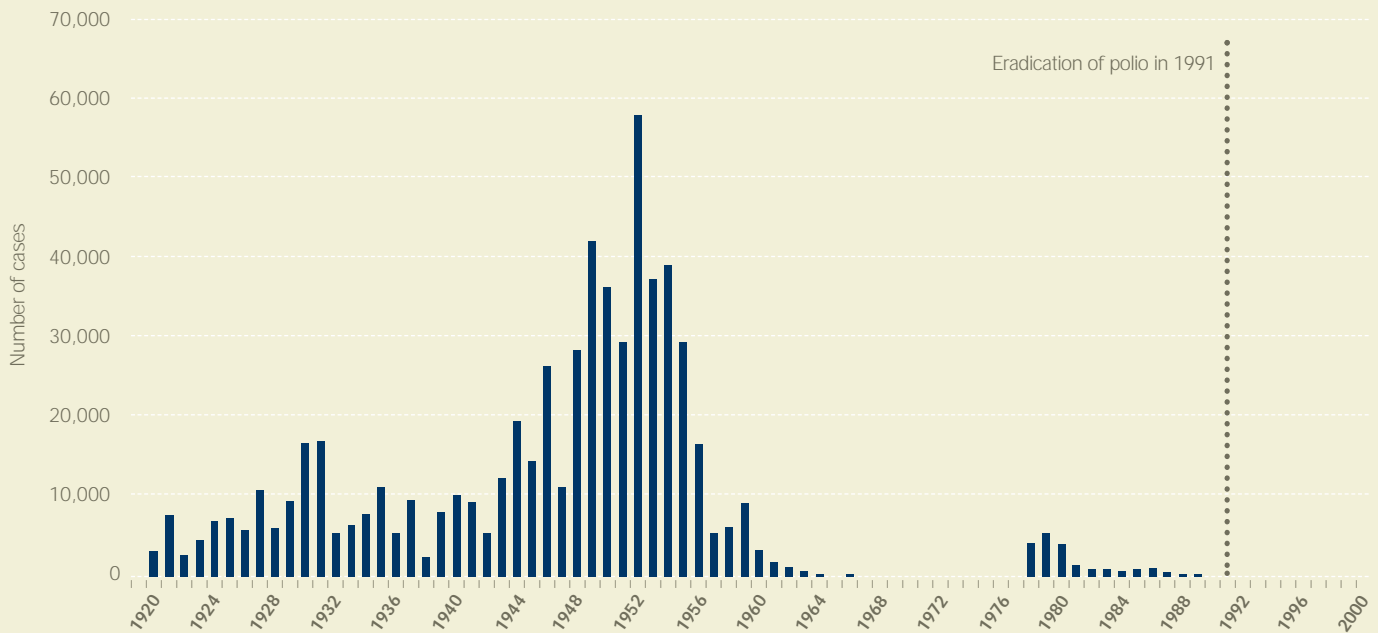


Building on past experience—from smallpox to measles

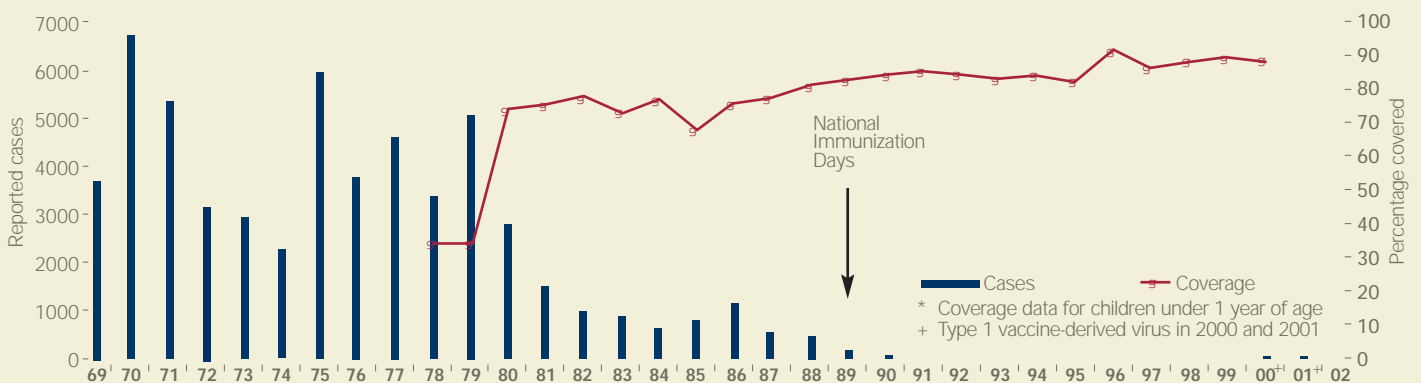
On 19 April 1972, the Americas became the first region in the world to achieve the goal of smallpox eradication. The last case of naturally occurring smallpox was detected in Rio de Janeiro, Brazil. Smallpox eradication became the foundation for development of the Expanded Program on Immunization (EPI), and many of its lessons informed the campaign that eventually eradicated poliomyelitis from the Western Hemisphere.

PAHO's strategy to eradicate wild poliovirus transmission focused on accelerating the EPI, with special vaccination strategies tailored to each country's needs. Key components of the strategy included intensification of immunization activities through national immunization days, house-to-house mop-up campaigns, and achievement and maintenance of high vaccination coverage of children under the age of 5 years. A surveillance system was developed for early detection of cases of acute flaccid paralysis. The last case of polio in the Americas was reported in 1991 in Peru. In September of 1994—following extensive review of surveillance information, key polio surveillance indicators, and laboratory results—an International Commission for the Certification of Poliomyelitis Eradication formally declared that transmission of wild poliovirus had ceased in the Americas. In 2002, the Region will be completing its 12th year without indigenous transmission of wild poliovirus. Success in eradicating smallpox and polio has spurred the Americas and the entire international community to tackle the challenge of eradicating measles in the Western Hemisphere.

The rise, fall, and disappearance of polio in the Americas



Coverage with the poliomyelitis vaccine (OPV3) and incidence of paralytic poliomyelitis in the Americas*



vaccine lots released and circulating in the Region. Furthermore, the network of national control laboratories is undergoing a certification program that seeks to establish the capacity of national laboratories to test specific vaccines. As a result of its evaluation, Mexico's National Public Health Laboratory has already implemented the recommendations issued by the certification team. Chile and Venezuela will undergo similar evaluations.

The Future of Vaccination

Over the past decades, work in the area of childhood immunization has yielded a wealth of knowledge regarding the epidemiology of diseases. That knowledge is now positioning immunization programs to extend their services to other age groups—adolescents, women of childbearing age, and the elderly.

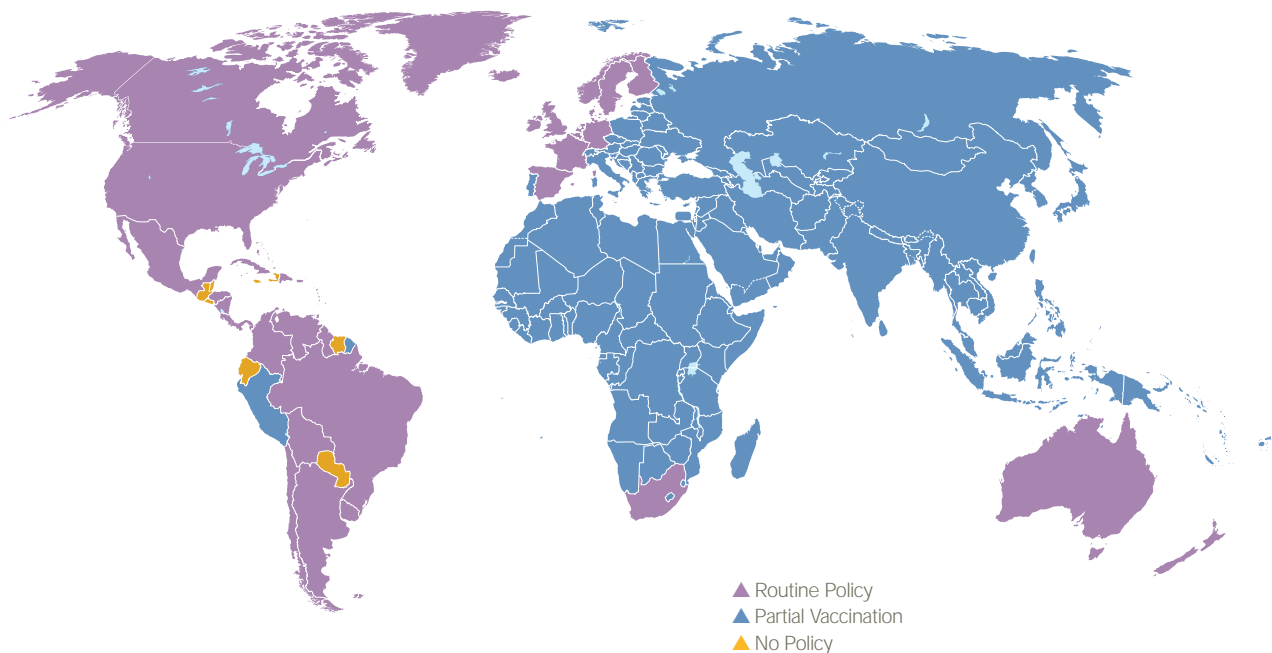
Countries are devising programs to prevent influenza among those at high risk of hospitalization and death from this infection and its complications, as well as strategies to reduce rubella infection in women of childbearing age. Control of yellow fever in the Americas—especially reducing the possibility of its re-urbanization—is another goal: routine yellow fever vaccination is now available, endemic countries have secured vaccination for residents in enzootic areas, and surveillance and laboratory diagnosis have improved.

New generations of vaccines of public health importance are coming out. The availability and use of combination vaccines—such as dtp+hib, dtp+hb, and dtp/hb+hib—hold the promise of simplifying immunization delivery, improving the performance of existing vaccines, and protecting children against other vaccine-

preventable diseases. These vaccines are considerably more expensive, however, than those currently in use.

The sustainability of introducing new and combined vaccines in routine immunization programs—and how and when to do so—is a topic of considerable discussion throughout the Region. A second-generation vaccination schedule that includes pentavalent, mmr, bcg, and polio vaccines costs an estimated US\$12 per person for the biologicals. Introducing these new vaccines, moreover, will require the updating of cold chain systems in the Americas, most of which were built 15-20 years ago to handle the traditional six basic vaccines. Second-generation vaccination schedule costs should be kept relatively low, compared to other health interventions, because of the paho Revolving Fund for Vaccine Procurement.

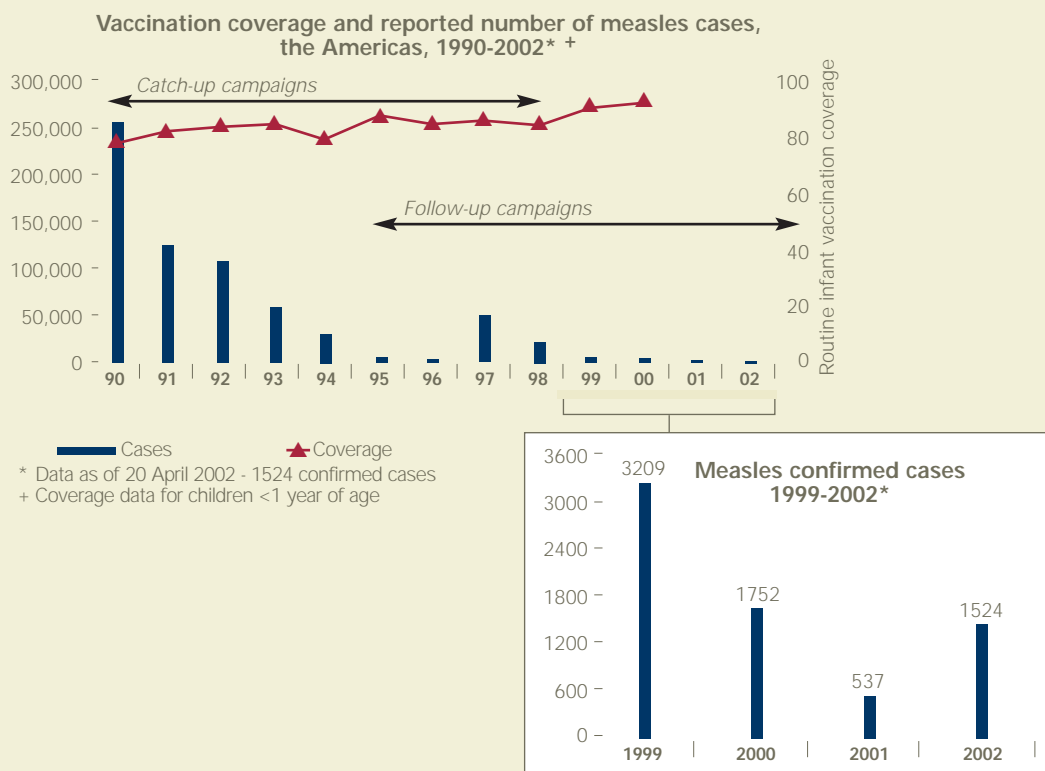
Closing the gap: global status of *Haemophilus influenzae* type b vaccination*



* As of December 2001

Making measles history

The Western Hemisphere has progressed far towards the goal of interrupting indigenous measles transmission—a goal set by all the countries in the Americas in 1994. Intensified vaccination and surveillance, coupled with active search of cases in health centers and high-risk communities, has effected a sharp reduction in the incidence of measles. The number of confirmed cases in the entire Region dropped from 14,332 in 1998 to 537 cases by the end of 2001, with endemic transmission in only one country. As recently as 1990, the countries of the Americas were reporting some 250,000 cases of measles. PAHO's recommended strategy for measles eradication has been instrumental in the steady reduction of measles morbidity in the Western Hemisphere. Global efforts towards measles control, especially aimed at the reduction of measles mortality, are being accelerated, following the strategies and lessons learned from the Americas. Those countries that have fully implemented the strategies recommended by PAHO have successfully interrupted indigenous transmission of the measles virus.



Notwithstanding, the importation of measles virus from regions where the disease remains endemic poses a major threat. Such importation triggered measles outbreaks in Argentina, Bolivia, and the Dominican Republic in 1998-1999, in Haiti in 2000-2001, and in Venezuela in 2001. Those instances of importation initiated endemic transmission, because the virus found large susceptible populations where PAHO's recommended vaccination strategy for measles eradication had not been fully implemented. On the other hand, although Brazil had an importation from Asia in 2001, the country had a high level of measles immunity following intensive efforts to achieve high vaccination coverage in 1999-2000 and strengthened measles surveillance. Likewise, El Salvador's efforts to reach >95% measles coverage rates proved instrumental in preventing resurgence of indigenous measles virus when the country was confronted with two instances of importation from Europe in 2001.

One of the legacies of the measles eradication initiative in the Americas will be its role in improving the technical and managerial capabilities of health workers at the local level. The initiative has been implemented largely while countries are changing the steering and delivery of national health programs. Immunization programs have capitalized on every opportunity brought about by these systemic processes to reinforce local political commitment to the allocation of financial and human resources to population groups at high-risk for measles and other vaccine-preventable diseases. Moreover, the enhanced measles surveillance system has revealed widespread circulation of rubella virus in the Americas and has identified congenital rubella syndrome as an important public health problem. The use of a vaccine containing measles and rubella when vaccinating against measles has been widely practiced throughout the Region in the past four years. That practice has been critical in controlling rubella which—if it infects women in their childbearing years—can result in a newborn child with congenital rubella syndrome, which in turn is linked to cataracts, hearing loss, and delayed development. Based on the experiences of rubella control strategies in the English-speaking Caribbean, Chile, Costa Rica, and Brazil, PAHO is supporting country initiatives to accelerate rubella control.

■ The ministers of health of Bolivia, Chile, Colombia, Ecuador, Peru, and Venezuela—meeting with the Director of PAHO in Sucre, Venezuela on 23 April 2002—agreed to band together to eradicate measles from their countries. The only country still registering cases is Venezuela, where incidence is declining dramatically.

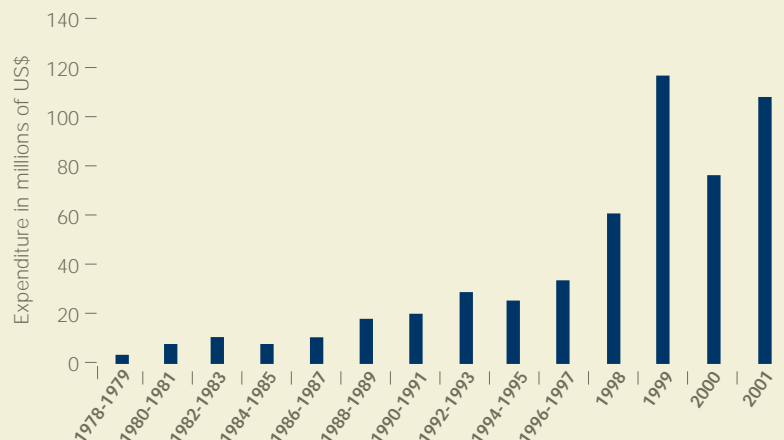


Securing access to old and new vaccines

The PAHO Revolving Fund for Vaccine Procurement—established in 1979 to purchase vaccines, syringes, needles, and cold-chain equipment for countries throughout the Region—assures the supply of high-quality vaccines for national immunization activities. The Fund:

- Makes vaccines affordable as the result of competitive procurement of bulk purchases, with the attendant economies of scale, which both keeps prices low and helps manufacturers make long-term production plans and capital investments.
- Enables delivery of technical cooperation directly to health authorities responsible for immunization programs.
- Requires a specific line item in countries' budgets to cover recurrent costs, five-year workplans, and the appointment of a national immunization program manager.
- Introduces new and additional vaccines rapidly and at affordable prices. Two examples are *Haemophilus influenzae* type B vaccine, used in only two countries in 1996 and now widely used in most countries in the Americas; and hepatitis B vaccine, used only for risk groups in 1997 and today part of routine immunization.

Enabling access to vaccines for national immunization programs: the PAHO Revolving Fund for Vaccine Procurement



The Organization is following a dual strategy of ensuring widespread utilization of vaccines that have been on the market for many years—such as MMR hepatitis B and newer vaccines such as *Haemophilus influenzae* type b—and of supporting the development of essential epidemiological information to aid in deciding about the introduction of new vaccines.

To monitor bacterial pneumonia and meningitis, a network of sentinel hospitals links public health laboratories and epidemiological units of the ministries of health. Initiated in 1993 with six countries and now comprising almost every country in the Region, the network generates data and information on the prevalent pneumococcal serotypes responsible for invasive diseases in children and on their antimicrobial susceptibility patterns; the impact of vaccination on hib diseases; and, soon, the status of meningococcal serogroups responsible for diseases in the Region.

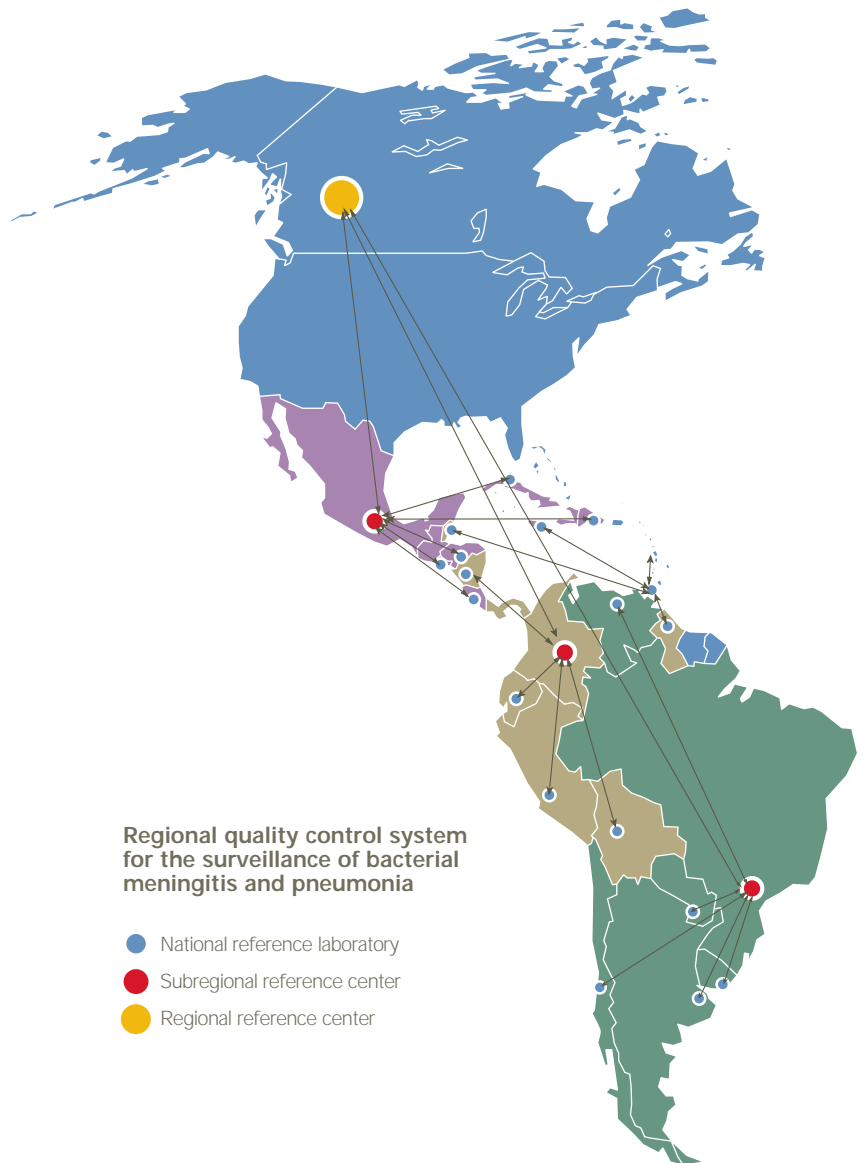
Recently, improvements have been made to the surveillance system, to link the information gathered with the results of ongoing clinical trials of pneumococcal vaccines. Diagnostic criteria used are similar to those used in the trials. Parallel cost-effectiveness studies are being conducted that will generate comparative costs for different interventions. A similar approach is being followed by the network for rotavirus vaccines, with the participation of the same sentinel hospitals. These activities are strengthening the laboratory and diagnostic capabilities of hospitals throughout the Americas.

Regional Vaccine Production

To adapt to changes in the marketplace and gain access to new technology, local vaccine producers are entering into joint ventures with private manufacturers and contemplating major investments to upgrade their facilities, equipment, and procedures so that they comply with good manufacturing practices as well as national and international requirements. paho is encouraging and supporting countries to conduct technical and economical

feasibility studies to identify their strengths, weaknesses, and areas needing improvement.

Bio-Manguinhos in Brazil has requested certification from the World Health Organization for its yellow fever vaccine, and the Genetic Engineering and Biotechnology Center in Cuba has done so for its hepatitis B vaccine. With paho's assistance, the National Institute of Health of Colombia has undertaken a feasibility study to establish priorities and alternatives for its production of yellow fever vaccine.





■ The Organization has built long-lasting partnerships in immunization, which will play a major role in sustaining the gains made in the fight against diseases preventable through vaccination.



Spain



Kingdom of the Netherlands



Partners in Immunization

paho's record of success has attracted major partners—in multi- and bilateral organizations, the private sector, and civil society—to support national immunization programs. For their part, countries are coordinating partners' work through interagency committees, established by paho during the poliomyelitis eradication initiative, that identify and address priorities. Given today's multiplicity of partners, interagency coordinating committees have become the most effective means of merging the individual agendas of diverse parties and steering them towards common goals.

With the World Bank, paho is supporting Bolivia, Ecuador, Paraguay, and Peru in efforts to

strengthen health sector reform, with the aim of expanding coverage, enhancing service, empowering communities to improve their members' health, and bolstering local capabilities to respond to health needs. paho has continued its long-term collaboration with the United States Agency for International Development, initiated during the polio eradication campaign, to reach the goal of interrupting indigenous measles transmission in the Americas. In the past several years, the U.S. Centers for Disease Control and Prevention and the Government of Spain have joined the measles initiative. That initiative, in turn, has been instrumental in establishing and

enhancing national surveillance infrastructures in countries throughout the Region, strengthening laboratory diagnostic capabilities, and bolstering countries' abilities to handle outbreaks. The Canadian International Development Agency has provided Haiti critical support to launch sustainable surveillance and immunization programs in that country. paho has also teamed up with the March of Dimes to reinforce regional rubella control efforts, and with the Bill and Melinda Gates Foundation to establish national surveillance systems and sustainable financing mechanisms for introducing *Haemophilus influenzae* type b, pneumococcal, and rotavirus vaccines.

A sampling of PAHO disease prevention and control activities in countries of the Americas

PAHO joined the Ministry of Health of **VENEZUELA** in using a number of strategies, including social communication, to combat epidemics in that country.

SURINAME has set immunization goals achieving >95% coverage for all antigens; sustaining the absence of indigenous cases of polio, measles, rubella, and congenital rubella syndrome; and strengthening surveillance of all vaccine-preventable diseases. Towards those ends, PAHO and nationals collaborated on an evaluation of the EPI program, which resulted in important recommendations regarding the cold chain, training and supervision, surveillance, organization and resources, and user satisfaction. PAHO has joined national counterparts in **TRINIDAD AND TOBAGO** to prevent and control cancer, diabetes, hypertension, tuberculosis, and AIDS.

In the face of measles, rabies, malaria, dengue, and hantavirus threats to health in **PARAGUAY**, PAHO has offered technical and financial support for promotion, prevention, care, and research activities.

To prevent and control diseases in **MEXICO**, PAHO bolstered the national reference laboratory, provided free and low-cost drugs to reduce the incidence of tuberculosis and leprosy, helped evaluate national malaria and dengue programs, contributed to efforts culminating in the country's cholera-free status, supported AIDS research and information outreach, and provided training to deal with diseases preventable by immunization.

PAHO is supporting the efforts of **COLOMBIA** to extend the tuberculosis control DOTS strategy throughout the country. In 1998, the strategy reached only 15% of the population; two years later, it covered more than twice as many. The safety of food is a major concern in the **CARIBBEAN**, where PAHO helps strengthen national programs, prepare legislation, promote common standards and regulations, enhance the quality of food safety research, and prevent, monitor, and control foodborne diseases.



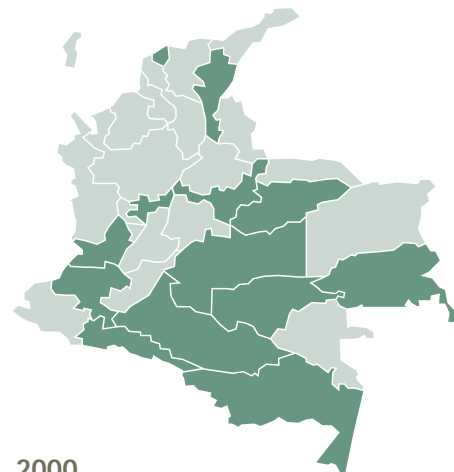
ECUADOR was the first country in the Region to pass a vaccine law, and its legislative branch allocated the resources needed to sustain the Expanded Program on Immunization and to cover the costs of new vaccines. The country has registered no further cases of measles or poliomyelitis, and the numbers of cases of neonatal tetanus, yellow fever, diphtheria, and whooping cough continue to drop.

Implementation of the DOTS strategy in Colombia



1998

- ▲ Population in the DOTS area: 6,068,422 (15%)
- ▲ Population where DOTS not applied: 34,704,572 (85%)



2000

- ▲ Population in the DOTS area: 12,954,881 (31%)
- ▲ Population where DOTS not applied: 29,344,420 (69%)



Integrating the Management of Childhood Illnesses

Childhood illnesses—diarrheal diseases and acute respiratory infections, in particular, as well as intestinal helminth infections, meningitis, and conditions resulting from malnutrition—continue to take a heavy toll in the Americas. A decade ago, countries in the Region—in league with *paho*, *who*, and *unicef*—committed to apply a strategy integrating the management of these childhood illnesses (*imci*).

The aim of the strategy is to reduce infant and child mortality and morbidity, improve growth and development in the first five years of life, and guarantee proper care in health services—throughout the community and within families. As a consequence of *imci*, the number of deaths due to infectious diseases, especially diarrhea and pneumonia, has dropped significantly. In Bolivia, Brazil, Ecuador, El Salvador, the Dominican Republic, Haiti, Honduras, Nicaragua, Paraguay, and Peru—countries that adopted the strategy between 1996 and 1998—the results have been encouraging. In one year alone, from 1998 to 1999:

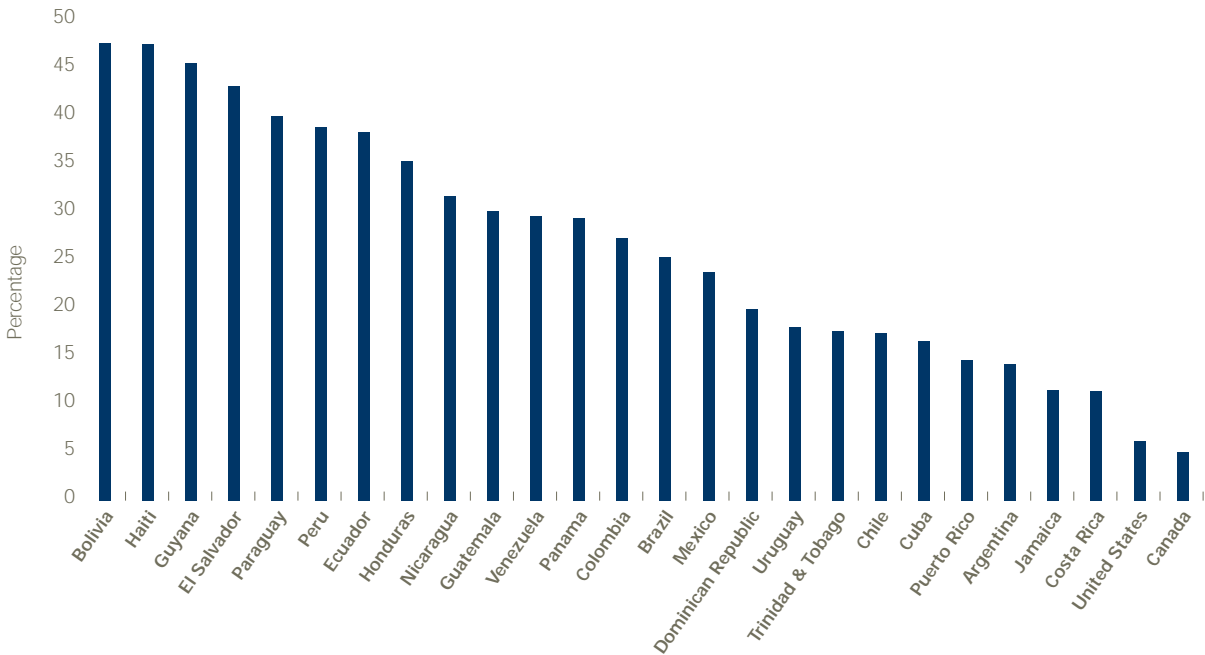
- Overall mortality in children dropped 7.3%.
- Mortality from diseases targeted by *imci* declined 15.3%.
- Some 22,000 fewer deaths of children from *imci*-targeted diseases occurred.

Information on mortality in 19 countries with more than 10,000 births a year shows that the proportion of deaths in children under five from diarrheal diseases and pneumonia shrank from 20% in 1991 to 12% in 1999.

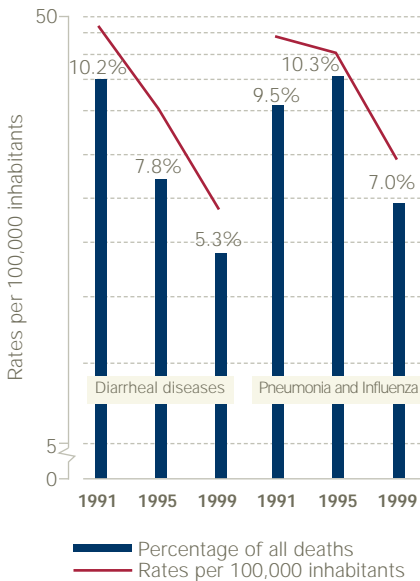
Encouraged by *imci*'s initial progress, the Organization launched the Healthy Children: Goal 2002 initiative, which proposes a reduction of 100,000 deaths in children under five for the period 1999–2002. In its first year, the initiative succeeded beyond expectations: instead of the projected reduction of 25,000 deaths, 33,000 lives were saved—a 6.4% reduction in mortality in this age group; more than two-thirds of that reduction was attributable to *imci*-targeted diseases, which dropped 15%.



Of all deaths in children under five years of age in countries of the Americas, the proportion attributed to diseases targeted by imci, 1999



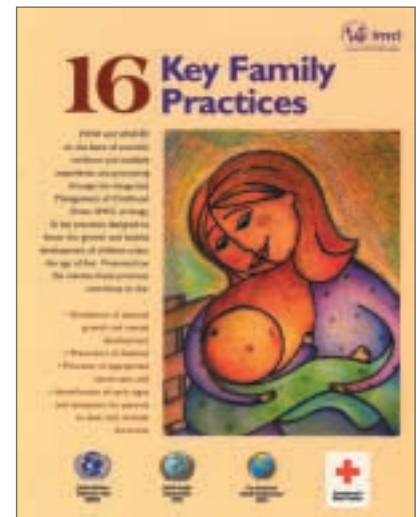
Diarrheal diseases and pneumonia and influenza are claiming fewer and fewer lives of children under five in the Americas*



* Argentina, Brazil, Canada, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guyana, Mexico, Nicaragua, Panama, Paraguay, Peru, United States, Uruguay, and Venezuela

In addition to saving the lives of infants and children, imci provides other benefits. A major one is improved quality of care as a result of focusing on children's health conditions; broadening the strategy to include other perinatal problems, asthma, bronchitis, accidents, and abuse; and adding health promotion elements such as detecting and treating developmental problems, early stimulation, and oral health.

The strategy's attempts to reach out to families and communities have resulted in their greater satisfaction with care provided by imci-trained staff and their enhanced ability to care for their children and to know when to alert health services of potential problems. Along with who, unicef, and the American Red Cross, paho has promoted "the 16 key family practices" to foster the healthy growth and development of children under five.

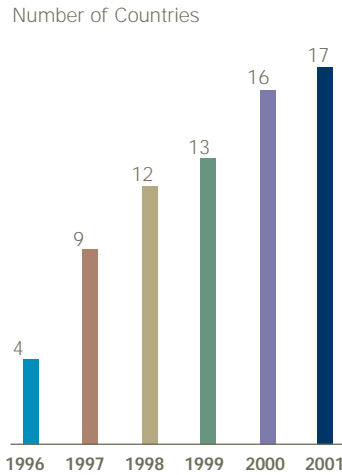


Controlling intestinal helminth infections



Although the Region is experiencing a decline in the prevalence and intensity rates of infections related to intestinal helminths, these parasites continue to pose a public health problem in the Americas, especially in poorer countries. In response to that problem, PAHO is promoting a multi-pronged approach that combines parasite-specific control programs with the healthy school initiative, environmental sanitation, diarrheal disease prevention and control, maternal and child health, nutrition, health education, and mass communication.

Application of the imci strategy continues to expand among the countries in the Americas*



*Countries with >10,000 births per year.

- ▲ Bolivia, Dominican Republic, Ecuador, Peru
- ▲ Argentina, Brazil, El Salvador, Honduras, Nicaragua
- ▲ Haiti, Paraguay, Venezuela
- ▲ Colombia
- ▲ Guatemala, Guyana, Uruguay
- ▲ Panama

Some 35,000 health workers in primary care services and more than 7000 community health workers have received imci training. To broaden application of the strategy, PAHO has obtained us\$9 million from the American Red Cross and the United Nations Foundation for a five-year project targeting communities throughout the Region.

The imci strategy has been incorporated in the curricula of 90 medical and 62 nursing schools in the Region and is targeted for inclusion in those of schools of nutrition and public health. Coordination with Latin American associations of pediatrics and nursing has resulted in teaching the strategy to last-year students as preparation for their postgraduate year of social service among rural and marginal populations, where application of imci can have a major impact.



Launching of the Healthy Children: Goal 2002 initiative: (Left to right) Dr. George A.O. Alleyne, Director, PAHO; Dr. Carmen Lissi Campos de Fernández, First Lady of the Dominican Republic; Mrs. María Isabel Rodríguez de Chávez, First Lady of Venezuela; and Mrs. Lourdes Rodríguez de Flores, First Lady of El Salvador.

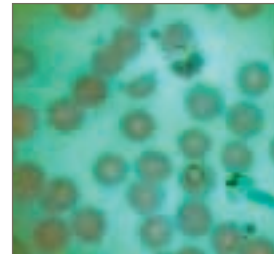


Reducing the Burden of Preventable Diseases Among the Poor

Malaria

PAHO continues to work with the countries to reduce deaths and illness caused by malaria, as well as the related health and economic burden, especially among the Region's most vulnerable groups. As part of the "roll back malaria" initiative launched by WHO in 1998—in partnership with countries where the disease is endemic, other international agencies, nongovernmental organizations, and civil society—countries in the Americas have progressively come on board. The nine countries sharing the tropical Amazon rainforest (where disease endemicity is the highest in the

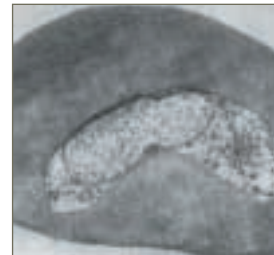
Region), the Central American countries, the Dominican Republic, Haiti, and Mexico have drawn up and are executing national plans and cooperating on areas of common epidemiological interest. Caribbean Basin countries are strengthening their surveillance systems to prevent reintroduction of malaria.



Plasmodium vivax

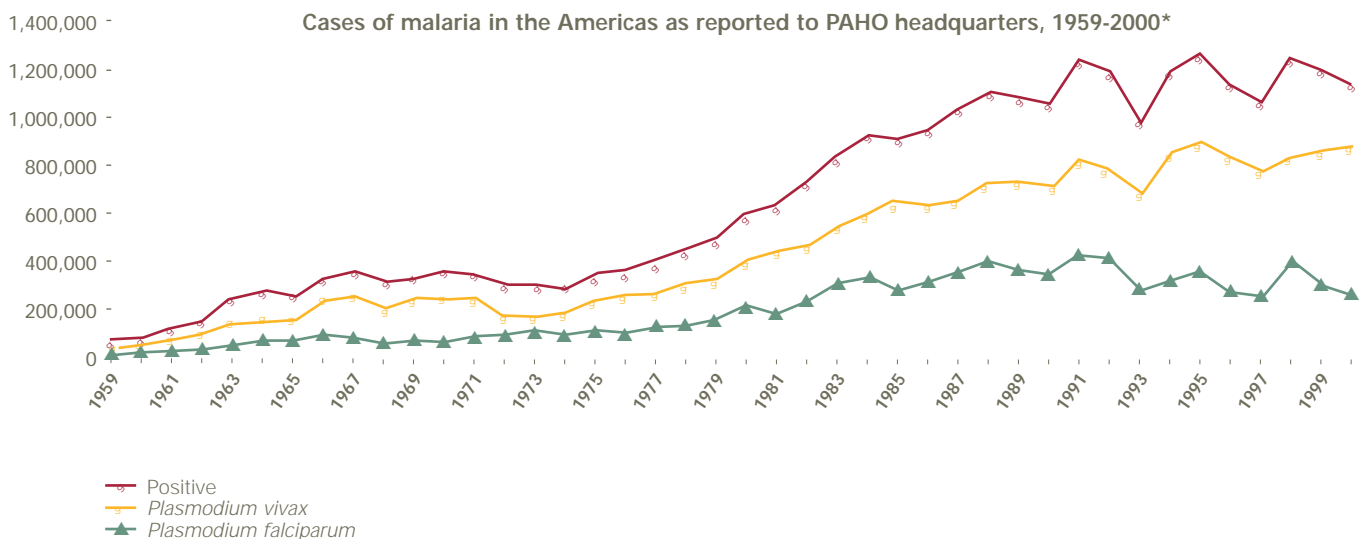


Anopheles albimanus



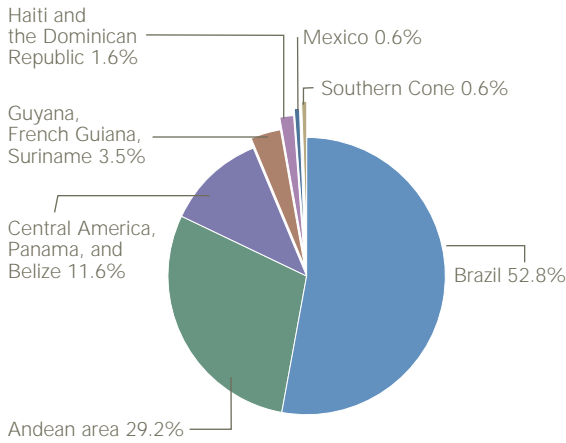
Plasmodium falciparum

■ **MALARIA** In nature, anopheline mosquitoes transmit various species of the genus *Plasmodium*, causing malaria—one of the most ancient infections known.



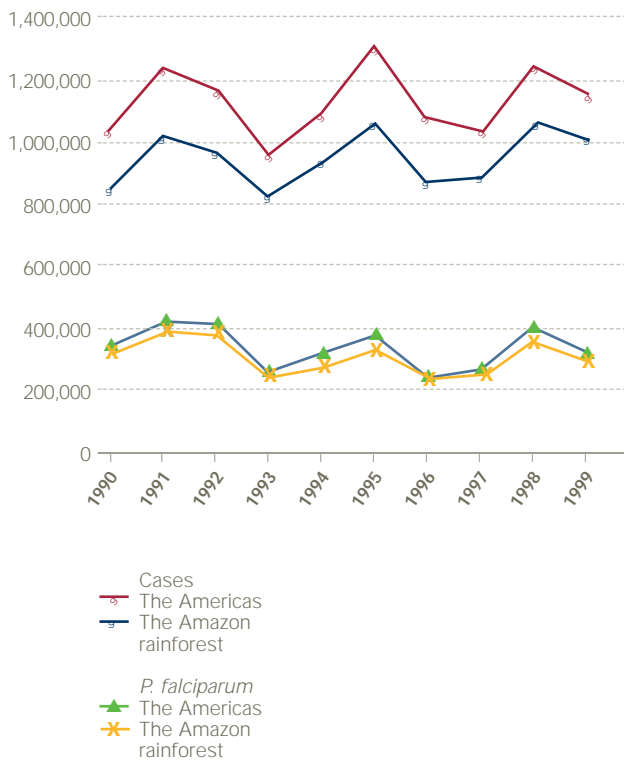
* The Region of the Americas launched a malaria eradication program in the mid-1950s. By the end of that decade, countries began to report cases of the disease, and data collection improved from year to year.

Distribution of cases of malaria, 2000

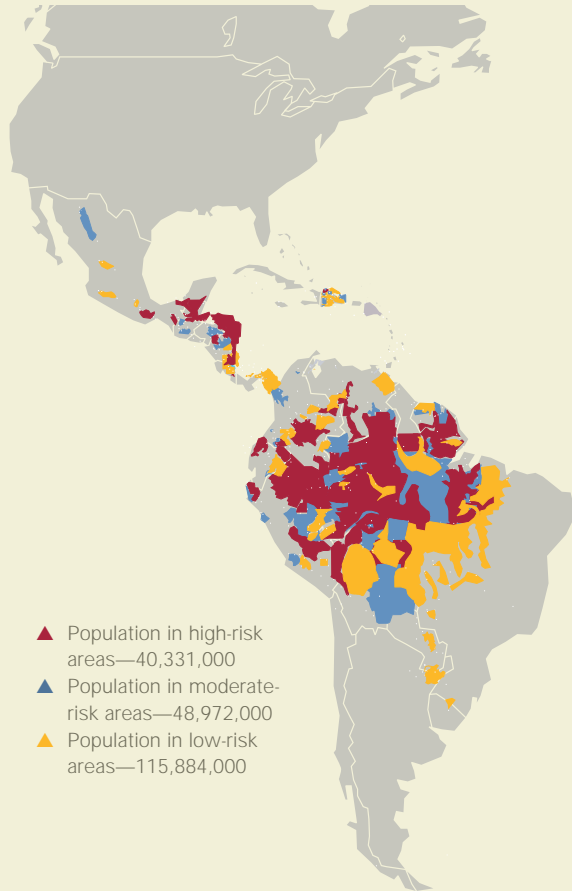


The Amazon rainforest: 86.1%

Malaria cases and those due to *P. falciparum*



Population distribution by risk of malaria transmission



The number of cases of malaria reported annually has been below 1.3 million over the past several years and is decreasing, and the number of related deaths has plummeted. Although cases due to the parasite *Plasmodium vivax* have increased to more than 80% of all cases in the Region, in the Amazon rainforest cases associated with *P. falciparum* are reported to have developed resistance to antimalarial drugs. To monitor drug resistance, rainforest countries have agreed to establish a surveillance network, to be funded by the countries, the United States Agency for International Development, the United Kingdom Department for International Development, and WHO; its findings will be used to inform national and regional drug treatment policies.

Dengue

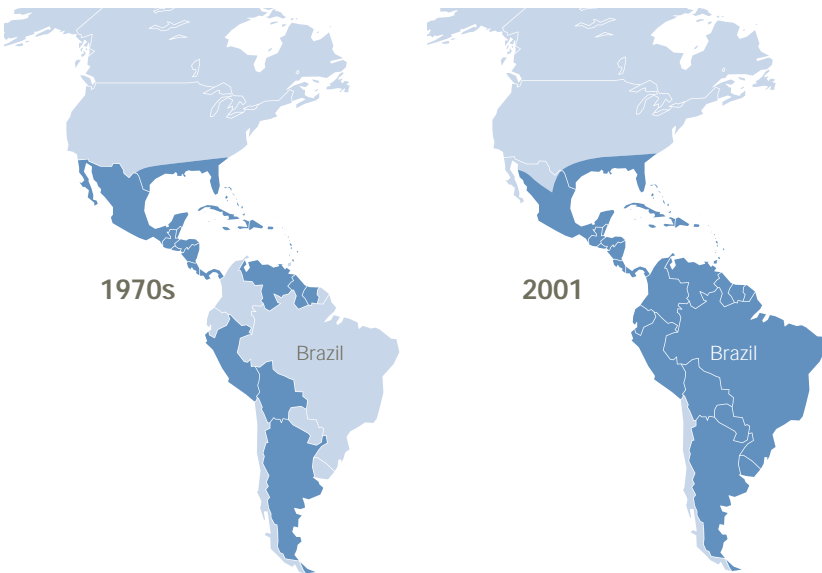
The situation of dengue has worsened in the Region in recent years. Countries in Central and South America have experienced repeated epidemics of the disease and of its more severe form, dengue hemorrhagic fever (dhf). The public health community is greatly concerned that the disease will spread in the Americas as it has in Asia, which reports hundreds of thousands of cases of dhf yearly. Moreover, the possible

reurbanization of yellow fever is alarming. To confront these problems, paho is working with the countries to build political commitment, promote government and private sector funding, reduce mosquito breeding sites, establish mechanisms for timely and uniform case reporting throughout the Region, and promote intersectoral coordination, community participation, and public education.

■ **DENGUE FEVER** and its more fatal version, dengue hemorrhagic fever, occur in more than 100 countries worldwide. In 2002, the disease hit hard in Brazil, where dozens of people have died since the beginning of the year.

■ **DENGUE FEVER** is caused by one of several viruses. The viruses are transmitted by an infected female mosquito, *Aedes aegypti*, which is primarily a daytime feeder and lives around human habitation.

Countries in which the vector mosquito was and is present

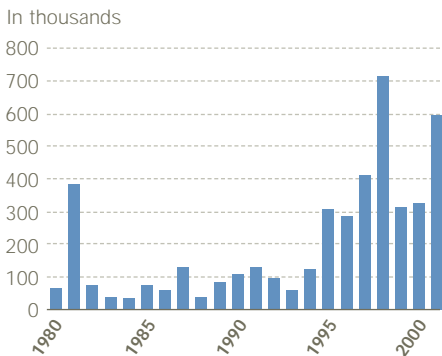


Pupae of *Aedes aegypti*

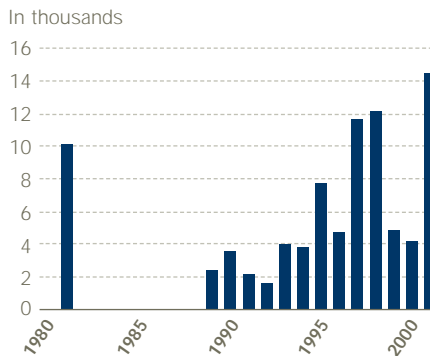


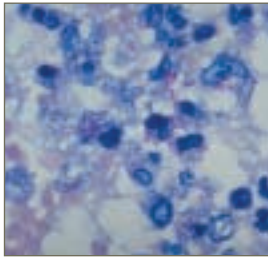
Aedes aegypti

Number of dengue fever cases in the Americas, 1980 to 2001



Number of dengue hemorrhagic fever cases in the Americas, 1980 to 2001





■ **TUBERCULOSIS**— caused by the bacillus, *Mycobacterium tuberculosis*— represents a public health threat in the Americas.



Tuberculosis

Tuberculosis continues to be a public health threat in every country in the Region, despite the availability of means to control the disease. Of all cases reported worldwide, the Americas accounts for 7%—almost 239,000 cases in 1999, a 5.4% reduction over the previous year. Eight countries report three-fourths of all regional cases—Bolivia, Brazil, the Dominican Republic, Ecuador, Haiti, Honduras, Mexico, and Peru; and two countries—Brazil and Peru—account for one-half of all cases. Of countries in the Americas, Brazil alone ranks among the 22 countries of the world with the highest burden of disease, as Peru has greatly reduced incidence of tuberculosis in recent years.

Since resistance to anti-tuberculosis drugs (isoniazid and rifampicin) is an emerging problem, the countries of the Region have stepped up surveillance. Thus far, surveys in Canada, Chile, Colombia, Cuba, Mexico, Nicaragua, Uruguay, and Venezuela indicate, however, that multi-drug resistance is either not a problem or not a significant one.

WHO promotes the directly observed treatment shortcourse (DOTS) strategy, which has proven effective in the diagnosis and treatment of tuberculosis. The number of countries applying the strategy increased from 19 in 1998 to 25 in 2001. To date, two-thirds of the population of the Americas is covered by DOTS.

Onchocerciasis and Filariasis

The Organization participates actively in the regional initiative to eliminate onchocerciasis, or river blindness, from the Americas, where the six remaining endemic countries—Brazil, Colombia, Ecuador, Guatemala, Mexico, and Venezuela—have dramatically reduced the at-risk population. paho has cosponsored regional conferences on elimination of the disease, provided technical support to national programs, and developed standardized epidemiological evaluations. Those evaluations indicate that the at-risk population shrank from 4,700,000 in 1995 to 660,000 in 1999.

Although the World Health Organization has called for the global elimination of lymphatic filariasis by 2020, the Region of the Americas expects to reach that goal much sooner. In the seven endemic countries—Brazil, Costa Rica, Dominican Republic, Guyana, Haiti, Suriname, and Trinidad and Tobago—the infection is focalized and the number of cases small. Elimination will entail mass multi-



drug therapy of the at-risk population, and GlaxoSmithKline is donating one of the drugs, albendazole, for as long as the disease persists. To ensure success of the regional program, the Organization is orchestrating partnerships with the endemic countries' ministries of health, the private sector, including the Bill and Melinda Gates Foundation, cdc, other international and bilateral agencies, and nongovernmental organizations. paho has advocated the designation of national program managers in all seven countries, four of which have also set up national task forces. With paho's support, the countries are using new diagnostic tools—antigen detection cards—to map and measure the magnitude of the problem. Those tools are enabling Guyana, Haiti, and the Dominican Republic to identify target populations and, perhaps, to show that Brazil, Costa Rica, Suriname, and Trinidad and Tobago may not require an elimination program and may only have to deal with residual morbidity.

■ The Caribbean is the most tourism-dependent region in the world: one in every five jobs and one-third of the gross domestic product depend on tourism. The Caribbean Epidemiology Center, the Caribbean Hotel Association, and the Caribbean Alliance for Sustainable Tourism have created a joint venture to promote healthy tourism and resource conservation. The aim of the project is to develop and establish Caribbean-wide standards and systems to ensure healthy, environmentally safe products and services.



Onchocerca volvulus

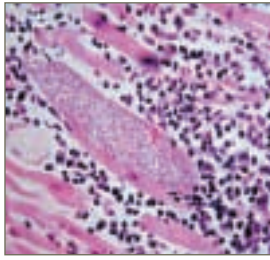


Simulium fly

■ **ONCHOCERCIASIS**—caused by the nematode *Onchocerca volvulus* and transmitted by the female *Simulium* fly—is the target of near-term elimination in the Americas.



■ The Caribbean Epidemiology Center cooperates with 21 of PAHO's member countries to manage outbreaks and emergency situations related to dengue and dengue hemorrhagic fever, malaria clusters in previously malaria-free countries, tuberculosis, food- and water-borne diseases, HIV/AIDS, violence, diabetes, and obesity. The Center operates a subregional surveillance system that serves to strengthen national epidemiological and laboratory capabilities.



■ **LEPROSY**—caused by the bacillus *Mycobacterium leprae*—is on the verge of elimination from the Americas.

Leprosy

A country that reduces the prevalence rate of leprosy to 1 case per 10,000 inhabitants can be considered to have eliminated the disease as a national public health problem. In the Americas, almost all countries have achieved elimination, and Paraguay and Suriname are expected to do so in the short term. Brazil, the only other country where leprosy constitutes a public health

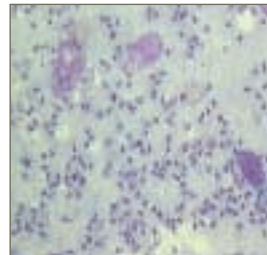
problem—registering 4.5 cases per 10,000 inhabitants and accounting for 90% of the total regional disease burden—is stepping up elimination efforts by decentralizing activities to municipalities and educating the community about leprosy. paho is advocating the countries' adoption of a regional plan for 2002-2004 to consolidate elimination of leprosy in the Region.

Status of Chagas' disease control in the Americas



Chagas' Disease

paho acts as the technical secretariat to subregional initiatives in the Southern Cone, Central America, and the Andean Area that target control of Chagas' disease. The objective is to interrupt transmission of *Trypanosoma cruzi* by the vector *Triatoma infestans* through spraying, improved housing conditions, and public education. Argentina, Bolivia, Brazil, Chile, Paraguay, and Uruguay have committed to eliminate *T. infestans*, by using entomological surveys and spraying residual-action insecticides.



Trypanosoma cruzi



Triatoma infestans

■ **CHAGAS' DISEASE** In Latin America, the blood parasite *T. cruzi*, is transmitted by the reduviidae bug, *T. infestans*.

Emerging and Re-emerging Diseases

Emerging and re-emerging infectious diseases represent an increasing public health risk, because of the agents involved, their easier transmission in changing physical and social environments, and their growing resistance to existing drugs. The impact that the appearance of such diseases can have on public health reverberated worldwide in 2001, when human cases of anthrax were identified in the United States. To help countries better prepare for the natural or deliberate release of biological agents, paho convened an expert consultation. It made recommendations regarding national preparedness that dealt with contingency plan development, public health surveillance, and laboratory capacity. The consultation

also recommended that paho's technical cooperation focus on information, support in national planning, training, identification of reference laboratories and assistance in building their capacity, and coordination of rapid response in the face of natural or intentional release of biological agents.

Currently, five networks—three subregional and two regional—deal with the surveillance, prevention, and control of emerging infectious diseases. paho has helped strengthen these networks by convening epidemiologists and laboratory staff to discuss emerging infectious diseases and providing training on bacteria identification, antimicrobial susceptibility, and laboratory quality control. Eight countries took part in a meeting that included preparation

of protocols and workshops on surveillance and laboratory diagnosis of influenza, hemolytic uremic syndrome, and hantavirus.

A comprehensive project to develop communicable disease surveillance has benefited the countries of Central America, the Dominican Republic, and Haiti. The project includes surveillance, information systems, detection and response to outbreaks, field epidemiology training, laboratory infrastructure building, and infectious disease surveillance during natural disasters. These countries have established interinstitutional technical groups to coordinate detection, research, and response to emerging and re-emerging infectious diseases.

Research and Training

The Organization promotes research and training as vital components of disease prevention and control. paho partnered with who, undp, and the World Bank on an initiative providing small grants in support of more than 40 research projects in countries of the Region. These grants have enabled research on:

- Efficacy of antimalarial therapies and treatment compliance in Bolivia, Brazil, Colombia, Ecuador, Peru, and Venezuela;
- Community participation for dengue control and risk factors for dengue transmission in Argentina, Brazil, Cuba, the Dominican Republic, and Honduras;

- Use of inadequate tuberculosis chemotherapy and its impact on morbidity and mortality;
- Leishmaniasis and filariasis in Argentina and Brazil.

The initiative also fosters training as a way of recruiting scientists to carry out research. An expanding network has connected institutions engaged in

interdisciplinary work, and workshops on epidemiological research methods have trained over 80 professionals from 14 countries.





Combating HIV/AIDS in the Americas

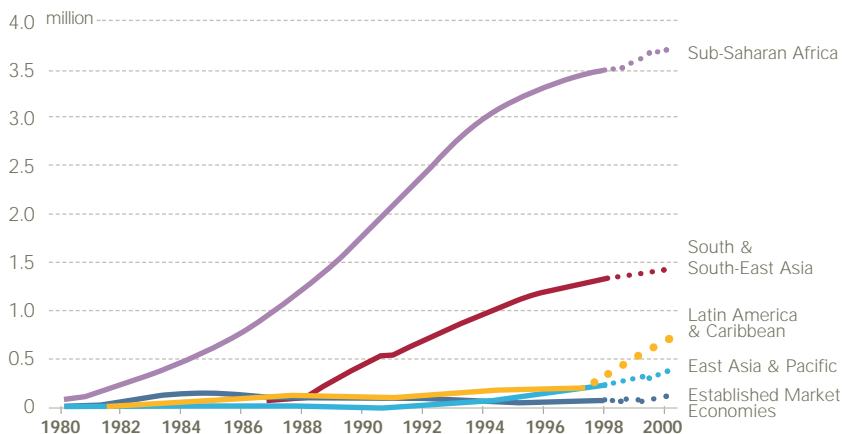
As the human immunodeficiency virus (hiv) epidemic enters a third decade, the challenges it poses to families, societies, governments, and science continue to mount. The complexities of hiv, the virus that leads to aids, and the behaviors that spread it are great. Nowhere is this more the case than in the Americas—especially in Latin America and the Caribbean, where the levels, patterns of spread, and responses to the epidemic are unusually varied.

second most affected area in the world, it lags far behind sub-Saharan Africa, where one adult in 12 is infected with hiv. Moreover, despite its persistent increase, the hiv/aids epidemic has not reached the general population in most countries of the Region, which bodes well for efforts to contain its spread.

hiv and other sexually transmitted infections are problems whose solutions demand a multisectoral approach. Because the determinants of these infections are largely behavioral, dealing with them requires a combination of political commitment, adequate and large-scale application of scientific knowledge and technology, new financial resources, and—most of all—individual and societal changes in attitude about gender equity, social stigmatization, and discrimination.

In the first decade of the fight against aids, the Organization made significant gains—among them, development of national aids programs, blood supply safety, and preventive interventions. paho has devoted major efforts to ensure that those gains have not been lost. The next phase of the epidemic will require strategic alliances, coordinated efforts, and greater mobilization of resources. In addition to placing hiv/aids on the “shared agenda” with the World Bank and the Inter-American Development Bank, paho is collaborating with the technical cooperation agencies of Canada, France, Germany, Norway, Spain, Sweden, and the United States, among others and is helping the

Estimated annual number of new hiv infections, by Region



In the Americas at the end of 2001, approximately 2.7 million men, women, and children were living with hiv. One of each 200 adults is infected with hiv—a prevalence rate of around 0.56% for the Region as a whole. Nearly four times that many are infected in the Caribbean, however, where 2.1% of adults are thought to be living with hiv. While the Caribbean is the

countries prepare to participate in the Global Fund for aids, Tuberculosis, and Malaria.

paho has contributed to improving comprehensive care by developing a model—“Building Blocks”—that provides guidance in crafting policies and strategies and comprises the full spectrum of care required to meet the needs of people living with hiv/aids, their families, and caregivers. The model, which is already being applied in a number of countries, contemplates three scenarios, depending on available resources, and provides a set of standards for care in the household and the community and at the primary, secondary, and tertiary levels of health care.

A major component of comprehensive care is access to antiretrovirals (arv). arv are drugs that, by interfering with viral replication mechanisms, cause a drastic reduction of viral particles in the bloodstream. This reduction is accompanied in many cases by dramatic improvement of clinical conditions, which reduces hospitalizations and augments survival among aids patients. To strengthen antiretroviral access, paho has promoted a regional protocol for arv treatment, assessed needs and devised plans for arv treatment in several countries, created a regional database on arv prices, and supported a regional fund for strategic public health supplies.

To improve epidemiological assessment of hiv/aids, paho has disseminated methods and strategies for “second-generation” surveillance, including characterization of hiv-i subtypes in eight countries, aids reporting, hiv sentinel surveillance and prevalence studies, and behavioral aspects such as condom use. paho fostered

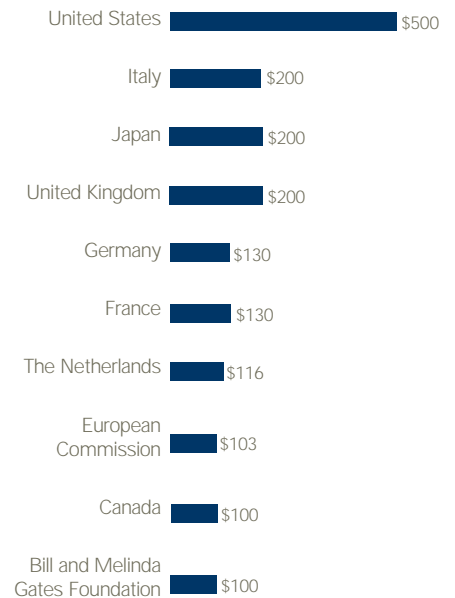
widespread application of surveillance methodology through an epidemiological network, Epi-Net, and helped countries draft strategic plans to improve national surveillance.

The emergence of hiv/aids has raised awareness of the urgent need to step up sexuality training and devise a more concerted, comprehensive approach to sexuality problems. Toward that end, paho arranged regional consultations and collaborated with the World Association of Sexology to produce information on promoting sexual health that has been widely disseminated and used for advocacy and teaching.

Despite efforts to broaden awareness of hiv/aids and increase knowledge of how the virus is contracted, the pandemic continues to spread. To make hiv/aids communication more effective, paho is conducting a study of the communication component of national aids programs in 13 Latin American and Caribbean countries. The results are expected to help programs capitalize on the experiences of other countries and adopt proven, research-based planning methodologies.

The United Nations has proposed that the countries of the world attain a 20% reduction in the number of infants infected with hiv by 2005 and a 50% reduction by 2010. To meet that goal, 80% of pregnant women will have to have access to hiv-prevention services in the context of prenatal care. Research indicates that when women receive such services before, during, and after the birth of their children, the mother-to-child transmission of hiv/aids can drop as much as 70% or more, and in resource-poor settings simple interventions (such as one dose of

Donors' pledges to the Global Fund for AIDS, Tuberculosis, and Malaria. The fund now totals nearly \$2 billion.
(figures in millions)



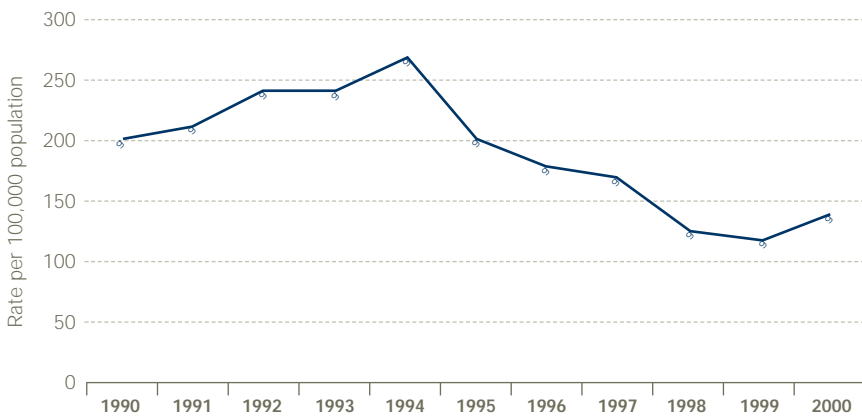
■ PAHO is helping the countries of the Americas position themselves to benefit from the Global Fund for AIDS, Tuberculosis, and Malaria.

the antiretroviral drug nevirapine) can reduce transmission by 50%. Prevention of mother-to-child transmission is a high priority in Latin America and the Caribbean, where many countries are executing pilot projects and others are launching full-scale programs. Communication will be a key to the success of these programs, so PAHO and UNICEF have supported

consultation among communicators. They, in turn, have recommended targeting adherence to treatment, attendance at counseling by both men and women, early and regular antenatal care attendance, healthy behavior in HIV-negative pregnant and lactating women and their partners; postnatal care attendance, proper breastfeeding, and testing acceptance.

■ To obtain information on perceptions about HIV/AIDS among out-of-school youth in **SURINAME**, PAHO participated in qualitative research involving focus groups throughout the country. To reverse negative trends revealed by that research, the project underscored the importance of using films and social marketing to educate these youths.

Incidence of HIV, Bahamas, 1990-2000



■ Since 1986, the Organization has been collaborating with the National AIDS Program in the **BAHAMAS**, where great progress has been achieved since the mid-1990s in reducing the incidence of HIV. Given its success, the Bahamas is now providing technical cooperation to other countries.



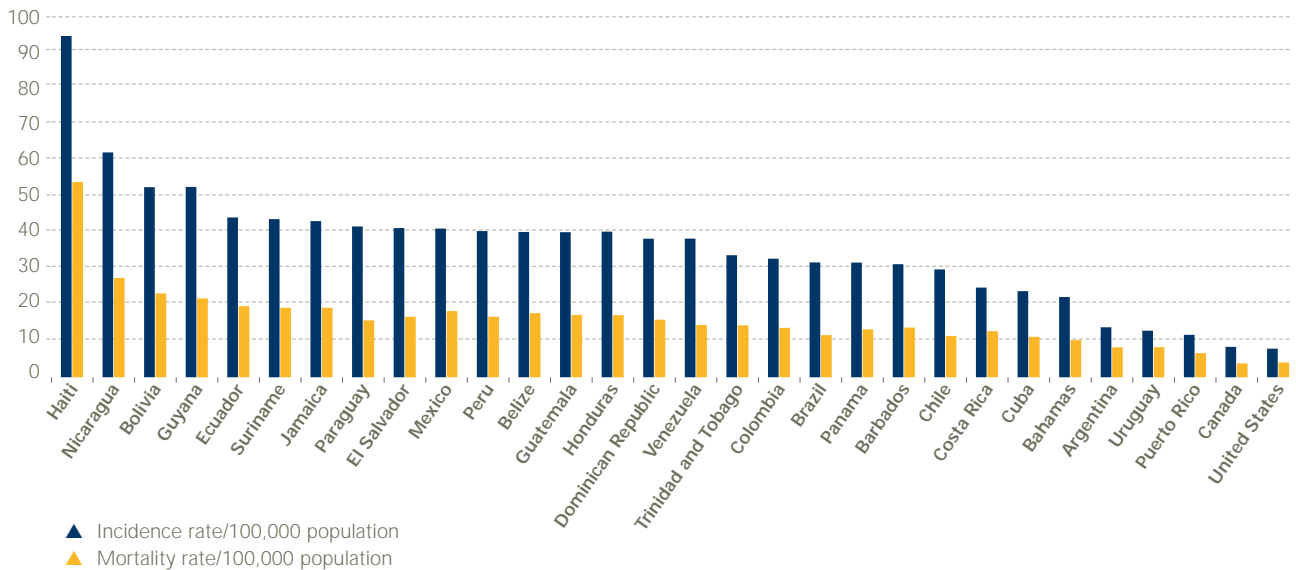
■ PAHO has been actively involved, through its country offices and CAREC, in promoting strategies and programs to prevent mother-to-child-transmission of HIV/AIDS. Countries of the **CARIBBEAN** are seeking resources to implement the programs and are providing clinical and social services to infected children to retard progression of the disease and improve the quality of their lives. Together PAHO and the countries launched a landmark agreement to combat HIV/AIDS.



Preventing and Controlling Cervical Cancer

Cervical cancer is a major threat to women’s health throughout the world. Incidence and mortality rates in the Americas are particularly high in poorer countries. To confront the threat, the Organization joined a partnership in 1999 of five international organizations, the Alliance for Cervical Cancer Prevention, that is funded by the Bill and Melinda Gates Foundation.

Cervical cancer in the Americas, 2000



Because access to effective screening and treatment services is one of the main obstacles to reducing the high rates of cervical cancer in Latin America and the Caribbean, PAHO has developed projects that incorporate appropriate prevention services, based on screening and treatment technologies, at the primary care level—especially in low-access areas. In Peru, the Organization and another Alliance partner, PATH, are conducting a project in the region of San Martín to evaluate the acceptability, safety, and cost-effectiveness of various screening methods. Among methods evaluated are naked-eye visualization of acetic-acid-washed cervix, visual inspection aided by a low magnification instrument, testing for the presence of human papilloma virus, and thin-layer cytology. The project aims to screen 80,000 women aged 25-49 over a three-year period, as an integral part of the region’s routine delivery of health services.



■ To ascertain the risk factors and the prevalence of human papilloma virus and cervical dysplasia in an urban area of Santiago, **CHILE**, PAHO is coordinating a study with the Ministry of Health, the International Agency for Research in Cancer, and two Chilean universities.

■ Without proper follow-up, many women do not receive the care that could save their lives. In **EL SALVADOR**, PAHO evaluated the follow-up care of women with abnormal Papanicolaou results in the rural area of Chalatenango. The evaluation found that:

- Of 109 women with abnormal results, 89 (95%) were so informed and referred for colposcopy.
- Of those, 72 (77%) had a colposcopy and/or biopsy.
- Of those, 62 (86%) were identified as needing treatment.
- Of those, 56 (90%) received treatment.

These findings will serve as a baseline for a demonstration project that will screen women aged 30-59 in Chalatenango.

To help countries establish information systems to record, track, and monitor women's screening tests and follow-up results, as well as to measure the impact of screening services, paho has developed a model that comprises system characteristics, requirements, data components and capabilities, and other features. The model, to be used as part of paho's package of technical cooperation with the countries, enables services to improve their management by incorporating functions such as an automatic generation of lists of women requiring follow-up.

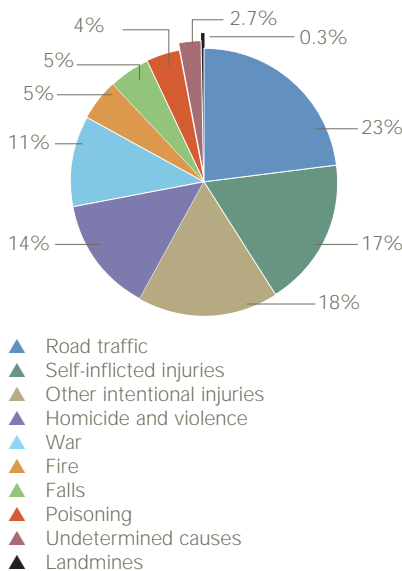
To collaborate in an external quality assurance process, over 40 laboratories in seven countries—Bolivia, Chile, Costa Rica, Ecuador, Mexico, Peru, and Venezuela—have formed a Pan American Cytology Network, with paho sponsorship. Problems abound: lack of registries of information, inconsistent diagnostic classifications, poor quality-assurance mechanisms, limited continuing education for

cytotechnicians and pathologists, and poor coordination between laboratories and health services to ensure follow-up care. paho conducted an appraisal of the network with a view to expanding the quality-assurance mechanisms of laboratories.

paho studies on women's participation in and perceptions of cervical cancer screening in Ecuador, El Salvador, Peru, Venezuela, and (in collaboration with path) Mexico confirmed that:

- Shame, limited access, and socioeconomic factors hinder women's full participation in screening programs.
- Peace of mind, being able to take care of themselves and their families, a sense of responsibility, health, looking good, and increased social acceptance are among the benefits of screening that women perceive.
- Peers, families, and friends most influence women to participate in screening.

Distribution of deaths due to injuries worldwide, 1999



Targeting the Prevention of Violence

A five-year plan to deal with social violence in **HONDURAS**, the result of paho's work with nationals, targets strengthening the country's governmental capacity and municipalities' development of violence prevention projects. A specific plan for San Pedro Sula aims to prevent violence against children, youth, and women.

To prevent violence in **NICARAGUA** and **EL SALVADOR**, national committees are preparing plans that will be informed by injury surveillance systems underway in those countries

with support of the ministries of health, paho, who, and cdc.

With the commitment of the **ANDEAN COUNTRIES** to strengthen it, a network for injury prevention and surveillance—created at the University of the Valle in Cali, Colombia—seeks to share experiences and information throughout the area.

In support of countries' activities, paho is teaming up with the idb, oas, unesco, cdc, and the World Bank in a coalition that taps resources from various sectors to prevent violence in the Americas.



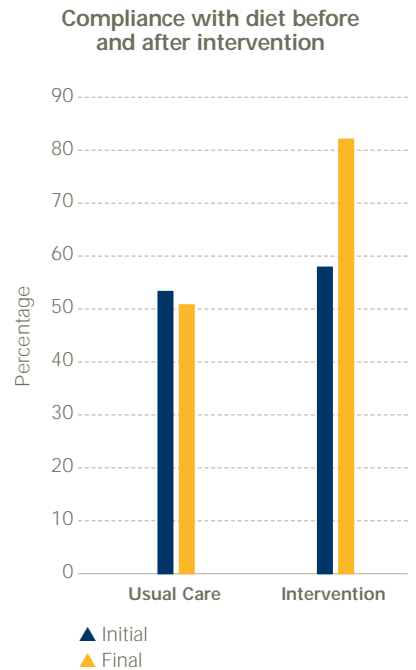
Reducing Noncommunicable Disease Risks

Noncommunicable diseases are emerging as the new pandemics of the 21st century. Many of the risk factors for diabetes, hypertension, and cardiovascular disease are due to patterns of individual behavior: physical inactivity, unhealthy diets, and smoking are prominent causes. To integrate approaches to prevent and control these diseases in Latin America and the Caribbean, paho created a network in 1996 that is commonly referred to as *carmen*, after the network's acronym in Spanish. Its aim is to reduce a set of risk factors common to these diseases by combining preventive health care services for high-risk individuals and health promotion strategies for the general population. *carmen* now comprises Argentina, Brazil, Canada, Chile, Colombia, Costa Rica, Cuba, and Puerto Rico, covering a population of over 5.5 million. Panama, Peru, and Venezuela are preparing to join *carmen*, and the English-speaking countries are creating their own network, *carli*.

paho and the International Diabetes Federation are working together to implement the Declaration of the Americas on Diabetes, with the aim of improving prevention and control of the disease. Diabetes education has been a major thrust of this work, with programs set up in Argentina, Barbados, Colombia, and Puerto Rico and standards published for all of Latin America and the Caribbean.

The Organization has proposed the development of a system for surveillance of noncommunicable disease risk factors that would work in the countries of Latin America and the Caribbean. As part of the process, and working with who and cdc, paho has consulted experts and conducted literature reviews to determine what variables such a system should measure, what population groups it should cover, what sampling methods to use, and what logistical problems to expect.

■ A PAHO study in three clinical settings in **CHILE** proved that interventions to educate diabetes patients—especially regarding diet compliance—can significantly improve their metabolic control.



■ The prevalence of diabetes in Latin America will double within the next two decades. Type 2 diabetes is already among the first causes of mortality in the Latin American adult population due to chronic complications related to premature and accelerated atherosclerosis. An estimated one-third of women and one-half of men in the region remain undiagnosed for years. In the face of a looming epidemic, the countries, with PAHO's cooperation, are creating national diabetes programs to improve treatment and access to health care services.





Cooperating in Veterinary Public Health

To chart the course of technical cooperation in veterinary public health—of vital importance to the Region because of its enormous social and economic consequences—the Organization brings together representatives at the highest political level to address matters of common concern to the countries' health and agriculture sectors. paho has been convening these inter-ministerial meetings, now known as RIMSA for their Spanish acronym, since 1968. In the beginning, the meetings dealt primarily with animal health; today they convene Ministers of Agriculture and Health to discuss much broader issues of common concern.



■ In 2001, Brazil hosted RIMSA, and the President of Brazil, the Honorable Fernando Henrique Cardoso, addressed the representatives, stressing the importance of cooperation among the countries of the Americas, trade as an instrument of peace, and hemispheric solidarity.

Protecting Food, Safeguarding the Public's Health

Food-borne diseases constitute a major public health problem and lead to decreased economic productivity as a result of diarrhea, cholera, salmonellosis, listeriosis, infections from enterohemorrhagic *Escherichia coli*, and chronic poisoning caused by chemical contaminants. In addition to the suffering they cause, food-borne diseases impose a substantial economic toll on those affected and their families, as well as on industry—especially tourism and trade, and health care systems.

One of the principal components of paho's veterinary public health program is food safety.

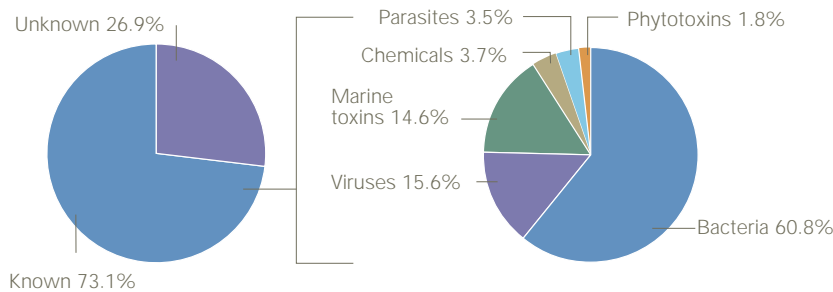
The aim of work in this area is twofold: to reduce the risks to humans of food-borne diseases and to facilitate world food trade. In 2000, the Organization's Directing Council approved a strategic plan for food protection and assigned responsibility for overseeing its regional implementation to paho and its Institute for Food Protection (inppaz). The following year, rimsa set up the Pan American Commission for Food Safety to advocate establishment of national food safety programs and promote intercountry and intersectoral collaboration across the entire food production chain.

To facilitate the exchange of information about food-borne outbreaks, INPPAZ coordinates a regional information system for food-borne disease surveillance, SIRVETA, in which 21 countries

actively take part. It provides information about food-borne outbreaks—what causes them, the foods implicated, and where those foods are consumed.

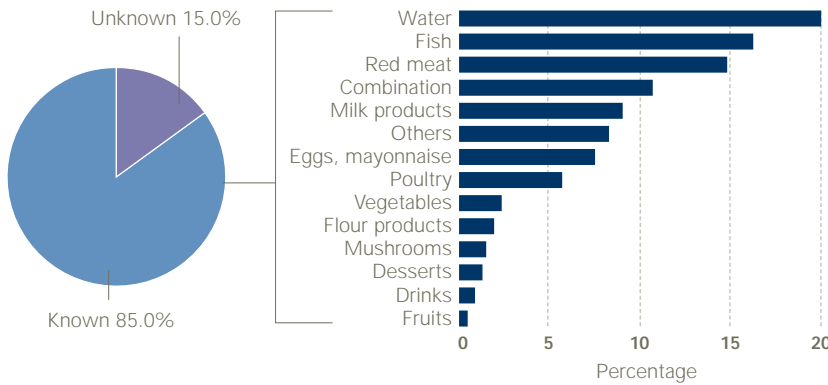


Causes of 2,575 outbreaks of food-borne diseases in the Americas, 1998-2001

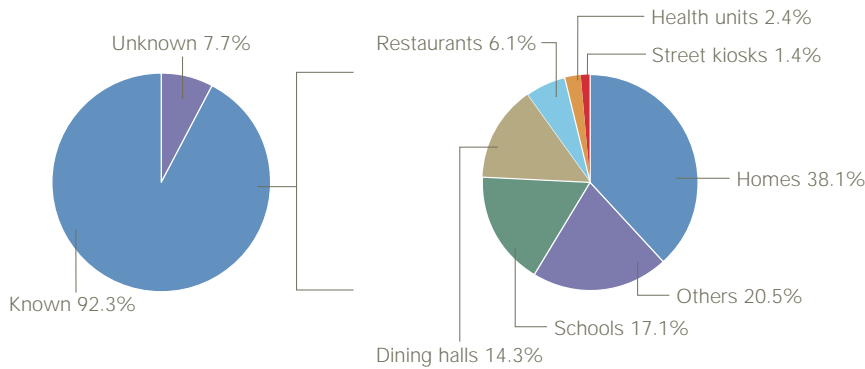


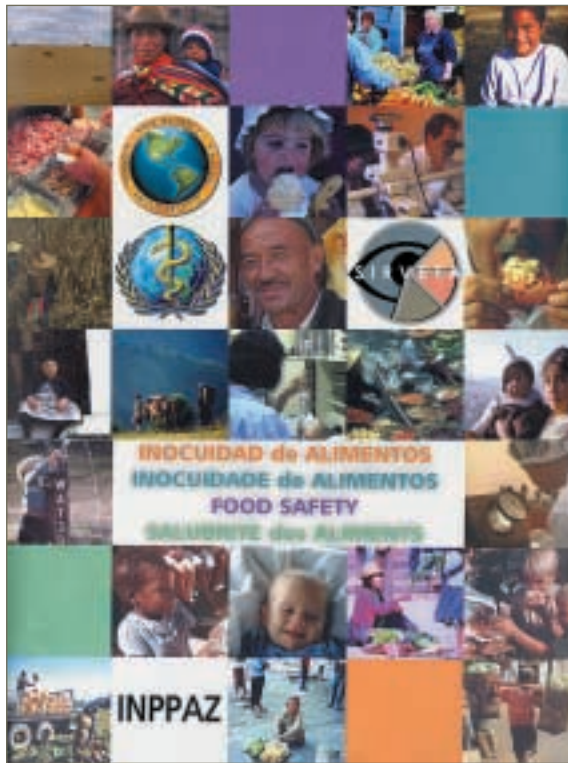
The effectiveness of SIRVETA has been widely recognized as a unique tool for developing food-borne disease prevention and control programs. With the expectation that it be replicated in other regions, WHO invited INPPAZ staff to make a presentation on SIRVETA, as part of a consultation to develop a strategy for global surveillance and risk analysis of food-borne diseases. CDC and INPPAZ have recently launched a hemisphere-wide epidemiological network to improve surveillance of food-borne diseases throughout the Americas.

Foods implicated in 2,575 outbreaks of food-borne diseases in the Americas, 1998-2001



Places where food implicated in 2,575 food-borne outbreaks was consumed in the Americas, 1998-2001





inppaz served as the prime mover in establishing an inter-American network of food analysis laboratories—in which 55 laboratories in 25 countries currently participate—to promote food safety, prevent food-borne diseases, protect consumers' health, and facilitate trade. The network pursues those aims by serving as a forum for the exchange of information on common methodologies, quality-assurance systems, and technical and scientific cooperation among countries.

A regional system of information on food legislation, created by inppaz, promotes the updating and standardization of national legislation, in accordance with international standards, as a means of improving countries' competitiveness in international

markets. Currently, 10 countries participate in the system. In agreement with the National Agency of Sanitary Surveillance of the Ministry of Health of Brazil, a food legislation project is under development in that country. Project activities include training in modern inspection systems. inppaz has already trained some 210 public service workers in quality management methodology. The goal is to strengthen sanitary surveillance of foods through more compatible food safety programs throughout the Americas by implementing equivalence, transparency, and standardization of food regulation and legislation.

As part of the organization of national food safety programs, inppaz promotes activities related to the Codex Alimentarius—a collection of uniformly presented food standards that have been adopted internationally. Its purpose is to improve the quality of foods for national consumption, facilitate international commerce, and guarantee equitable trade practices. inppaz and the Coordinating Committee of the Codex Alimentarius for Latin America have developed an Internet chat room to enable broad-based discussion of food protection issues.

To assist countries' efforts to update food inspection and control systems and adopt modern, universally accepted inspection methods, inppaz conducts training programs for application of the hazard analysis critical control points methodology, good manufacturing practices, and standard sanitary operation procedures.



Eradicating Foot-and-Mouth Disease

The countries and the Pan American Center for Foot-and-Mouth Disease (panaftosa) have joined forces to eradicate that disease throughout the hemisphere. Up until mid-2000, the disease-free zone included the Southern Cone subregion—Argentina, Chile, Paraguay, Uruguay, and the states comprising the cattle-producing zones of southern, central-western, and eastern Brazil—covering approximately 6.2 million square kilometers and some 140 million cattle. Argentina, Chile, and Uruguay had achieved international recognition for being foot-and-mouth disease free without vaccination, and Paraguay and Brazil as free with vaccination. This situation represented an important economic benefit for the Southern Cone countries, which eliminated losses occasioned by the disease, saved the cost of vaccination and treatment, initiated exports of meat to North America, and expanded trade with Europe and the Orient.

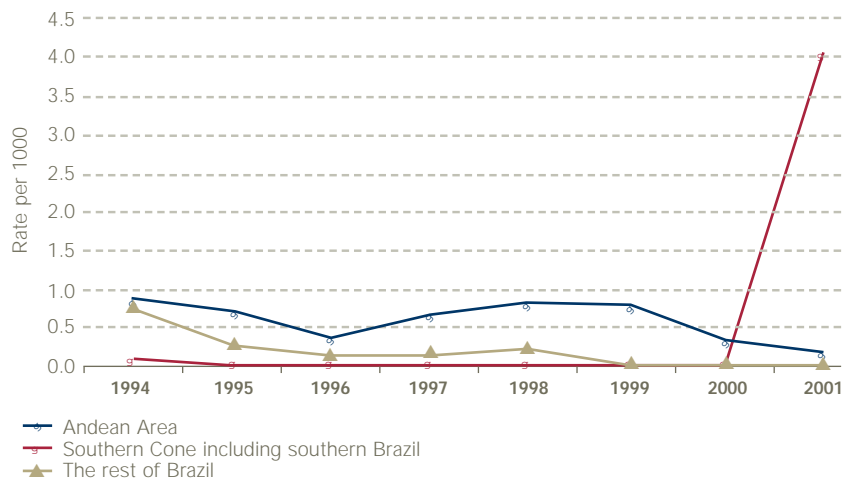
This situation deteriorated, however, in the second semester of 2000 with the appearance of outbreaks in Brazil and Uruguay—outbreaks that were rapidly eradicated. Unfortunately, a serious epidemic appeared in Argentina in February of the following year and spread throughout the country (except Patagonia) to Uruguay and southern Brazil. Export losses in Argentina and Uruguay are estimated at US\$400 million and US\$300 million, respectively. Chile, Paraguay, and the rest of Brazil remained free of the disease.



PANAFTOSA
CENTRO PANAMERICANO DE FIEBRE AFTOSA

■ The Pan American Center, PANAFTOSA, is responsible for helping the countries of the Americas eradicate foot-and-mouth disease and prevent and control zoonoses.

Herds affected with foot-and-mouth disease in South America



Until mid-2000 foot-and-mouth disease was either eradicated or on the decline in Latin America and the Caribbean



Today, with PANAFTOSA's cooperation and experience acquired over many years, the affected countries are advancing rapidly towards eradication. At those countries' request, PANAFTOSA is providing close, ongoing supervision of national programs. Brazil has made important progress, where—as a result of the Amazon Basin Project—16 of the federal units are now recognized as disease free, as is Guyana. In the Andean area, Colombia obtained international recognition

as being free of foot-and-mouth disease with vaccination in a zone that includes the Atlantic Coast Project, with an estimated 7 million cattle. Peru, too, has made good progress in its eradication program. And PANAFTOSA is working with the Andean Pact to enable programs to achieve eradication of foot-and-mouth disease throughout South America by 2009. Countries in Central America, North America, and the Caribbean have maintained their disease-free status.



Preventing and Controlling Zoonoses

Following the recommendation of an external advisory group in 1996, panaftosa assumed responsibility for the Organization's technical cooperation in the area of zoonoses, while inppaz directed its efforts exclusively to food safety.

In relation to **RABIES**, panaftosa targeted strengthening national programs, coordinating a regional epidemiological surveillance system, assuring medical attention for exposed individuals, supervising the use of biologicals of recognized quality and safety, promoting the creation of diagnostic laboratory networks coordinated by who/paho Collaborating Centers, and carrying out massive vaccination campaigns. The frequency of cases of human rabies transmitted by dogs continues to trend downward. From an annual average of 293 cases in the decade from 1980 to 1989, the annual average for the decade from

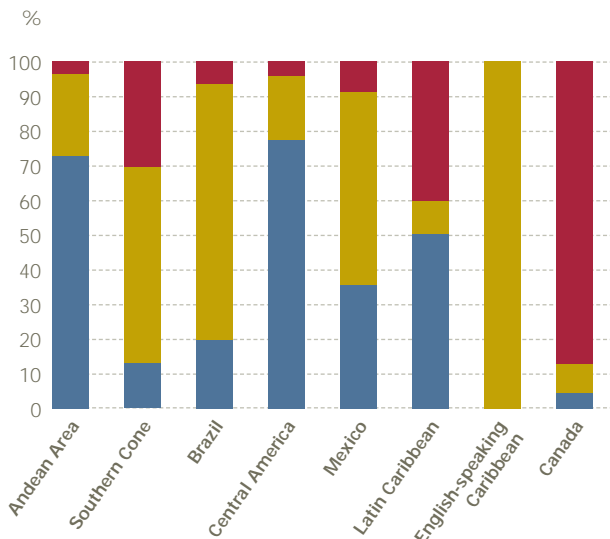
1990 to 1999 dropped to 168 cases; 64 and 42 cases were recorded in 2000 and 2001, respectively—roughly half of which represented rabies transmission by dogs. Human rabies of canine origin has virtually disappeared in the major cities of Latin America.

The same downward trend is observed in canine rabies. The annual average of 17,600 cases in the decade 1980-1989 dropped to 6,600 in 1990-1999; 2,086 and 801 cases were registered in 2000 and 2001, respectively. This reduction has had a direct impact on the occurrence of human rabies. Among the countries that have remained free of human rabies transmitted by dogs are Argentina, Canada, Chile, Costa Rica, Panama, the United States, Uruguay, the English-speaking Caribbean countries, and the Brazilian states of São Paulo, Rio de Janeiro, and the Federal District. As has occurred in other parts of the



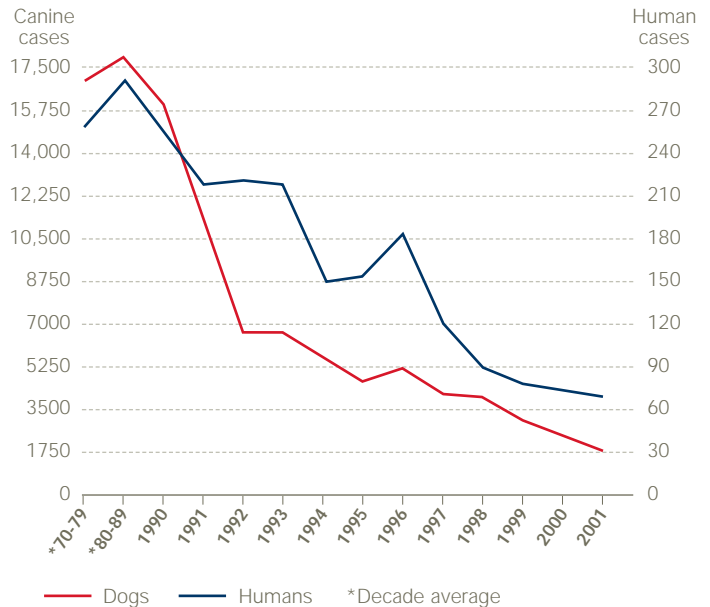
■ As part of a weekly supplement, "Vida," appearing in the newspaper *La República*, the PAHO/WHO Office in Peru produced cartoons promoting health including this one, part of a series intended to educate the community about preventing rabies.

Proportional distribution of rabies cases in animals in the Americas, 2001



■ Pets: dogs and cats
 ■ Farm animals: cows, sheep, goats, etc.
 ■ Wild animals: bats, skunks, opossums, etc.

Canine and human rabies are on the decline in the Americas



world, with the decline in cases of canine-transmitted rabies in the Americas, rabies transmitted by wild animals has become a more serious problem. Of all human cases registered in 2001 for which the source of infection could be identified, 8.8% were transmitted by bats. Of all cases of rabies in other animal species during 2001, the proportion corresponding to wild animals was 87.8% in Canada; the United States has had similar figures in previous years; 8.3% in Mexico; 40% in the Spanish- and French-speaking Caribbean; 3% in Central America; 2.6% in the Andean Area; 5.4% in Brazil; and 29.6% in the Southern Cone.

BRUCellosis and Bovine Tuberculosis continue to be serious economic and public health problems. panaftosa conducted a situation analysis of programs to combat these diseases in 24 countries. That analysis showed that Canada and the United States are almost free of these diseases; the English-speaking Caribbean and Cuba have very low disease levels; Central and South America continue to be endemic; and control and eradication programs are being strengthened in Mexico and the Southern Cone countries. Brucellosis caused by *Brucella melitensis* continues to be a serious public health problem in Mexico, Peru, and the area bordering Argentina, Bolivia, and Paraguay, but control programs based on mass vaccination of sheep and goats are being developed. All the countries are committed to eradicating these diseases, encouraged by their success in eradicating foot-and-mouth disease.

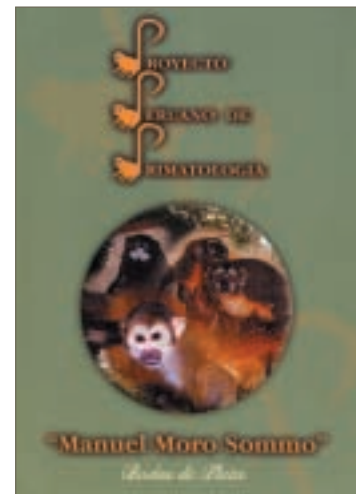
panaftosa coordinates an **EQUINE ENCEPHALITIS** information and surveillance system that comprises

Brazil, Colombia, Ecuador, Honduras, Mexico, Panama, and Venezuela—the countries that, with the exception of Brazil, pose the greatest risk of Venezuelan equine encephalitis outbreaks, which seasonally trigger epidemics. Complementing the surveillance system is laboratory diagnosis to characterize the antigen of the strains involved. This information is then used to advance campaigns for mass vaccination of equines, which helps reduce the risk of human cases.

Sporadic cases of **PLAGUE**, in areas that had cases in the past, were reported in Bolivia, Brazil, Ecuador, Peru, and the United States. No outbreaks of plague occurred, however, during the past several years in Peru or Ecuador, which had had large outbreaks in 1992 and 1997, respectively. Efforts to break the cycle of transmission between rodents and humans, by controlling infestation of rats in silos where corn and other foods are stored and developing a surveillance system with laboratory back-up, appear to have been successful.

In the wake of Hurricane Mitch, Central America and the Caribbean experienced an increase in cases of **LEPTOSPIROSIS**. To strengthen epidemiological surveillance of the disease, panaftosa cooperated with the affected countries by improving their laboratories' diagnostic capacity.

The Americas continues to be free of cases of **BOVINE SPONGIFORM ENCEPHALOPATHY**. To bolster prevention and epidemiological surveillance plans, paho organized a consultation of experts from Europe and the Americas, in which directors of national veterinary services partook, that issued recommendations to avoid introduction of the disease.



■ The Peruvian Primatology Project celebrated a quarter-century of protecting neoprimate species at risk of extinction by means of controlled harvesting and reproduction in captivity. As part of this scheme, the Project was able to supply samples for development of vaccines such as hepatitis A and B, as well as carry out basic research into malaria, physiology and human nutrition. An estimated 250 specimens of neotropical primates of biomedical interest are transferred yearly to scientific institutions.