Disease Prevention and Control

The Organization's program of technical cooperation in disease prevention and control aims to strengthen Member Countries' capabilities to eradicate, eliminate, prevent, and control disease.

Information is fundamental to this work. Knowledge about the incidence and prevalence of disease allows decision-makers to select priority areas for intervention. And an understanding of the changes in the patterns of disease helps measure

Info

Information

the progress of prevention and control programs and provides insights as to the effectiveness of various actions. The ability to detect certain changes in disease incidence may be crucial in minimizing the impact of new infectious disease threats.

Advances in technology bring new possibilities for the collection, analysis, and communication of disease information. In 1998, PAHO provided technical cooperation to countries to strengthen their surveillance systems for emerging diseases, antibiotic resistance, diseases preventable by immunization, AIDS, foodborne diseases, and noncommunicable diseases. Surveys of behavioral risk factors were promoted in several countries as a first step in designing integrated noncommunicable disease programs. The electronic platform for the routine and rapid communication of infectious disease information was developed for the Americas. A CD-ROM was created to make existing food protection legislation available throughout the Region. Additional details are provided in the sections that follow.

The trends of the HIV/AIDS epidemic in the Region can be summed up in three words: ruralization, feminization, and pauperization.

AIDS

Available data shows that the HIV/AIDS epidemic in the Region of the Americas continues to grow, spreading to larger population sectors. The trends of the HIV/AIDS epidemic in the Region can be described in three words—ruralization, feminization, and pauperization. Initially, the epidemic concentrated among urban, middle class, adult groups, but now it has spread to rural communities and to poorer and younger population groups. Furthermore, as more and more women become infected, the number of pediatric cases also increase due to perinatal transmission. The brunt of the epidemic is increasingly being felt by groups whose access to services and information is limited by low income.

National AIDS programs must cope with an increasing number of affected individuals without a proportional increase in the resources needed to ensure appropriate care for them or to maintain the public awareness needed to curtail the spread of the epidemic. Moreover, the programs are under added pressure from various community sectors that demand access to extremely costly, state-of-the-art treatments that have shown promising results in developed countries. The need for a more accurate system to monitor the epidemic for better planning of targeted preventive interventions has become evident.

The Pan American Health Organization, in collaboration with UNAIDS and other international partners, provided technical collaboration for the development of a "second generation" surveillance system that enables health authorities to assess the evolution of the epidemic and plan prevention, control, and treatment activities accordingly. A series of guides and clinical protocols on the comprehensive care of people

infected with HIV and the clinical management of STDs were developed to provide health authorities with concrete recommendations on appropriate, affordable care interventions. Training in preventive interventions aimed at particularly vulnerable groups was provided to governmental and non-governmental organizations, and the technical collaboration necessary to ensure a safe blood supply continued to be provided.

DISEASES PREVENTABLE BY IMMUNIZATION

For the past 21 years, PAHO has played a significant role in fostering a culture of information in the area of vaccine-preventable diseases. Emphasis has been on building in each country an infrastructure capable of supporting a steady flow of epidemiological information to monitor progress and inequities in the area of vaccine-preventable diseases. At the center of the Organization's work has been the close collaboration with the ministries of health in discussing every country's diverse technical and policy issues related to the sustainable delivery of national immunization services. The coordination with multilateral and bilateral organizations has been critical for maximizing resources allocated by the international community, as has been the dialogue with the countries' emerging partners, such as state and district health officials.

The Organization has stressed the importance of training health workers to gather and analyze epidemiological data, and of ensuring that reliable feedback is provided throughout a system of reporting units that originate from the local level, reaching up to central authorities and regional coordinating agencies. The usefulness of these systems has rested upon routine monitoring by means of well-defined and universally accepted indicators.

At the regional level this information has enabled PAHO to highlight priority countries and underserved populations within countries, negotiate solutions, and gather the necessary national and international expertise to elaborate and implement appropriate public health responses. In 1998, emphasis was placed on improving existing networks of communication to guarantee the ongoing and rapid flow of epidemiological information among all areas in a country and with neighboring countries. The Organization also worked with health authorities to improve the routine use of epidemiological information for policy decisions within the health sector and with other sectors of government.

During 1998, PAHO supported health authorities in determining national capabilities to conduct surveillance and immunization activities, as well as manage resources at the periphery. The impact of health reforms and decentralization efforts on the delivery of immunization programs also was closely monitored through the Organization's routine performance evaluations of national immunization programs.

Emphasis has been placed on building an infrastructure that can provide epidemiological information to monitor progress and inequities in diseases preventable by immunization.

The main tools used by PAHO to monitor progress in the control of vaccine-preventable diseases include the Polio Eradication Surveillance System (PESS)—which gathers and maintains case-based information on acute flaccid paralysis, including laboratory diagnosis—and the Measles Eradication Surveillance System (MESS), which collects and maintains case-based information on suspected measles cases. This information is published in weekly surveillance bulletins on polio and measles, which are sent to all countries in the Region. PAHO also maintains a database, PAISIS, that reports on morbidity, mortality, and immunization coverage of diseases preventable by immunization, and for two decades it has published *EPI Newsletter*, a bimonthly publication in Spanish and English that is distributed worldwide.

In 1998, PAHO worked with all countries to fine-tune their use of the MESS system and to review the quality of the data being collected. The shift in responsibility for gathering data for national surveillance systems from the central level to the local level required that PAHO focus on expanding the scope of its technical cooperation to the local levels. In Venezuela, the MESS system was successfully decentralized to the state of Zulia. In Colombia, a decentralized MESS installation became operational in 13 departments, including two laboratories at the departmental level. In Ecuador, the first attempt to decentralize MESS took place in the state of Guayas, both at the Expanded Program on Immunization and at the Instituto Nacional de Higiene y Medicina Tropical Leopoldo Izquieta (INHMT), in the state of Pichincha, and at INHMT in Quito. In Peru, decentralization of MESS was carried out in the four Lima regions and at the national laboratory.

The Regional initiative to eradicate poliomyelitis from the Western Hemisphere was instrumental in strengthening the capabilities of countries to gather epidemiological information for routine immunization activities. During the last year of the polio initiative, the most comprehensive surveillance system in the history of the Americas was put into operation; more than 22,000 health units participated, covering every county or district in the Region.

In support of the goal of eradicating measles by the year 2000, the disease's surveillance has been heightened.

Similarly, countries are benefiting from the heightened attention being placed on measles surveillance in support of the goal of measles eradication by the year 2000, which has the backing of all the Region's countries. The information gathered allows countries to determine the spacing of measles vaccination campaigns, prevent the spread of outbreaks, and monitor the changing epidemiology of this disease. As a result of this monitoring, the measles eradication strategy is now targeting vaccination of specific groups of adults who are at the highest-risk of being exposed to measles virus. Based on the experience during the polio years, greater emphasis is now being placed on the integration of laboratory and epidemiology data. The permanent communication channel between laboratories and immunization programs is resulting in more streamlined and efficient case handling, from investigation to final classification.

The Organization also has worked to establish and/or enhance communication networks between countries to ensure that quality vaccines are used in national immunization programs. PAHO continued to play a catalytic role in facilitating interaction among the National Control Laboratories and National Control Authorities in the eight vaccine-producing countries. Collaboration has been primarily geared to ensure that quality data is regularly produced, analyzed, and distributed in all countries. All the National Control Laboratories are now connected to the Internet or have electronic mail.

During the year, PAHO intensified its technical and managerial advice on how to build a surveillance, laboratory, and delivery infrastructure to accommodate the introduction of other vaccines of public health importance, such as the rubella vaccine, to prevent rubella and congenital rubella syndrome; hepatitis B vaccine, *Haemophilus influenzae* type b (Hib) vaccine, and yellow fever. The current surveillance systems used for measles and poliomyelitis will serve as a foundation to build these systems. For Hib, a surveillance protocol for bacterial meningitis and pneumonia was developed for Central America, with the participation of laboratory personnel and epidemiologists from those countries. Further standardization in the Region was achieved during a workshop in Colombia, with the participation of laboratory personnel from Bolivia, Ecuador, Paraguay, and Peru. This workshop was later reproduced in Bolivia and Paraguay, with the participation of laboratory personnel of pediatric hospitals that will integrate the surveillance system.

Regarding yellow fever, the early detection of cases will be key for conducting prompt mass immunizations and effective vector control activities to prevent the re-urbanization of the disease. Therefore, PAHO worked with countries to support the establishment of a regional surveillance network of icteric and icteric–hemorrhagic syndromes, as well as a laboratory network capable of providing the required diagnostic support.

In 1998, the Caribbean Community (CARICOM) set the goal to eliminate rubella by the year 2000. Data from the measles surveillance system have confirmed widespread circulation of rubella in many Caribbean countries and elsewhere in the Americas. As a first step, PAHO supported the Caribbean countries review of guidelines for the surveillance of rubella, in order to accurately define the disease burden and to identify appropriate vaccination strategies.

A surveillance network to monitor the prevalence and antibiotic resistance of *S. pneumoniae* serotypes from invasive diseases in children under 5 years old in Argentina, Brazil, Chile, Colombia, Mexico, and Uruguay was well established. The network is providing reliable national, subregional, and regional epidemiological information by monitoring seasonal and geographical changes of these infectious microorganisms and their antimicrobial resistance. This network has been expanded to include a regional sentinel hospital surveillance system to

Early case detection will be key for conducting prompt mass immunizations and control activities to prevent the re-urbanization of yellow fever.

PAHO sponsored subregional laboratory networks to monitor emerging diseases in the Amazonian countries and in the Southern Cone.

monitor *H. influenzae* and other bacteria responsible for meningitis and respiratory diseases. The information will play an important role in evaluating the magnitude of the problem and measuring the impact of vaccination programs against Hib. PAHO also is providing technical supervision in the development of the Control and Release of Biologicals System (CLB), which monitors vaccine lots circulating in the Region.

EMERGING DISEASES

To expedite the exchange of information and thus allow for immediate and effective action to be taken in the face of new infectious diseases or changes in their incidence, PAHO collaborated with BIREME to create an electronic platform for reporting infectious diseases of national, subregional, and Regional significance. This system uses the Internet and electronic mail to link health ministries with PAHO Headquarters, the Centers for Disease Control and Prevention (USA), and the Laboratory Centre for Disease Control (LCDC) of Canada.

Given the special features of infectious diseases as well as population movement patterns, PAHO sponsored the establishment of two subregional networks of laboratories to monitor emerging diseases, one for the Amazonian countries and one for the Southern Cone.

In the wake of Hurricane Mitch's devastating sweep through Central America, a daily surveillance system was implemented to ensure early detection of outbreaks of communicable diseases or any increase in their incidence in the event of disaster. Thanks to this system, it was possible to monitor patterns of cholera, dengue, malaria, and leptospirosis in the five countries hardest hit: Belize, El Salvador, Guatemala, Honduras, and Nicaragua. Based on the data gathered, parameters were defined and comparisons were drawn with the pre-hurricane period. Guatemala was found to have the highest incidence of cholera, with 2,840 suspected cases (a weekly average of 493 cases) and 22 deaths, for a lethality rate of 0.8%. Nicaragua was hit mainly by an epidemic of leptospirosis, with 708 suspected cases (a weekly average of 79 cases) and 7 deaths, for a lethality rate of 0.9%. These diseases were endemic in the countries mentioned. According to the information received, malaria and dengue did not register any significant increases over the pre-hurricane period. It can be concluded, therefore, that the surveillance system kept the Central American countries effectively informed and promoted prevention and control actions that checked the spread of major epidemics.

The surveillance system was complemented by a training program in the control of epidemic outbreaks, especially those arising in the aftermath of natural disasters. This two-pronged approach is expected to make for more rapid and effective responses to such situations and thus minimize the mortality and morbidity associated with outbreaks of

infectious diseases, which disproportionately affect the poor and displaced population groups.

PAHO continued to monitor resistance to antibiotics, posting relevant information on its Web site. The Organization undertook joint initiatives with LCDC and other institutions and professional associations, as well as with the pharmaceutical industry. Argentina, Brazil, Chile, Costa Rica, Mexico, Peru, and Venezuela cooperated in efforts to monitor antibiotic resistance in *Salmonella*, *Shigella*, and *Vibrio cholerae*, and support was provided for laboratory staff training in the Bahamas, Barbados, Jamaica, Saint Lucia, Suriname, and Trinidad and Tobago.

In late 1998, the Organization sponsored the Pan American Conference on Antimicrobial Resistance, which was held in Venezuela in collaboration with that country's health ministry and the Pan American Association of Infectology. At the gathering, recommendations were formulated for strengthening surveillance and promoting policies for the rational use of antibiotics.

MALARIA

Significant headway has been made in terms of reducing mortality from this disease. Incidence is expected to drop thanks to the simultaneous introduction of vector control measures, early diagnosis, and immediate case treatment. In this connection, PAHO promoted the preparation of guidelines and protocols for the simultaneous implementation of intensive actions, which were prepared and implemented in Mexico, as well as guidelines for selective vector control which were produced by a group of Latin American experts. The Organization also supported and participated in cost-efficiency and cost-effectiveness analyses of disease control programs, and worked with countries and financial institutions of the Region to design investment plans for the control of communicable diseases. PAHO feels that the Region is well prepared to take part in the global WHO initiative "Rolling Back Malaria."

Vector control, early diagnosis, and immediate case treatment are critical weapons in lowering the incidence of malaria.

TUBERCULOSIS

Tuberculosis is an infectious disease that has a significant social component, in that it is closely linked to poverty. As part of the PAHO/WHO-recommended strategy for effective control of this disease, technical cooperation has focused on disseminating information among the countries of the Region, underscoring the need to adopt the strategy known as DOTS (directly observed treatment, short course). As a result, eight countries have implemented this strategy at the national level; eleven have revised their control policies and updated their national standards; and six have identified pilot areas for DOTS implementation. In five of

the eleven countries that have not yet adopted this strategy, PAHO conducted training activities to establish pilot areas for DOTS.

The IMCI strategy is an ideal tool for achieving greater equity in children's health.

CHAGAS' DISEASE, SOUTHERN CONE INITIATIVE

Argentina, Bolivia, Brazil, Chile, Paraguay, and Uruguay are all participating in the initiative to eliminate the vector of Chagas' disease. Data from these countries indicate that entomological surveys were conducted in 806 *municipios*, for a total of 18,358 towns and 832,460 homes. Residual action insecticides were sprayed in 667 *municipios*, for a total of 5,057 towns and 104,578 homes.

In 1998, entomological surveillance activities were conducted under various formats and strategies in the countries, covering a total of 1,218 *municipios*, 22,555 towns, and 3,083,306 homes in the Southern Cone. These figures bear witness to the continuity, and in some cases the expansion, of action in these countries to control *Triatoma infestans.* Chile, for instance, detected 362 samples of *T. infestans* in 1998, compared with 727 in 1997. Another indicator of the success of that country's vector-elimination program was the drop in serologic prevalence among 12,794 children under age 11 in the 47 *comunas* that had received chemical treatment over the past 12 years. Serologic testing for *Trypanosoma cruzi* was positive in 1.1% of children studied in 1995 through 1997, as compared with 5.4% of the children studied in 1982 through 1990. This reduction in prevalence was observed in all endemic regions of Chile, thus confirming that vectoral transmission of *T. cruzi* had been interrupted or at least reduced in the endemic zones in which chemical control measures had been carried out over the preceding 10 years. Judging from the data reported in 1998, it can be concluded that the transmission of *T. cruzi* in Chile appears to have been interrupted.

INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESSES

With cooperation from PAHO, the countries have moved forward with implementation of the Integrated Management of Childhood Illnesses (IMCI) strategy. IMCI aims at upgrading the quality of services and promoting preventive and health promotion activities for children at home and in the community, with a view to reducing child mortality. This strategy, which was formulated jointly by PAHO/WHO and UNICEF, is an ideal tool for achieving greater equity in children's health, since it helps to detect and treat problems that have the greatest health impact, regardless of the reason for the consultation. Furthermore, the strategy includes systematic monitoring coupled with preventive care and health promotion, thereby reducing missed opportunities for the care of this population group.

As part of a massive effort to disseminate information and knowledge, PAHO promoted the application of this strategy to the groups at highest risk, i.e. those presenting infant mortality rates above 40 per 1,000 live births. Ten of the 12 countries that presented such rates in the early 1990s have adopted the strategy and are gradually implementing it in their health services.

Under a joint initiative of PAHO, UNICEF, international financing agencies, bilateral cooperation agencies, and nongovernmental organizations, training was provided to more than 6,000 health workers in the Region. Similarly, partnerships were strengthened with religious organizations, such as the Catholic Medical Missions Board, World Vision, Catholic Relief Service, and the Centro Católico Hispánico.

More than 30 scientific and technical publications were prepared and distributed on the topic of the IMCI strategy, and training materials on children's health promotion were prepared for community health agents, as a way of fostering communications between health workers and parents. Work began on incorporating the IMCI strategy into pediatrics curricula, and joint efforts were undertaken with regional and national academic and scientific institutions to promote this process in undergraduate and graduate-level courses.

Within the context of the IMCI strategy, the Meeting on the Control of Intestinal Helminthiases was held in October in Rio de Janeiro, Brazil, with an eye to extending the coverage of diagnostic, treatment, and prevention measures. As part of the strategy's educational component, health services and the community would continue to emphasize breast-feeding and proper nutrition for children; links were also studied between the IMCI strategy and actions to improve perinatal health, which is another key determinant of child mortality.

NONCOMMUNICABLE DISEASES

In 1998, PAHO actively gathered essential data on noncommunicable diseases in 16 countries of the Region, including information on mortality from cardiovascular diseases, cervical cancer, diabetes, and accidents. This information was used to analyze the situation of noncommunicable diseases Regionwide, which was published in *Health in the Americas, 1998 Edition*, and to launch activities and programs to combat these diseases.

Through the Pan American network set up under a set of activities for the multifactorial reduction of noncommunicable diseases (known by its Spanish acronym CARMEN), the Organization continued to support activities designed to prevent health risk factors and to implement programs aimed at mitigating such risks, including programs to combat smoking, control hypertension, and promote physical activity. As a means of fostering public programs for physical activity, a collaborating

PAHO supported activities to prevent health risk factors and to implement programs aimed at mitigating those risks.

center headquartered at the Centers for Disease Control and Prevention (USA) was set up, and a work plan was drawn up.

The CARMEN project's main achievements include: preparation and implementation of national prevention and control policies for noncommunicable diseases as a public health problem; launching of a strategy to reorient primary health care services; establishment of partnerships with nongovernmental organizations; fostering of a greater role for the private sector; publication of evaluation results, which have been used to promote activities to control noncommunicable diseases; and focus on cardiovascular risk factors that are traditionally overlooked, such as physical inactivity.

Prevention of Cardiovascular Diseases through Primary Care

Hypertension is a medical condition that affects 140 million adults in the Americas, of whom 55 to 70 million are unaware that they suffer from the condition; fewer than one-half receive proper treatment. The Pan American Hypertension Initiative—sponsored by PAHO in collaboration with the National Heart, Lung, and Blood Institute of the United States—was launched in 1998 to tackle one of the core problems related to the prevention of cardiovascular diseases: the fact that they are not included in primary health care services or institutionalized clinical advice.

The Pan American Hypertension Initiative deals with a key problem in preventing cardiovascular diseases: the fact that these diseases are not included in primary health care services.

Diabetes

As an advocate and signatory of the Declaration of the Americas on Diabetes (DOTA), PAHO joined with the International Diabetes Federation and five industrial groups to provide training for national associations in organizational development and specific leadership in diabetes in Barbados and Panama. The Organization also cooperated in the development of standardized diabetes education programs; it designated three educational centers of excellence with subregional responsibilities in Argentina, Colombia, and Puerto Rico; and it prepared training evaluation guidelines. With collaboration from the Experimental and Applied Endocrinology Center (CENEXA) in La Plata, Argentina, protocols were drawn up for protecting and assessing the quality of life of diabetes patients. Information packets were also prepared and distributed to key health care providers, and the DOTA strategy was promoted at professional gatherings.

Cervical Cancer

As a way to reduce the incidence of this cancer, the Organization set up the Pan American Cytology Network, which received financing from the Spanish International Cooperation Agency and technical support from the Laboratory Proficiency Testing Program, of Ontario, Canada. This program conducts ongoing training for and external evaluations of laboratories that perform cytological testing, with an eye to improving

the diagnostic quality of participating laboratories. Based in Chile, this initiative has supported early detection programs for cervical cancer in Chile, Costa Rica, Ecuador, Mexico, and Venezuela.

PAHO took part in the preparation of demonstration projects and the implementation of preliminary evaluations in three countries of the Region. It also cooperated in a preliminary study on information systems to enhance the monitoring of early detection programs for cervical cancer in Ecuador and Venezuela. These systems will make it possible to establish a series of indicators on the stage of the lesions detected, false positives and negatives, improperly taken samples, and delays in the application of proper treatment.

In several countries, PAHO lent support for qualitative studies on women in at-risk age groups and health care providers, examining knowledge, attitudes, and practices with regard to sample-taking for cytology testing and preventive measures. The findings of these studies will provide input for designing education and promotion programs in the hope of increasing the number of women over 30 who take part in cervical cancer screening.

FOOD PROTECTION

Foodborne diseases (FBDs) are one of the most significant public health problems in the world today, and they continue to undermine the Region's economic productivity. Chief among these diseases are cholera, salmonellosis, listeriosis, infections from enterohemorrhagic *Escherichia coli,* and food poisoning caused by chemical contaminants.

Manual inspection has been the means of choice for preventing and controlling FBDs, but it has been impossible to conduct regular inspections as often or as thoroughly as required to guarantee food safety for consumers. Microbiological analysis, which is conducted as a complement to traditional inspection methods, suffers from statistical constraints, owing to the number of samples examined and the time required to analyze them. By the time results are received, the lots from which the samples were taken are often no longer in the processing facility or, in some cases, they have already been consumed. Available information indicates that traditional inspection methods have not been able to solve the problem of FBDs; indeed, the number of episodes has been growing.

The Hazard Analysis and Critical Control Points (HACCP) system represents a new approach to food inspection and has served as an axis for PAHO technical cooperation in modernizing inspection services. In 1998, the Organization provided HACCP training in virtually all the countries, equipping some 700 food inspectors with experience in using this new approach.

The Organization has also contributed to the structuring of epidemiological surveillance of FBDs in an effort to foster ongoing exchanges

Foodborne diseases are one of the most significant public health problems, and they undermine the countries' economies.

of regional epidemiological information in this area. Cooperation activities have focused on improving information on the occurrence of FBDs in each of the countries, so as to gauge the effectiveness of national food protection programs, promote actions to prevent and control these diseases, and provide means for estimating the associated economic losses. Thanks to these pooled efforts, 19 countries have included FBDs in their epidemiological surveillance systems.

A study on bacterial contamination in food sold by street vendors showed that unsanitary food storage and serving conditions, coupled with poor hygiene of vendors and customers, expose them to the risk of contracting foodborne diseases. The authorities and the community need to take a proactive stance to mitigate this risk. The analysis presented in that study led to technical cooperation activities aimed at reducing the risk of FBDs associated with consuming foods sold on the street.

SURVEILLANCE AND CONTROL OF THE LEADING ZOONOSES

PAHO has assigned priority to technical cooperation geared towards setting up regional programs for the surveillance, prevention, and control of specific zoonoses, including rabies, equine encephalitides, echinococcosis/hydatidosis, and the so-called emerging zoonoses. To achieve this, information systems have had to be developed, maintained, and disseminated to ensure surveillance and timely action against these diseases.

The countries have stood by their commitment to eliminate cases of human rabies transmitted by dogs, which continue to be the disease's main reservoir in Latin America. The overall number of cases of human rabies has been falling since 1990. From previous levels of over 250 case reportings, only 120 cases were reported in 1990, and 64 cases in 1998. These data also reflect the perseverance and resolve of national control programs for canine rabies, since the number of cases of this disease fell from 16,000 in 1990 to 4,271 in 1997; in 1998, the figure dropped by 43%.

PAHO has assigned priority to technical cooperation geared towards setting up surveillance systems of specific zoonoses.

The Organization has focused on bolstering the sustainability of national programs to help achieve the goal of eradicating human rabies. The strategies and methods adopted have sought to promote epidemiological surveillance (including molecular biology techniques for characterizing the variants of the rabies virus) and epidemiological systems based on risk detection and monitoring.

The natural disasters that buffeted the Region during 1998 severely affected the living conditions of the poorest and most vulnerable populations in several countries. The El Niño phenomenon in Peru and Ecuador triggered ecological and climatic changes that set the scene for outbreaks of emerging and re-emerging diseases. Thanks to information and surveillance systems already in place, it was possible to

keep and compile accurate records. For instance, an outbreak of pneumonic plague in the province of Pichincha, Ecuador, left a toll of 12 deaths, and controlled outbreaks of leptospirosis in northern Peru, in Guayaquil, Ecuador, and in Central America, produced some 800 cases and 12 deaths. The timeliness of prevention and control actions kept these diseases from having an even greater impact on the affected populations. At the same time, it was ascertained—once again—that interventions need to adopt an intersectoral, interdisciplinary approach, since effective prevention and control measures do not depend solely on medical actions.

The forecasting techniques developed for the surveillance of equine encephalitides have yielded excellent results in preventing outbreaks of the disease in humans, although several episodes of Venezuelan and eastern equine encephalitis were reported in Colombia, Panama, Mexico, and Belize. Without a doubt, diagnostic coverage needs to be expanded to other countries if adequate surveillance is to be ensured throughout the Region. The strategy of intercountry cooperation has proven to be especially useful by tapping technical expertise already in place in the Region.

FOOT-AND-MOUTH DISEASE

Through its Pan American Foot-and-Mouth Disease Center (PANAFTOSA), PAHO has created one of the world's most sensitive and practical epidemiological surveillance systems, which provides information on the occurrence of cases of this disease to all categories of livestock breeders. The system—and timely dissemination of the data it generates—made it possible in 1998 to monitor in detail the trends in foot-and-mouth disease and allowed the International Office of Epizootics (OIE) to maintain certification of Chile and Uruguay as disease-free areas.

In 1998, the OIE conferred disease-free status on the region comprising the Brazilian states of Rio Grande do Sul and Santa Catarina, in which livestock is vaccinated against foot-and-mouth disease. The surveillance system also verified that non-Amazonian Brazil, i.e., the states of São Paulo, Minas Gerais, Espírito Santo, Paraná, Mato Grosso, Goiás, and the Federal District, has marked over two years without any case occurrences.

The strategies promoted by PAHO include involving breeders in the hemispheric plan and in running local programs, setting up local veterinary health committees, applying vaccine in oil suspension, improving diagnostic techniques for the vesicular disease, and upgrading the information system for surveillance of the disease. Thanks to these strategies, over two million cattle herds—equivalent to 164.6 million head of cattle (or 42.4% of South America's total herd)—are free of foot-and-mouth disease.

PAHO has created a sensitive and practical epidemiological surveillance system to provide information on foot-and-mouth disease cases to livestock breeders.