
Abstracts and Reports



Status of the Eradication/Elimination of Certain Diseases from the Americas

During the discussion of the Plan of Action for the eradication of indigenous transmission of wild poliovirus, held in the XXXIV Meeting of the Directing Council of PAHO in 1989, it was proposed formally to the Council that the Organization study a calendar for the eradication of certain other diseases in the coming years. The Director of the Pan American Sanitary Bureau accepted the proposal and indicated that setting eradication goals could be extraordinarily useful not only for mobilizing the Region's resources but also for enhancing the credibility of the health sector and its capacity to give concrete responses to real problems through highly visible actions. The Region of the Americas has often taken the lead in disease eradication, being the first to eradicate smallpox and deciding in 1985 to eliminate the transmission of poliomyelitis.

The topic was further discussed at the 105th Meeting of the Executive Committee in 1990. An overview of global efforts at disease eradication was presented to the Meeting, specifically the plans and programs of the International Task Force

for Disease Eradication. The XXIII Pan American Sanitary Conference (1990), upon reviewing the recommendations of the Executive Committee, requested that the Director consult with Member Governments and present to the next meeting of the Governing Bodies a detailed report on the status of eradication¹ or elimination² efforts relating to those diseases for which decisions have already been taken to proceed: poliomyelitis, neonatal tetanus, measles, urban rabies, and foot-and-mouth disease. The Director was also requested to consult with Member Governments and establish mechanisms to determine the feasibility of eradication/elimination campaigns against certain communicable or nutrition-related diseases that had not yet been targeted: onchocerciasis, leprosy, American trypanosomiasis (Chagas' disease), nonvenereal treponematoses, iodine deficiency disease, and xerophthalmia due to vitamin A deficiency.

Source: Pan American Health Organization, Report on the Status of the Eradication/Elimination of Certain Diseases from the Region, Washington, D.C.: 18 July 1991, Document CD35/16.

¹Eradication of an infection implies that transmission of the causative agent has ceased irreversibly and the infection has disappeared from all countries of the world.

²Elimination is the disappearance of transmission of an infection from a small or large area, with a country or continent ultimately becoming free of the infection.

This report summarizes information that was presented to the XXXV Meeting of the Directing Council in September 1991 on the status of efforts to eradicate/eliminate the targeted diseases and on the feasibility of eradication/elimination of the other diseases mentioned above.

DISEASES FOR WHICH TARGETS HAVE BEEN ESTABLISHED

Polio myelitis

Poliovirus transmission is on the verge of being interrupted throughout the Western hemisphere. Only 14 of over 2,000 stool specimens examined during 1990 revealed wild poliovirus. It is notable that these 14 isolates represented a decrease of 40% compared with the 24 recorded in 1989. These findings are particularly remarkable considering the enormous improvement in surveillance for acute flaccid paralysis.

Highest priority must be given to the elimination of what appear to be the few remaining foci of wild poliovirus infection. The Andean countries are of special concern and demand urgent attention. Through 7 September 1991, four isolates of wild poliovirus had been detected, three in Colombia and one in Peru. A number of foci are undoubtedly present along both the Atlantic and Pacific coasts of Colombia. Neighboring areas of Venezuela and Ecuador are at special risk. Foci are also present in the northern areas of Peru adjacent to Ecuador and could well exist in other parts of the country. Because of Peru's current socioeconomic disturbances and the cholera epidemic, all possible assistance should be provided to strengthen that country's surveillance/containment/immunization program. A special intensive effort (such as the one conducted in Central America late in 1990) encompassing Colombia, Peru, Ecuador,

and neighboring areas of Venezuela appears to be needed.

Neonatal Tetanus

From 1985 to 1990, between 1,100 and 1,400 cases of neonatal tetanus were reported annually in the Americas. The 1990 data are still provisional and surveillance for neonatal tetanus is not yet fully developed. Preliminary information from studies over the last three years indicates that as many as 10,000 cases of this disease might be occurring every year in the Region of the Americas.

PAHO's approach to the elimination of this disease in the Region by 1995 is to vaccinate all women of child-bearing age in all areas that are identified as high-risk for disease transmission. The basis of this strategy is that disease prevalence varies in the different geographic areas within a country. Surveillance must be established to determine the magnitude of the problem in those areas that do not report cases and to evaluate the impact of the vaccination programs in areas targeted for action.

The studies conducted so far have indicated that 57% of the cases of neonatal tetanus in the Americas occur in only 5% of the total number of *municipios*, districts, or counties, where only 10 million of the 86 million women of child-bearing age in Latin America reside. Thus, the vaccination of 12% of the women of child-bearing age could prevent 57% of the cases of neonatal tetanus that are known to occur in any given year.

Measles

Reported cases of measles averaged over 600,000 per year before the introduction of measles vaccine in the Region of the Americas, yielding rates of over 150 cases per 100,000 population. With the implementation of the Expanded Program on

Immunization (EPI), the average yearly number of cases decreased to 300,000 in the late 1970s. A second decrease was observed in the 1980s, with 100,000 cases being reported in 1989, a rate of 15 cases per 100,000 population. Thus, rates reported by the end of the 1980s represented only 10% of those reported 20 years earlier.

Coverage rates for measles vaccine have increased from 30% in 1978 to over 70% in 1990. This has resulted in changes in the epidemiology of the disease, notably an increase in the interval between epidemic years. The outbreaks observed in several countries in the last two years reflect this change and are the consequence of the accumulation of susceptibles.

Two important components make up the strategies for measles control: achievement and maintenance of high immunization levels, and intensive epidemiologic surveillance to detect all suspected cases and to institute appropriate control measures. Through the use of these strategies, Cuba has reported no cases of measles since September 1990. A 1995 target for eliminating measles in the English-speaking Caribbean has already been established. That subregion initiated its measles elimination activities in May 1991, with the vaccination of all children under 15 years of age and the start of intensive surveillance activities.

Urban Rabies

As a result of vaccination campaigns and increased surveillance in the large cities of Latin America in the 1980s, canine-transmitted human rabies has been controlled in all principal urban areas. Nevertheless, canine rabies continues to be endemic in rural and suburban areas, and rabies transmitted by dogs continues to be a public health problem in Latin America, where 95% of the human cases in the Region occur. On average, there

were 200 human deaths per year from canine-transmitted rabies between 1986 and 1989, the majority of which occurred in communities with less than 50,000 inhabitants. This figure represents a 38% decrease over the average during the previous four-year period.

Based on evaluation of the progress achieved during the 1980s by the Regional Program for the Elimination of Urban Rabies, it is expected that the final attack phase of urban rabies elimination will be consolidated in the 1991–1994 quadrennium, with the goal of making the 50 remaining cities under the program free of rabies and maintaining them rabies-free through epidemiologic surveillance. From 1992 to the year 2000, efforts will be made to extend the coverage of the canine rabies control program to medium-sized and small urban and suburban areas in order not only to reduce the risk to the human population in such areas but also to decrease the threat of reintroduction of the disease into rabies-free cities.

Foot-and-Mouth Disease

Foot-and-mouth disease causes losses estimated at US\$510 million per year in the livestock industry of the countries of South America. The formal development of national programs for the control of foot-and-mouth disease began during the 1970s and formed the basis for the organization of national animal health services and programs for the maintenance of disease-free areas. As a direct result, in areas where these programs are carried out, the annual incidence of the disease has been reduced more than 90%, and foot-and-mouth disease has been eliminated in Chile, northwestern Colombia, North America, Central America, the Caribbean, the Guianas, and the Patagonia region of Argentina.

The Member Governments, with the

active involvement of cattle producers and ministries of agriculture, have promoted the policy of eradication since 1985. The hemispheric plan of action initially called for eradication of the disease by the year 2000. However, this goal was not sustainable due to constraints imposed by the economic crisis in Latin America, which has seriously affected the infrastructure of animal health services and has delayed initiation of eradication efforts in several countries. By the year 2000 it will be possible to eliminate the clinical disease; however, the elimination of endemic foci and establishment of a solid prevention program to maintain the virus-free status will require an additional eight years.

DISEASES THAT HAVE NOT YET BEEN TARGETED

American Trypanosomiasis

This disease is an autochthonous zoonosis that occurs from northern Mexico to southern Argentina and Chile. An estimated 12 to 16 million people are infected, and at least 60 million others live in areas where they are at risk of acquiring the infection.

Given the sylvatic reservoir of *Trypanosoma cruzi*, it is not possible to eradicate the infection. However, the tools for interrupting the domestic cycle of *T. cruzi* transmission, such as chemical control, housing improvement, and health education, have been available for decades. In fact, the prevalence of the infection has decreased in those countries that have consistently applied control measures. However, attempts to interrupt domestic transmission have been made in only a few areas (Venezuela, some parts of Brazil). Transmission via blood transfusion can be prevented if blood is screened and positive units are discarded. In a few

countries of the Region, serology for *T. cruzi* is mandatory for blood donors.

Sufficient information is not yet available to establish a regional goal for the elimination of American trypanosomiasis. However, certain steps may be taken to better control the disease:

- Where *T. cruzi* infection is endemic, distribution of the infection is known, and the vector is domiciliary, a plan of action should be developed to interrupt vectoral transmission of *T. cruzi* through a combination of control methods selected after cost-efficiency, cost-effectiveness, and cost-benefit analyses are made.
- Where *T. cruzi* infection is endemic but the distribution is not well defined, epidemiologic surveys should be conducted in order to identify areas of high risk of transmission, and then the above steps taken.
- Where *T. cruzi* infection through blood transfusion occurs, a plan of action should be developed for the performance of serologic tests to detect it.

Leprosy

Leprosy is endemic in all countries of the Americas, with the exception of Chile. The estimated number of cases in the Region between 1984 and 1986 was 340,000, 70% of them in Brazil.

Early detection and multidrug therapy (MDT) are required to rapidly reduce prevalence and control transmission of the disease. However, only 23.8% of leprosy patients in the Region are receiving MDT, while the world rate is 55.7%.

Leprosy could be eliminated as a public health problem in a relatively short period of time in most countries of the Caribbean, North and Central America, and the Southern Cone. However, in the Amazon area, the quality of epidemiologic information, as well as the level of under-

standing of the pathogenicity of *Mycobacteria leprae* and the population's immune response, must be improved before a similar goal could be established. In all subregions it will be necessary to increase the rate of early diagnosis and initiation of MDT. Complementary activities must be the protection of susceptible populations with BCG vaccination and prevention and treatment of any physical disabilities stemming from the disease.

The 44th World Health Assembly, meeting in Geneva in May 1991, adopted a goal of attaining the global elimination of leprosy as a public health problem by the year 2000. For this purpose, elimination is defined as the reduction of prevalence to a level below one case per 10,000 population. In order to reduce the prevalence of leprosy to this level in the Americas, it will be necessary to strengthen general health services so they can carry out diagnosis and MDT, to assure an adequate supply of drugs and their proper administration, to strengthen case registration and reporting activities, to monitor MDT, and to conduct epidemiologic studies in the Amazon.

It was recommended that a plan of action for the elimination of leprosy in the Americas be developed (with elimination defined as noted above) for presentation to the Governing Bodies of PAHO in 1992.

Nonvenereal Treponematoses

The prevalence of nonvenereal treponematoses (yaws and pinta) has decreased significantly as a consequence of the widespread availability and use of penicillin. The most recent information indicates that yaws is reported sporadically in the northern part of South America (Brazil, Venezuela, Suriname, Guyana, and Colombia). Recently, some foci of endemic yaws were reported among rural populations in Haiti in the course of surveys for HIV infection. Pinta ap-

pears to be limited to certain areas in the south of Mexico, Central America, Colombia, and some indigenous communities in Venezuela. However, available statistics are not sufficient to clarify the epidemiologic situation of these diseases.

No vaccines exist to protect susceptible individuals, and primary health care personnel are often not familiar with the signs and symptoms. Nevertheless, mass screening by means of available laboratory tests and effective low-cost drug therapy make the interruption of transmission a realistic and feasible objective in well-executed control programs.

Although nonvenereal treponematoses are extremely susceptible to appropriate treatment, the lack of knowledge of their distribution necessitates that epidemiologic studies be carried out before any target date for eradication/elimination is established. During an initial period of approximately three years, epidemiologic studies should be conducted to define the geographic and population distribution of the disease, the social conditions of the affected population, and the risk factors for disease transmission. These studies would include categorizing reported cases for the purpose of clinical, bacteriologic, and serologic confirmation, and performing serologic surveys based on these "index" groups in order to establish prevalence, proportion of recent latent-to-delayed cases, and distribution by characteristics such as sex, age, and urban/rural origin, as well as performing seroepidemiologic and operational research. A subsequent stage would include training primary health care personnel to assume responsibility for clinical confirmation, treatment management, and surveillance.

It was recommended that the goal of elimination of nonvenereal treponematoses should not be established at this time. However, as a first step, the target of 1994 could be established for the af-

fectured countries to conduct the epidemiologic studies outlined above.

Onchocerciasis

Human onchocerciasis exists mostly in localized foci in Brazil, Colombia, Ecuador, Guatemala, Mexico, and Venezuela. Although information on prevalence is somewhat limited, it is estimated that Ecuador, Guatemala, and Mexico have the highest numbers of cases, respectively. Considering that humans are the only confirmed reservoir of *Onchocerca volvulus*, that the blackfly vector involved in transmission has a low vectorial capacity, and that a single dose of the drug ivermectin administered annually or semiannually effectively decreases microfilarial counts, elimination of the pathologic expression of the disease is indeed feasible. Recent work confirmed that sustained administration of ivermectin can interrupt transmission. The drug is provided free of charge by the manufacturer, and Guatemala and Mexico already have ongoing control programs.

Achieving the goal of elimination will require strengthening the ongoing control activities, with emphasis on health education for community participation; assessing the epidemiologic status of the disease in Brazil, Colombia, and Venezuela through a standardized protocol, before using ivermectin; continuing to administer semiannual or annual doses to all onchocerciasis patients in the six endemic countries until the end of this century; and strengthening the countries' information systems in order to achieve efficient epidemiologic surveillance, thus assuring a systematic and well-structured monitoring process.

The governments of the endemic countries should assign the highest priority to onchocerciasis control, in order to standardize diagnostic and treatment procedures and coordinate actions. If these

measures are followed, current pathologic manifestations of the disease, as well as new cases, could be eliminated in the Region by the end of the century. Transmission will be interrupted and eradication may be accomplished within the next 20 years.

It was recommended that the plan of action for elimination of onchocerciasis in the Americas, developed by a multi-agency, multinational technical consultation, be adopted.

Iodine Deficiency Disorders

Iodine deficiency disorders (IDD) persist as a public health problem in certain areas of Central and South America. In some Andean areas, mental retardation and cretinism associated with endemic goiter affect as much as 14% of the population. A wide range of other organic and functional problems, including birth defects, deaf-muteness, and varying degrees of neurological impairment, are also associated with IDD.

IDD can be eliminated as a public health problem in the Region by providing an adequate intake of iodine in those areas where the element is naturally deficient in the environment. The scientific knowledge and technology exist to eliminate IDD by the year 2000. The most effective and economical method of preventing IDD is the fortification of salt with iodine.

The strategy for elimination of IDD consists of the following steps:

- maintenance of surveillance systems to monitor endemic goiter and other manifestations of the deficiency;
- fortification of salt with iodine and monitoring of its quality, marketing, and use;
- adoption of legislation and regulations regarding salt fortification for human as well as animal consumption;
- use of social marketing approaches

to educate the public about the necessity of using iodized salt;

- administration of iodized oil to at-risk populations.

In 1988, PAHO developed a regional project for the control of iodine deficiency disorders in Latin America. Funds have been provided by the Government of Belgium through UNICEF to initiate activities in the Andean subregion, where PAHO is providing technical cooperation. In 1992–1993, IDD epidemiologic surveillance and salt evaluation programs in all countries will be consolidated. Support will be continued for program implementation in the Andean and Southern Cone countries, and control programs will be formulated in Central America and Brazil. Support to the national programs will continue in the period 1994–1999.

It was recommended that the goal of eliminating iodine deficiency disorders by the year 2000 be adopted and that an updated plan of action be developed, including activities oriented toward the strategies outlined above.

Vitamin A Deficiency

This is a serious public health problem in some areas of the Region, particularly among the children of the poor in rural areas. It alters cellular metabolism, causes eye disorders that may result in blindness, retards growth and development of the immune system, and increases risk of death in preschool children. Because measles increases the utilization of vitamin A, children with marginal liver stores of the vitamin who contract measles may develop acute vitamin A deficiency, resulting in eye damage and possibly increased mortality from respiratory and diarrheal diseases.

It is estimated that in certain areas of Haiti as much as 2% to 3% of preschoolers have corneal lesions attributable to vitamin A deficiency. It is also a public

health problem in the Northeast of Brazil in areas of high population density and poverty. Vitamin A deficiency may pose a serious problem in other countries, such as Bolivia, El Salvador, Guatemala, and Honduras, although no recent representative data exist.

It is feasible to eliminate vitamin A deficiency as a public health problem in the Region by the end of the decade through fortification of certain staple foods, administration of vitamin A to high-risk population groups, and the production and consumption of foods rich in vitamin A. To accomplish the goal of eliminating this problem, the present situation regarding the prevalence of vitamin A deficiency in the countries should be determined during the next year. Based on this information, a detailed plan of action for the elimination of vitamin A deficiency in the Americas by the year 2000 should be formulated for presentation to the Governing Bodies in 1992. This plan should include evaluation and strengthening of food fortification programs, formulation and implementation of programs for community education and social marketing, increase in the production of foods rich in vitamin A, distribution of capsules of vitamin A to children in priority areas as a short-term measure, and fortification of staple foods, weaning food mixtures, and foods distributed through food aid programs.

CONCLUSION

The XXXV Meeting of the Directing Council of PAHO, after reviewing the information summarized above, adopted resolution XIV, which endorsed the recommendations regarding the setting of targets for the elimination, eradication, or control of these diseases. It urged the Member Countries and the Director to continue their activities in support of prevention, control, and surveillance.