

**XXIII PAN AMERICAN SANITARY CONFERENCE****XLII REGIONAL COMMITTEE MEETING****WASHINGTON, D.C.**

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**CALENDAR OF POSSIBLE ERADICATION TARGETS TO BE ACHIEVED IN THE AMERICAS
BETWEEN NOW AND THE YEAR 2000**

The issue of disease eradication has been presented and discussed as a response to a proposal in the XXXIV Meeting of the Directing Council that the Pan American Organization study a calendar of eradication of diseases for the coming years. The Region of the Americas has often taken a leading role in disease eradication, being the first to eradicate smallpox. In 1985 the Region also decided to eliminate the transmission of poliomyelitis by 1990. Specific target dates have been set for the elimination of neonatal tetanus, urban rabies, foot-and-mouth disease, and measles in the English-speaking Caribbean. Other infectious diseases which may be considered for eradication/elimination include onchocercosis, leprosy, the non-venereal treponematoses, Chagas' disease and the disorders resulting from deficiency of iodine and vitamin A.

This topic was discussed at the 105th Meeting of the Executive Committee and the global efforts at disease eradication were presented, specifically the plans and programs of the International Task Force for Disease Eradication. Particular stress was laid on the necessity to distinguish clearly between elimination, in which disease disappearance is focal, and eradication, where all countries are free of the disease and transmission of a causative organism has ceased irrevocably. The setting and meeting of targets was considered to be important not only for the specific disease, but because of the impact on the health infrastructure and public health in general. The discussions also brought out the offer of full support from the pharmaceutical industry.

The Executive Committee accepted the proposal for further action by PAHO, and supported the inclusion of the diseases and deficiency disorders which had not previously been included.

The Sanitary Conference is asked to review the situation on disease eradication/elimination, to approve the approach by PAHO, and to consider the resolution recommended by the Executive Committee, which follows:

THE 105th MEETING OF THE EXECUTIVE COMMITTEE,

Having examined the report presented by the Director on disease eradication in the Americas between now and the year 2000;

Considering the progress which has been made in the Region of the Americas in the eradication/elimination of certain diseases;

Taking account of the plans which exist at the national, regional and global levels with regard to disease eradication/elimination; and

Recognizing the importance which regional efforts at disease eradication/elimination have in terms of focusing interest and efforts not only on the specific disease in question but on public health and the public health services in general,

RESOLVES:

1. To transmit the document to the XXIII Pan American Sanitary Conference for its consideration.

2. To recommend to the XXIII Pan American Sanitary Conference that it adopt a resolution along the following lines:

THE XXIII PAN AMERICAN SANITARY CONFERENCE,

Having examined Document CSP23/6 on disease eradication in the Americas between now and the year 2000, presented by the Director of the Pan American Sanitary Bureau;

Considering the progress which has been made in the Region of the Americas in the eradication/elimination of certain diseases;

Taking account of the plans which exist at the national, regional and global levels with regard to disease eradication/elimination; and

Recognizing the importance which regional efforts at disease eradication/elimination have in terms of focusing interest and efforts not only on the specific disease in question but on public health and the public health services in general,

RESOLVES:

1. To thank the Director for the report presented.

2. To accept the basic orientations and proposals contained in the document.

3. To request the Director to:
 - a) Consult with Member Governments and present to the next meeting of the Governing Bodies a detailed report on the status of the eradication/elimination effort in relation to those diseases for which decisions have already been taken to proceed on a regional basis towards eradication/elimination, that is, poliomyelitis, neonatal tetanus, urban rabies, foot-and-mouth disease, and measles;
 - b) Consult with Member Governments and establish mechanisms to determine the feasibility of eradication/elimination on a regional basis of those diseases which have not yet been targeted, but for which a possibility of eradication/elimination exists, e.g., onchocercosis, leprosy, Chagas' disease, the non-venereal treponematoses, iodine deficiency diseases, and xerophthalmia due to vitamin A deficiency, and in the event that such eradication/elimination is determined to be feasible, prepare the appropriate plans of action to be presented to the Governing Bodies;
 - c) To provide technical cooperation to the individual Member Countries wishing to proceed towards eradication/elimination of diseases which may not be suitable targets for a regional effort.

Annex

CALENDAR OF POSSIBLE ERADICATION TARGETS TO BE ACHIEVED
IN THE AMERICAS BETWEEN NOW AND THE YEAR 2000

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CALENDAR OF POSSIBLE ERADICATION TARGETS TO BE ACHIEVED
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INTRODUCTION

During the discussion in the XXXIV Meeting of the Directing Council of the Pan American Health Organization on the Plan of Action for the eradication of indigenous transmission of wild poliovirus, it was pointed out that the eradication of disease could serve as a fundamental strategy for giving new value to the health sector. Perhaps the successes achieved in the eradication of smallpox and the advances with respect to poliomyelitis should be regarded as a new beginning, and it was proposed formally to the Council that the Organization study a calendar of eradication of diseases for the coming years.

The Director of Pan American Sanitary Bureau accepted the proposal and indicated that setting of 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 response to real problems through actions which were of high visibility. This paper is a response to the proposal made to the Council, but before discussing the diseases which can be targeted for eradication, it would be useful to examine the terminology being used in this area.

TERMINOLOGY, DEFINITIONS AND CONCEPTS

There has been considerable debate over the use of the term "eradication" in relation to diseases, particularly infectious diseases. In the international conference on the eradication of infectious diseases, sponsored by the Fogarty Center of the US National Institutes of Health in 1980, the following definitions were accepted.

Eradication of an infection implies that the infection has disappeared from all countries of the world, because transmission of the causative organism has ceased in an irreversible manner.

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

It has been suggested that the term "eradication" be always qualified, e.g. global eradication, to admit the possibility of national or regional eradication of the disease. More recently, the concept of control or partial elimination has been gaining favor, and some diseases have been targeted to be controlled to the extent that they are no longer a public health problem. The concept of eradication can really only be applied to the infectious diseases with their identifiable causative organisms; other diseases of man such as those due to deficiency can obviously never be eradicated, although they can have their incidence reduced to a very low level. Infantile malnutrition, for example, can never be eradicated from the world, although theoretically it can be reduced to levels at which it

does not pose a public health problem. It is of course highly arbitrary to establish prevalence limits for any disorder to indicate when it is, or is not, a public health problem.

CURRENT GLOBAL EFFORTS

In addition to discussing the definition of the terms which have been given above, the 1980 Symposium proposed that the potential candidates for eradication were measles, poliomyelitis and yaws. It is important to note that there was agreement that strengthening of basic health services was a prerequisite for disease eradication and that global eradication campaigns would provide support for improvement of the general health services infrastructure.

More recently, in 1988, an International Task Force for Disease Eradication was established to "systematically evaluate the potential eradicability of candidate diseases and identify specific barriers to their eradication that might be resolved by further research or other action". The Task Force has examined various criteria for proposing diseases for eradication and their first review is shown in Table 1. The conclusions at this stage are that only Guinea worm and poliomyelitis are eradicable.

Their conclusions are in keeping with the recent resolutions of the World Health Assembly on disease eradication. In 1986, the World Health Assembly adopted a resolution to eliminate Guinea worm disease (WHA39.21), and in 1988 the goal of eradicating poliomyelitis by the year 2000 was adopted (WHA41.28). The World Health Assembly has also resolved to eliminate neonatal tetanus, and to eliminate leprosy as a public health problem.

REGIONAL PERSPECTIVES

Historical

The Region of the Americas has always taken a leading role in disease eradication and control efforts. Indeed, the Second Pan American Scientific Congress in 1916 requested the American Republics to inaugurate a well-considered plan of malaria eradication. But it was under the directorship of Dr. Fred Soper that the activities of the Pan American Sanitary Bureau with respect to disease eradication received great impetus. In 1947, the first meeting of the Directing Council studied a plan for the continental eradication of Aedes aegypti proposed by Brazil and resolved "to entrust to the Pan American Sanitary Bureau the solution of the continental problem of urban yellow fever, based fundamentally on the eradication of Aedes aegypti." (CD1.R1). In 1950, the XIII Pan American Sanitary Conference, "recognizing the certainty that with the adoption of new techniques of malaria control and with sufficiently intensive and coordinated efforts on the parts of the member countries

TABLE I*

Candidates for Eradication

Disease	Current Annual Toll Worldwide	Chief Obstacles to Eradication	Conclusion
Guinea worm	10,000,000 people infected. Few deaths	Lack of public and political awareness, inadequate funding	Eradicable
Poliomyelitis	250,000 cases of paralytic polio. 25,000 deaths.	No insurmountable technical obstacles: increased political determination needed	Eradicable
Yaws and Endemic Syphilis	2,500,000 cases	Political and financial inertia	Could interrupt transmission**
Onchocerciasis	18 million cases; 340,000 blind	High cost of vector control, no therapy to kill adult worms, restrictions in mass use of Ivermectin	Could eliminate associated blindness
Rabies	52,000 deaths	No effective way to deliver vaccine to wild animal disease carriers	Could eliminate urban rabies
Measles	2,000,000 deaths most of them children	Lack of suitably effective vaccine for young infants; cost; public misconception of seriousness	Not now eradicable
Tuberculosis	8-10 million new cases; 2-3 million deaths.	Need improved diagnostic tests and chemotherapy, vaccine; wider application of current therapy	Not now eradicable
Leprosy diagnostic	11-12 million cases	Need improved diagnostic tests and chemotherapy; social stigma; potential reservoir in armadillos	Not now eradicable

* From the first report of the International Task Force for Disease Eradication. (MMWR Vol. 39, No. 13, 1990.)

** Because individuals may be infected for decades, and the organisms cannot be distinguished from those that cause venereal syphilis, elimination of transmission--not eradication--would be the goal.

and territories, total eradication of the disease from the Americas can be achieved," resolved to recommend to the Bureau "to develop the necessary activities and assist the various countries...with a view to achieving the eradication of malaria from the Western Hemisphere" (CSP13.R18).

In the same meeting, another resolution was passed which recommended that countries develop smallpox vaccination programs with a view to eradicating the disease (CSP13.R19).

For a variety of reasons which need not be analyzed here, there was failure to eradicate malaria. Aedes aegypti was indeed eliminated from large parts of the Americas, leading to much optimism about its eventual regional elimination but, unfortunately, it has been reintroduced into many of the areas from which it had been eliminated. However, the Region of the Americas was the first to eradicate smallpox, and the XXII Meeting of the Directing Council of the Pan American Health Organization (PAHO) in a historic meeting in 1973 resolved "to note that in terms of the criteria set by the World Health Organization Expert Committee on Smallpox, the disease has been eradicated in the Region of the Americas" (CD22.R17).

Current Status of Disease Eradication Efforts

It is possible to examine the regional efforts particularly in relation to the diseases considered by the International Task Force and to draw some lessons as to common approaches which can be used. For each disease there will be a brief description of the epidemiological situation and examination of the prospects for eradication/elimination. Finally, there will be mention of the present status of the eradication/elimination effort if one has already begun. Among the diseases to be considered will be those which have been studied by the Task Force as shown in Table I and are of particular importance to the Region.

Poliomyelitis

On 14 May 1985 the Director of PASB proposed the goal of eradication of indigenous transmission of wild poliovirus from the Americas by 1990. In the same year, the XXXI Meeting of the PAHO Directing Council resolved to accept the Proposal for Action for the eradication of indigenous transmission of wild poliovirus from the Americas by 1990, and declared the goals established in the Proposal for Action as one of the major directives of the Organization.

The data relevant to this disease are being presented in detail in this meeting of the PAHO Executive Committee under another agenda item and therefore will not be repeated here. However, these data show that by the end of 1989 polio transmission was confined to less than 1% of all the municipalities in the Americas. Confirmed cases of polio in 1989 were less than 150, and only 17 isolates of wild poliovirus had been found. The key strategies used for this eradication effort were:

- Mobilization of national and external resources;
- Good surveillance systems;
- Accurate laboratory diagnosis;
- Supplementation of the delivery of OPV through existing health institutions: national immunization days where needed to further enhance coverage, and special house-to-house vaccination in areas in which there is suspicion of continued transmission;
- Information dissemination; and
- Effective inter-agency collaboration and coordination.

The eradication effort is proceeding satisfactorily, and there is every indication that the goal will be reached.

Measles

Since the Expanded Program on Immunization (EPI) was launched in the Americas in 1977, there has been a steady reduction in the number of measles cases reported: 301,548 in 1977 compared with 105,617 in 1989. If Mexico is excluded for 1989, every subregion shows a general decline in the incidence rate, even though there may be epidemic years. The decline over time of the mortality rate is greater than that seen for morbidity, perhaps due to the increase in vaccination coverage in the younger age groups. As a result of increased vaccination coverage, there also is an increase in the inter-epidemic period in some countries.

The major impediment to measles elimination in the Americas has been inadequate vaccination coverage, particularly in periurban and remote rural areas, but in addition, the vaccine now in common use will not permit the elimination of the disease. Children under one year cannot be adequately protected. Because their protective maternal antibodies are slow to wane, they cannot benefit from vaccination until age nine months, when they can mount a protective immune response to vaccination. When the new high titer Edmonston-Zagreb vaccine becomes available in sufficient quantities, children may be protected by vaccination at six months.

In order to eradicate measles from the Americas, it will be necessary to achieve full coverage, vaccinating all children between 9 months and 14 years. Thus, for this target population of approximately 150 million, and with an estimated vaccine cost of US\$0.12 per person, the initial investment only for vaccines would be approximately \$18 million. The subsequent yearly cost would be approximately \$1.8 million. These estimates do not include cost of reinforcing surveillance, laboratory services and promotion. Since much of the infrastructure for immunization is already in place, the additional costs for a program would not be very high, but more precise estimates will have to be established.

In 1978, the United States of America decided to eliminate measles by 1982. This goal has not been met, but the efforts have led to a major reduction in the number of cases reported. In Latin America, Cuba has set a goal of eliminating the disease by 1990, Costa Rica has fixed on 1993, and the English-speaking Caribbean countries have set their target date as 1995.

Non-venereal Treponematoses

There are three such diseases--yaws, endemic syphilis, and pinta. The massive campaigns of treatment with penicillin which were sponsored by the Rockefeller Foundation, PAHO, WHO and UNICEF have substantially reduced the incidence of the endemic treponematoses. There are no good data on present prevalence rates: pinta is found only in some parts of Central America, Mexico and Colombia, while yaws has been reported in small foci in Colombia, Ecuador, French Guiana and Guyana.

Currently, there is no structured or coordinated regional plan directed towards eradication of these diseases, although there is an appropriate treatment technology available and eradication is theoretically feasible, provided the financial and political resources could be mobilized.

Onchocercosis

There is significant underreporting in the Region but it is definitely known that the disease is endemic in six countries--Brazil, Colombia, Ecuador, Guatemala, Mexico and Venezuela. Current gross estimates are that these countries have approximately 100,000 clinical cases with definitive focal transmission. The largest numbers of cases are in Venezuela and Guatemala, with 47,000 and 35,000 cases respectively. There are no data on the real size of the endemic areas in the countries, in part because only those patients with severe disease, e.g. actual or impending blindness, are registered, and also because there are no uniform criteria for diagnosis.

Since Onchocerca volvulus has man as its only definitive host, it is one of the few parasitic diseases which theoretically could be eradicated. However, until recently the poor therapeutic armamentarium available made any thought of eradication very far-fetched indeed. The principal forms of control have been those which focused on the vector, surgical extirpation of nodules and the unsatisfactory treatment with filaricidal drugs.

With the advent of Ivermectin, an antihelminthic originally developed for animals, it is now possible to think of interrupting transmission in those foci which are known, and perhaps contemplate the prevention and eventual elimination of blindness, which is one of the most serious manifestations of the disease. Ivermectin, which is a specific microfilaricide, is easy to administer, has very few side effects, and is being provided free of charge to the endemic countries.

Well-designed treatment schedules can reduce local transmission, but it may take up to 20 years for the adult parasite to die naturally, hence the immediate prospect of complete eradication of the disease by this method alone is not very good. Obviously, the possibility of eradication will be enhanced by establishing simultaneously programs of vector control.

Neonatal Tetanus

The existence of neonatal tetanus is an indication of failure of the health services, since the main strategies and technologies to prevent this disease are well known. These strategies consist of tetanus toxoid vaccination, combined with adequate prenatal and delivery care.

Although the tendency is towards a decline in the number of cases, some 1,300 cases were reported in the Region in 1988, and it is estimated that this figure represents only 10-20% of the true number of cases. Studies carried out in 1988 showed that 79% of the cases occurred in 9% of the geographical units surveyed in 11 countries. Fifty eight per cent of these cases occurred in urban areas, and 78% of the cases registered occurred in children born to women with at least two children, and who presumably had had previous contact with the health services.

In 1989 the World Health Assembly discussed the progress made in the Expanded Program on Immunization and, in recognizing the challenges which needed to be addressed during the decade of the 1990s, called for the elimination of neonatal tetanus from the world by 1995--a goal which has also been accepted and endorsed by PAHO.

Although a specific regional campaign has not been started, there have been intensified efforts in some countries, particularly those of Central America. The main strategies will be to vaccinate women whenever they come into contact with the health services, focussing particularly on the areas of highest risk. Preliminary data show that rapid reduction in incidence can be achieved, although it is obviously not possible to speak of complete eradication of the disease. The organism C. tetani is ubiquitous, and unsterile procedures will always pose a risk to unprotected newborns.

Leprosy

Leprosy is endemic in all the countries of the Americas, with the exception of Chile. There are no accurate data on the prevalence of the disease, but it has been estimated that between 1984 and 1986 there was a total of 336,000 cases of leprosy in the Americas. Brazil has 70% of all the cases in the Region; since 1970 there has been a 6.9% increase in the rate per 1,000 population, and between 1980 and 1985, 110,000 new cases were detected.

There are no immediate prospects for eradication of the disease. There is no proven method of primary prevention, and control programs are based on early diagnosis and effective multidrug therapy. Therapy prevents disabilities and reduces the prevalence and the source of infection, thereby diminishing the possibilities of transmission, but the length of incubation and lack of knowledge of basic aspects of the epidemiology of the disease make it virtually impossible to envisage eradicating it.

Chagas' Disease

American trypanosomiasis is an autochthonous zoonosis of the Americas, and the human infection is found from Mexico in the north to Chile and Argentina in the south. It is estimated that 90 million persons are at risk of acquiring the disease and between 12 and 15 million are already infected. Between 10% and 30% of those infected will have the cardiac and visceral lesions which characterize Chagas' disease.

Since the infection is zoonotic, it is not possible to speak of eradication, but it is possible to reduce significantly its transmission by dealing with the two most common forms of transmission, i.e. through the invertebrate vector and through blood transfusion. Intradomiciliary spraying with residual acting insecticide, public education and improvement of housing are the best approaches to combat the vector. Serology for T. cruzi in potential blood donors and the chemoprophylaxis of blood in high prevalence areas are the best strategies for reducing transmission by blood.

Various countries have already shown that by applying these control methods it is possible to interrupt transmission, as was done in the State of Sao Paulo, Brazil, some 15 years ago.

A concerted effort with political, financial and community support for the well-tried control measures can interrupt transmission of this disease.

Urban Rabies

Since dogs account for over 90% of the human cases of urban rabies, and the technology exists to interrupt transmission, the Region has established the goal of eliminating the disease. At the III Inter-American Meeting at the Ministerial Level on Animal Health (RIMSA III) in 1983, a resolution was approved which requested PAHO to coordinate a regional program for the control and ultimate elimination of urban rabies.

During the period 1970-1979 the mean annual number of cases of human rabies was 289, between 1980 and 1983 this figure was 319, and between 1984 and 1987 it was 219. This last datum obscures the fact that in every year of this quadrennium there has been a steady decrease in cases, with 175 in 1987 and 148 in 1988. In 1989, 21 of the countries did not report a single case of rabies. Mexico and Brazil are the

countries with the highest number of cases, and in 1988 these two accounted for 55% of the total. In Brazil, however, no cases of rabies have been reported in 1989 from the large urban areas, such as Rio de Janeiro and Sao Paulo.

The main activities developed under the plan to eliminate rabies have been the massive vaccination of the canine population, the epidemiological stratification of the disease with identification of the foci which merit special attention, and the medical treatment of the persons who have been exposed.

Substantial extrabudgetary funds have been mobilized for a program in Central America, and there have been good results on the basis of strengthening the national programs. However, because of the slow progress in some other countries, PAHO has intensified its technical cooperation, initiating a final attack phase in the elimination effort. In addition to the vaccination campaign and the treatment of the exposed persons, more attention is being given to developing a more rapid and reliable system of epidemiological surveillance. The Pan American Zoonoses Center is a critical resource in this final phase of the effort.

The main problems in executing the Regional Plan of Action have been the difficulty in having all countries establish and maintain control programs, and acquiring the needed additional funding, particularly for purchasing of vaccines.

If the current program is to continue and the appropriate level of political commitment is obtained, it should be feasible to achieve the target of eliminating urban rabies by 1991.

Foot-and-Mouth Disease

The countries of the Americas have long recognized the political and economic impact of the presence of foot-and-mouth disease, and as a result of their concerns the Pan American Foot-and-Mouth Disease Center was established in 1951. In 1972 the South American Commission for the Control of Foot-and-Mouth Disease (COSALFA) was formed, and it has played an important role in the coordination, promotion and evaluation of programs to control the disease.

The countries can be divided into three groups:

- Those free of the disease and in which it has never been reported: The Central American countries and Panama.
- Those in which outbreaks have occurred, but the disease has been eliminated: United States of America, Canada, Mexico, the Caribbean islands, Guyana, Suriname, French Guiana and Chile.
- Infected countries: Argentina, Bolivia, Brazil, Colombia, Ecuador, Paraguay, Peru, Uruguay and Venezuela.

In 1987, the V Inter-American Meeting at the Ministerial Level on Animal Health (RIMSA V) resolved to eradicate the disease from the Americas by the year 2000, and the Hemispheric Committee for the Eradication of Foot-and-Mouth Disease (COHEFA) in 1988 prepared a Regional Plan of Action for eradication.

The basic strategies to be employed include:

- Vaccination based on knowledge of the epidemiology of the disease and the definition of the different ecosystems in which it exists;
- Development of an effective vaccine--particularly the oil-adjuvanted type;
- A unified regional system of epidemiologic surveillance;
- Organization of subregional approaches based on specific projects and formal intercountry agreements;
- The active participation of involved groups, such as cattle raisers and dealers, and the meat and milk product industries.

The Pan American Foot-and-Mouth Disease Center of the PAHO Veterinary Public Health Program acts as focal point for the eradication program and secretariat for the various subregional organizations formed, such as COSALFA.

The prospects of achieving the target appear to be good, given the acceptance of the program by national governments.

Diseases Caused by Dietary Deficiencies

Although the debate on disease eradication or elimination has focussed predominantly on the infectious diseases, there are some disorders caused by dietary deficiencies which still pose a major but correctable problem:

Iodine Deficiency

Goiter and endemic cretinism are the best recognized manifestations of iodine deficiency but there are several other problems which are known to occur. These include abortions, birth defects, and varying degrees of neurological disorders. The most important cause of the problem is deficiency of iodine in the diet. Recent estimates indicate that in the region of the Americas 60 million people are at risk of disorders due to iodine deficiency, 30 million have goiter, and 3 million have overt cretinism. The most effective and economical method of preventing iodine

deficiency is through the fortification of salt with iodine, but the administration of iodized oil is an alternative approach in communities in which consumption of iodized salt on a regular basis is difficult because of their inaccessibility.

The application of these simple measures on a wide scale in the countries with problems needs appropriate legislation, regulations and concerted technical, operational and administrative support. Health education of the populations at risk is also indispensable. It is felt that the Region of the Americas could virtually eliminate iodine deficiency disorders as a public health problem, provided the political and financial support were present to ensure the development and execution of prevention and control programs.

Vitamin A Deficiency and Xerophthalmia

Xerophthalmia is an extreme manifestation of vitamin A deficiency but other significant subclinical problems do occur as well. For program purposes PAHO has targeted some countries in Latin America and the Caribbean where xerophthalmia is endemic. In El Salvador, Haiti and Guatemala national control programs are underway; in Bolivia, Peru, parts of Brazil, Honduras, Nicaragua, parts of Mexico and Ecuador a significant public health problem exists, but national or local programs are rudimentary. In countries such as Colombia, Dominican Republic, Paraguay and Venezuela a serious public health problem is suspected but the data are not very good.

The best solution is to promote and make available foods rich in vitamin A, or failing that, fortification with vitamin A of some food which is widely consumed, such as sugar. In situations requiring immediate treatment, vitamin A can be administered directly.

The current view among nutritionists is that the knowledge and technology exist to eliminate vitamin A deficiency as a significant public health problem, and the major requirements are financial and political resources.

COMMON FEATURES OF THE APPROACH TO DISEASE ERADICATION/ELIMINATION

The following represent some common approaches which have been adopted in the establishment of disease eradication/elimination programs:

- Definition of the scientific basis on which eradication or elimination can be based. This includes a careful study of the availability and applicability of effective, simple inexpensive control measures.
- Diagnosis of the situation. This implies the collection of information on the prevalence, incidence, mortality, morbidity, distribution, ecological characteristics and the social, economic

and political determinants and importance of the disease. The behavior of the disease over time and the cost benefit of an eradication/elimination effort are important data.

- Establishment of an effective surveillance system based on the known epidemiological characteristics of the disease.
- Evaluation of the effectiveness of the infrastructure, particularly of the health services at the country level in terms of the material, human and organizational resources necessary to initiate and sustain the eradication efforts and maintain the results achieved.
- Promotion and development of bilateral and multilateral inter-country border agreements.
- Mobilization of the popular and political resources necessary to carry forward the needed activities.

ROLE OF PAHO

The role of PAHO will be to provide technical cooperation to the countries which are willing to carry out eradication/elimination efforts either individually or on a regional basis. The Pan American Centers will provide critical input in those disease areas which lie within their competence. The following represent those aspects of the technical cooperation which are applicable to this exercise, and take account of the approaches mentioned above:

Mobilization of Resources

On the basis of the epidemiological situation and the proposed approach to disease elimination or eradication, PAHO can provide information as to the resources necessary for the initial and maintenance phases of the effort. Such information will show clearly the resources needed and available at the country level and those needed externally. PAHO advises the governments on the mechanism for coordinating the inputs from other sources into the effort.

Provision of Information

PAHO, either through its own staff, or with the assistance of experts individually or in working groups, will assemble the scientific information needed to inform the countries as to the feasibility of eradication efforts. This will involve the following:

- Detailed study of the disease epidemiology including trends in morbidity and mortality;
- Examination of the merits of the available means of control and the feasibility of their application;

- Advice on the most appropriate methods and systems for surveillance which is critical to any successful effort at disease eradication or elimination.

Development of Policies, Plans and Programs

PAHO will assist in the development of the national and regional plans of action. Such plans will embrace the strategies to be adopted and the technical justification for the resources needed, the possible sources of such, the coordination mechanisms necessary, the managerial approaches to be taken and the evaluation procedures to be established.

It is of fundamental importance to consider the impact of these efforts on the existing health services--whether they can comfortably incorporate the control efforts, or whether the special approaches being taken and systems being established serve to weaken rather than strengthen the services. The latter was considered to be the case with some vertical control programs. The eradication efforts, through their high visibility and capacity to attract resources, should be seen as mechanisms for strengthening the basic health infrastructure and favoring such approaches as decentralization and strengthening of local health systems.

Research

PAHO can stimulate the research which is needed to advance the eradication effort--usually in collaboration with other agencies. Such research is primarily operational, since, if considerable basic research into the cause of disease is needed, it is unlikely that such a disease can be targeted for eradication. Research into the economics of various control strategies and the cost-benefit analyses of eradication or control will also be carried out.

Training

PAHO will facilitate the training necessary for any or all aspects of the national or subregional eradication efforts, particularly in project/program planning, surveillance, implementation and evaluation, and in those management skills needed.

CONCLUSIONS

It is clear that the Organization has advanced carefully in recent years in proposing diseases for regional eradication. This is essential, since, although there is great advantage to be gained from successful efforts, and the willingness to try of itself may be highly laudable and beneficial to the health sector, unrealistic goal-setting may bring discredit to public health and its practice. The scientific bases for eradication efforts must be solidly set.

It is not recommended that the Organization embark immediately on new regional eradication efforts, attempting to set definitive new targets for specific diseases. Rather, it is recommended that PAHO, in collaboration with the Member Governments and with the international efforts now underway, should undertake a comprehensive plan of work over the next year which involves the following:

- a) Evaluation of the progress being made in the achievement of the targets for those diseases already marked for eradication/elimination (Table II)

TABLE II

Progress Towards Eradication/Elimination

Disease	Date of Decision	Target Date	Plan in Execution	Major Constraints
Poliomyelitis,	1985	1990	yes	None
Neonatal Tetanus	1989	1995	yes	Efficiency of services
Urban Rabies	1983	1991	yes	Financial resources
Foot-and-Mouth Disease	1989	2000	yes	Sustainability of political will
Measles (English-speaking Caribbean)	1989	1995	no	Financial resources

Thus, PAHO will present to the next meeting of the Governing Bodies a detailed report on the status of the eradication/elimination efforts in relation to the diseases shown in Table II. Such a report should indicate, inter alia, the epidemiological situation in the countries, the state of development of national and regional plans, the extent to which the common approaches referred to above have been used, the constraints to disease eradication/elimination and the efforts which have been made to overcome them. The report will also describe the technical cooperation which has been given by PAHO in this area.

- b) Establishment of the mechanisms to determine the feasibility of eradication/elimination on a regional basis of those diseases which have not yet been targetted, but for which a possibility of eradication or elimination exists, e.g., onchocercosis, leprosy, measles, the non-venereal treponematoses, iodine deficiency disorders and vitamin A deficiency and xerophthalmia

PAHO will liaise with other agencies and bodies involved in disease eradication/elimination, and inform the Governing Bodies on the steps taken to establish the mechanisms. This will involve careful study and documentation of the scientific, epidemiological, organizational and political feasibility of an eradication/elimination effort. Specific work groups may have to be convened to collect pertinent information and synthesize the various feasibility considerations into proposals and recommendations. Decisions can then be taken on adopting regional targets and dates for achieving them.

The above relates primarily to regional targets and does not address specific individual national efforts to eliminate or control diseases. In such cases PAHO will provide the fullest possible technical cooperation, as described above. Encouragement will be given to the national or subregional efforts, since many of the lessons learned can benefit future drives to establish regional initiatives. As the 1980 International Conference stated with regard to elimination: "...though reversible by importation of infection from other areas, the achievement of elimination, even if temporary, is important because it demonstrates the feasibility of ultimate eradication throughout the world."