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EXPANDED PROGRAM ON IMMUNIZATION: ELIMINATION OF MEASLES FROM THE AMERICAS

The annexed report, *Expanded Program on Immunization*, was reviewed by the 118th Meeting of the Executive Committee in June and has been updated to include 1995 data received from countries since then. It reviews the progress being made by Member States with their national immunization programs and the initiative to eliminate measles transmission from the Western Hemisphere by the year 2000, and highlights the tremendous progress being achieved, with immunization coverage with BCG, DPT, polio, and measles vaccines being maintained around 80% and measles incidence reaching an all-time low in the entire Hemisphere. The report also notes that neonatal tetanus is under control in 98% of the health districts in Latin America and the Caribbean. Some of the surveillance indicators for poliomyelitis experienced a level of deterioration in some countries during the last year. Much remains to be done if countries are to increase immunization coverage, as the 20% of children that remain unimmunized are the hardest to reach, and if the gains in control of vaccine-preventable diseases are to be maintained.

To advance the goal of measles elimination, it will be necessary for every country to monitor the build-up of susceptible pre-school children—those that failed to be vaccinated and those few that did not respond immunologically to vaccination. The recommendation is that when the number of susceptibles reaches a number equivalent to a birth cohort, countries implement a vaccination campaign aimed at all children under 5 years of age, regardless of previous vaccination status.

The report underscores the high level of commitment of Member States to the sustainability of their immunization programs, which is evidenced by the increased allocation of national resources, particularly for the purchase of vaccines and the financing of other recurrent costs. Even so, for the period 1997-2001, a total of

US\$ 53 million of external resources will be needed to support the national efforts towards sustaining and increasing immunization coverage and eliminating measles transmission. This amount will supplement the over \$657 million to be invested by the governments themselves.

The highlight of the discussion at the 118th Meeting of the Executive Committee was the signing of an agreement between the United States Government, through its Agency for International Development (AID), and the Pan American Health Organization for a five-year grant of \$8 million to support the measles elimination initiative and the expansion of immunization services. These funds, together with an estimated \$9 million from PAHO's own sources, will provide some of the external funds needed for the initiative. The Government of Spain has also committed approximately \$650,000 and the services of an associate expert to support the program.

The Directing Council is asked to review the document and Resolution CE118.14, proposed by the Executive Committee for the consideration of the Directing Council, as follows:

THE 118th MEETING OF THE EXECUTIVE COMMITTEE,

Having reviewed the report of the Director on the progress made by the Expanded Program on Immunization (EPI) and the regional initiative for the elimination of measles from the Americas by the year 2000 (Document CE118/18),

RESOLVES:

To recommend that the Directing Council at its XXXIX Meeting approve a resolution along the following lines:

THE XXXIX MEETING OF THE DIRECTING COUNCIL,

Having reviewed the report of the Director on the progress made by the Expanded Program on Immunization and the regional initiative for the elimination of measles from the Americas by the year 2000 (Document CD39/18);

Noting with satisfaction that all countries are committed to the strategies outlined in the Plan of Action for Measles Elimination in the Americas by the year 2000, and the remarkable progress which has been attained; and

Observing that in spite of this progress much still remains to be done, and that the number of children susceptible to measles infection continues to grow in many countries,

RESOLVES:

1. To express its deep appreciation to the Governments of Spain and the United States of America for the support recently committed to the measles elimination initiative, and to urge other collaborating governments and organizations to follow this example.
2. To urge all countries to assign the necessary human and financial resources to the Program, particularly those needed for the purchase of vaccines and syringes, as well as the recurrent costs for surveillance of vaccine-preventable diseases, particularly measles and poliomyelitis.
3. To call to the attention of all countries that have accumulated a large number of susceptible children the urgency of implementing "follow-up" measles campaigns targeting all children 1-4 years of age, regardless of previous vaccination status.
4. To request the Director to continue his efforts to ensure support for the Plan of Action for the Elimination of Measles from the Americas by the year 2000.

Annex

EXPANDED PROGRAM ON IMMUNIZATION

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EXECUTIVE SUMMARY

The Plan of Action for Measles Elimination in the Americas by the year 2000 was unanimously approved by the Ministers of Health during the XXXVIII Meeting of the PAHO Directing Council in September 1995. In the areas of control and/or eradication of vaccine-preventable diseases, the report reviews the Region's compliance with the indicators for polio surveillance following the eradication of the disease in 1994, current levels of vaccination coverage, and the significant progress achieved towards the control/elimination of neonatal tetanus in the Americas.

The document provides an update on the activities carried out by the Special Program on Vaccines and Immunizations (SVI), which since March 1995 has encompassed the activities of the Expanded Program on Immunization (EPI) and those of the Regional System for Vaccines (SIREVA). Particular emphasis is given to the implementation of the Plan of Action. It also describes SVI's efforts to ensure the Region's self-reliance in vaccine production and quality control. Noteworthy is the establishment of a regional network for vaccine quality control and the certification of vaccine-producing institutions in Latin America and the Caribbean, through networking among these institutions for the development of improved and/or new vaccines and adherence to good manufacturing practices (GMP). Adherence to the GMP norms ensures that safe and efficacious vaccines are consistently produced and controlled, with standards of quality appropriate to their use and in compliance with the marketing requirements.

As a result of the measles initiatives undertaken by several countries in the Americas and given the dramatic impact of PAHO's measles strategy on the incidence of the disease, the Region reported only 6,125 confirmed cases in 1995, the lowest number of confirmed measles cases since surveillance began, and compared to 23,583 in 1994. In the Caribbean, it has been over four years since the last laboratory-confirmed case was detected. In addition, no cases of measles have been reported for the past three years in Chile or Cuba.

Despite the considerable progress achieved in the Americas towards the goal of measles elimination, the report points out that the proportion of susceptible children among 1-5-year-olds is increasing in almost every country of the Region, posing the danger of an outbreak, especially in areas with relatively low vaccination coverage. This has prompted countries to undertake "follow-up" campaigns targeting all children 1 to 5 years of age, as indicated in the Plan of Action.

The document also stresses SVI's concern with the apparent deterioration in the surveillance for cases of acute flaccid paralysis in some countries during the first months of 1996, and a slightly declining tendency in the levels of vaccination coverage during

the last three years, particularly for measles and BCG. This tendency could seriously jeopardize the target of measles elimination.

While the collaboration of the international community will be critical, the overall contributions will continue to come from national governments. As shown in the document, national contributions vis-à-vis external resources towards EPI programs have in fact steadily increased, further ensuring the sustainability of immunization programs.

1. Introduction

In March 1995, the Director of the Pan American Health Organization established the Special Program on Vaccines and Immunization (SVI). The Special Program consolidates all those activities of technical cooperation of the Organization in the areas of vaccine research, development, licensing, production, quality control, and utilization in national immunization programs; epidemiological surveillance of vaccine-preventable diseases; and introduction of new and newly-improved vaccines in national immunization programs. With these objectives, SVI combines the Expanded Program on Immunization and the activities carried out by the Regional System for Vaccines as established by the XXIV Pan American Sanitary Conference in 1994.

One of the major efforts of SVI now under way is to ensure the use of vaccines of assured quality in the national immunization programs. The strategy to achieve this goal encompasses the establishment of a regional network for vaccine quality control and the certification of vaccine-producing institutions in Latin America and the Caribbean, through adherence to good manufacturing practices (GMP), as well as the networking among these institutions for the development of improved and/or new vaccines, such as DTP (diphtheria, tetanus, and pertussis), DTaP (including acellular pertussis), and vaccines against typhoid fever and *Neisseria meningitidis* serogroup B. Furthermore, through hospital-based surveillance, the distribution of the serotypes of *Streptococcus pneumoniae* is being identified in various countries to help determine the optimal composition of a vaccine against this infectious agent for effective use in the countries of the Region.

The activities of SVI aim at all the objectives established for the Expanded Program on Immunization by Resolution CD25.R27 of the XXV Meeting of the Directing Council (1977), including regional self-reliance in vaccine production and quality control, and contribute to the goals of the Children's Vaccine Initiative which aims to speed up the development and utilization of new and improved vaccines. These activities can facilitate the logistics of national immunization programs and increase the feasibility and success of additional initiatives for further control and/or eradication of infectious diseases, as was the case with smallpox, poliomyelitis, and, more recently, measles in the Western Hemisphere.

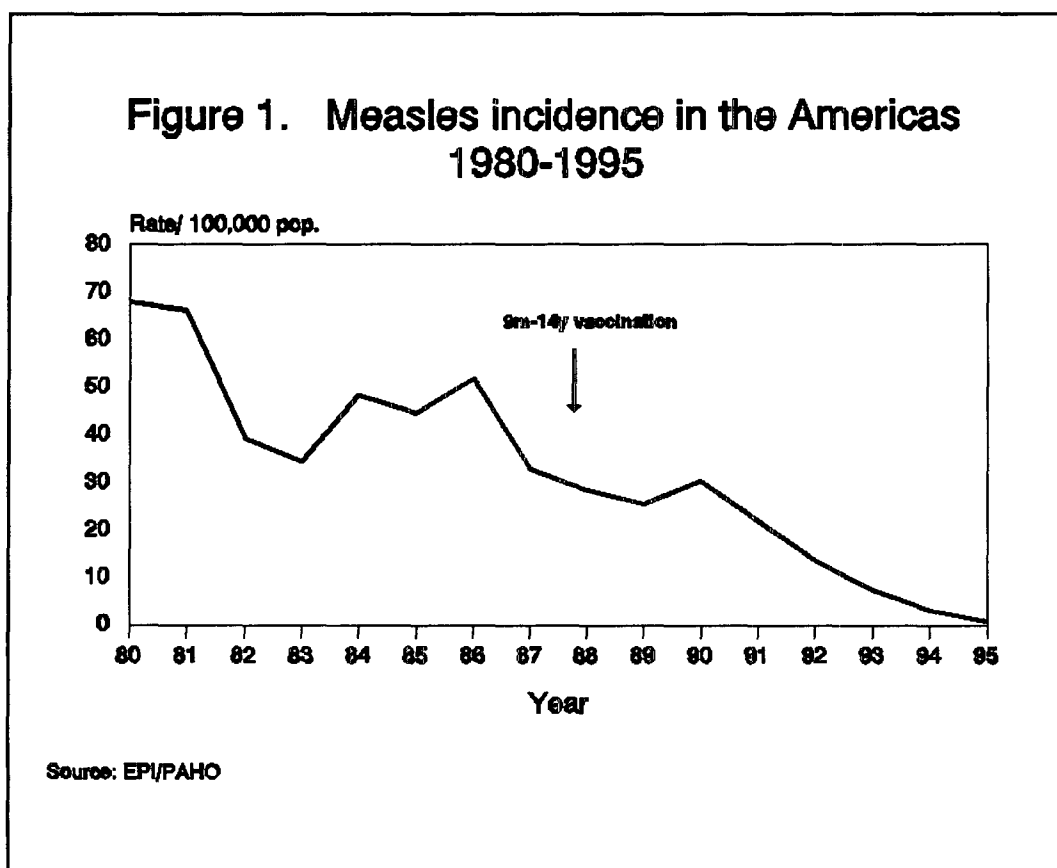
Following the successful initiative to eradicate poliomyelitis from the Americas, the activities carried out to eliminate measles from the Western Hemisphere by the year 2000, established by the XXIV Pan American Sanitary Conference (1994) and outlined in the Plan of Action approved by the XXXVIII Directing Council Meeting (1995), are being implemented, with the aim of reinforcing the entire health infrastructure, particularly those aspects related to disease control and epidemiological surveillance throughout the Region of the Americas.

2. Progress to Date

2.1 Measles Elimination

It has now been over four years since the last laboratory-confirmed case of measles was reported in the English-speaking Caribbean. Although there is as yet no formal process for the certification of interruption of measles transmission, all available data strongly suggest that this has likely occurred. It is apparent that the goal established by the CARICOM ministers of health of interrupting measles transmission in the English-speaking Caribbean by 1995 has been accomplished. This is the first time that a group of countries has achieved and maintained a measles-free status for such a long period. In addition, there have been no laboratory-confirmed measles cases in Chile or in Cuba over the last two and three years, respectively, despite the presence of excellent surveillance systems—a major accomplishment for these countries.

During 1995, the total number of measles cases reported in the Region of the Americas reached a historic low of 6,125 (Figure 1).



Of the 6,125 reported confirmed cases, 3,050 (50%) were confirmed by laboratory tests. Of these, 2,357 (77%) were reported from one country alone. The remaining 3,075 cases were confirmed on clinical grounds without an adequate laboratory investigation and thus represent a failure of the surveillance system (Table 1). Without laboratory testing, it is impossible to state with certainty whether or not these cases truly represent measles virus infection or are due to another cause. It is expected that, with the regional measles diagnosis laboratory network now in the final phase of completion and with all needed equipment and reagents provided and personnel appropriately trained, the rate of laboratory investigation can be increased.

For the first 11 weeks of 1996, only 96 cases were confirmed (69 with laboratory confirmation), compared with 731 cases confirmed (150 with laboratory confirmation) for the same period in 1995.

It is now over a year since the occurrence of an imported case of measles into the United States of America from Latin America and the Caribbean. This is in stark contrast to the period 1990-1992, when countries of this Region accounted for over 80% of all such importations, with an average of over 100 imported measles cases per year. This information provides solid evidence of the extremely high level of measles control that has been achieved in the countries of the Western Hemisphere.

PAHO has developed a comprehensive methodology for evaluating the capacity of national surveillance systems to detect measles cases. The first application of this methodology was implemented successfully in Mexico and El Salvador in December 1995 and February 1996, respectively. These evaluations were unable to detect measles virus circulation in those countries at the time they were performed.

Despite the great progress achieved in the Americas towards the goal of measles elimination, it is important to keep in mind that measles virus still circulates freely in other parts of the world and that the danger of repeated importations into this Hemisphere remains high. Data from country program reviews underscore the fact that, in spite of this great success and the high levels of vaccination coverage, many children remain who are susceptible to measles in almost every country in the Region. This is due to the fact that vaccine coverage never reaches 100% and that vaccine efficacy is approximately 90%. Therefore, every year there are some children who are not vaccinated and some vaccinated children who, for some reason or another, fail to respond to the vaccine and remain unimmunized.

At the time of this report, it is expected that, in the English-speaking Caribbean, for example, approximately 25% of all children 1-5 years of age are susceptible to measles. The latest program review in Central America indicate that the proportion of susceptible children among 1-5-year-olds may be as high as 30%. Undoubtedly, this high

Table 1. Measles Surveillance in the Americas, 1995

Region	Country or Territory	Total Suspected Cases Notified	Discarded (Provisional)	Confirmed		
				Clinically	Laboratory	Total
Andean	Bolivia	92	16	76	0	76
	Colombia	3,577	1,563	127	157	284
	Ecuador	919	...	919	0	919
	Peru	636	283	224	129	353
	Venezuela	651	479	139	33	172
Brazil	Brazil	4,159	2,911	548	13	561
Central America	Belize	10	6	4	0	4
	Costa Rica	249	212	34	3	37
	El Salvador	260	260	0	0	0
	Guatemala	56	33	0	23	23
	Honduras	26	26	0	0	0
	Nicaragua	5	...	5	0	5
	Panama	92	73	16	3	19
English Caribbean	Anguilla	2	2	0	0	0
	Antigua and Barbuda	1	1	0	0	0
	Bahamas	11	11	0	0	0
	Barbados	27	27	0	0	0
	Cayman Islands	0	0	0	0	0
	Dominica	37	37	0	0	0
	French Guiana	...	...	...	...	...
	Grenada	5	2	3	0	3
	Guadeloupe	0	0	0	0	0
	Guyana	16	16	0	0	0
	Jamaica	133	118	15	0	15
	Martinique	...	...	...	...	...
	Montserrat	1	1	0	0	0
	Netherlands Antilles	...	...	...	...	...
	Saint Kitts and Nevis	2	1	1	0	1
	Saint Lucia	8	6	2	0	2
	Saint Vincent/Grenadines	0	0	0	0	0
	Suriname	12	12	0	0	0
	Trinidad and Tobago	57	57	0	0	0
	Turks and Caicos	9	5	4	0	4
	British Virgin Islands	1	1	0	0	0
	U.S. Virgin Islands	0	0	0	0	0
Latin Caribbean	Cuba	74	73	1	0	1
	Dominican Republic	32	32	0	0	0
	Haiti	...	...	...	...	...
	Puerto Rico	11	...	0	11	11
Mexico	Mexico	1,395	1,151	232	12	244
North America	Bermuda	0	0	0	0	0
	Canada	2,357	...	0	2,357	2,357
	United States of America	301	...	0	301	301
Southern Cone	Argentina	1,808	1,153	651	4	655
	Chile	300	300	0	0	0
	Paraguay	142	69	69	4	73
	Uruguay	5	0	5	0	5
Total		17,479	8,937	3,075	3,050	6,125

... No information provided

Source: EPI/PAHO Measles Epidemiological Surveillance System (MESS), as of 31 March 1996

number of susceptibles may fuel an outbreak should measles virus be reintroduced in these areas, especially in those pockets with relatively low vaccine coverage. As the Plan of Action indicates, it is imperative that all countries regularly analyze their accumulation of susceptibles. If this number has reached the threshold indicated in the Plan of Action (greater than or equal to the number of children in one annual birth cohort), they should implement "follow-up" vaccination campaigns targeting all children 1-5 years of age. These campaigns should be conducted as soon as possible, and their impact would be greatly enhanced if conducted simultaneously by all countries in a given geographical area. An example of a coordinated "follow-up" campaign is the one carried out by all countries of Central America on 14 April 1996, which reached large numbers of children and contributed to the social integration of that region.

Similar "follow-up" campaigns have already been carried out in Belize, Brazil, Chile, Cuba, and Jamaica. It is expected that the remaining countries will be following suit with measures to effectively immunize those susceptible children that have accumulated since their initial elimination campaign conducted a few years ago. If these measures are not implemented, the achievement of the elimination goal by the year 2000 will be in jeopardy.

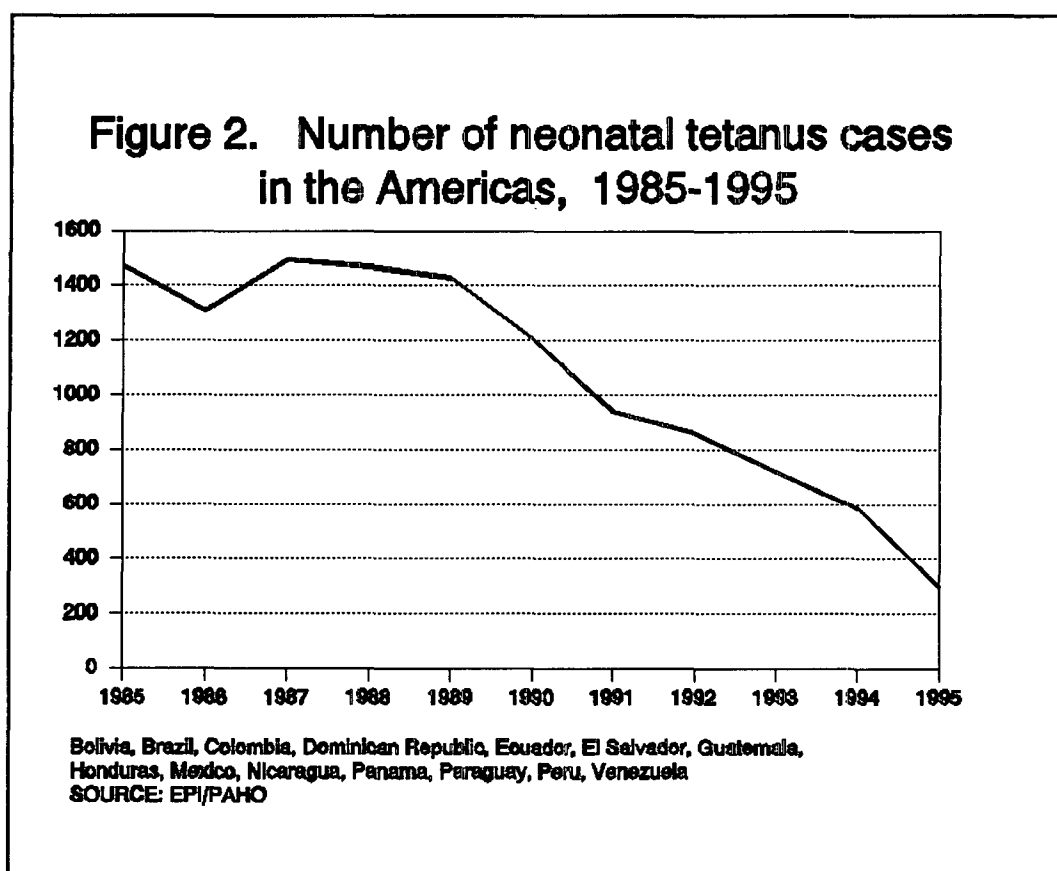
2.2 Neonatal Tetanus Control

The World Summit for Children of 1990 set the goal that by the year 2000 no district in any country should present a rate of more than 1 case of neonatal tetanus per 1,000 live births. The strategy recommended by PAHO for the achievement of this goal is the vaccination of women of child-bearing age with at least two doses of tetanus toxoid-containing vaccine in the areas at risk for the disease and proper investigation of cases that are still occurring to allow the institution of corrective measures. Areas at high risk are defined according to national criteria in the various countries, but include one or more characteristics that are common to all countries:

- areas with an incidence of neonatal tetanus greater than the national average in any of the three previous years;
- areas with recurrent annual cases of neonatal tetanus;
- areas with one or more neonatal tetanus cases in the current year;
- areas potentially at risk because of poor social indicators.

Following the strategy outlined, great progress has been achieved so far in the countries where this disease has had a high incidence. Bolivia, El Salvador, and Honduras, for example, have achieved an accumulated 90% coverage with tetanus-toxoid containing vaccine in women of childbearing age in areas at risk for the disease.

Figure 2 shows the overall trend of the disease, which in spite of improved surveillance presented a 5-fold decrease since efforts were initiated in 1987. Furthermore, during 1995, over 85 % of all reported cases were investigated, in comparison with only 43 % in 1990. Most importantly, for 1994, 98% of all districts in the high-incidence countries either reported zero cases of neonatal tetanus or presented a rate of less than 1 case per 1,000 live births, which is the target set by the World Summit for Children (Table 2). If these efforts are maintained, the Region of the Americas could certainly achieve the year 2000 goal.



2.3 Maintenance of Poliomyelitis Eradication

The last confirmed case of paralytic poliomyelitis due to wild poliovirus occurred on 23 August 1991 in the town of Pichinaki, Department of Junín, Peru. In September 1994, the International Commission for the Certification of Poliomyelitis Eradication in the Americas (ICCPE) presented to the XXIV Pan American Sanitary Conference its conclusion that transmission of wild poliovirus in the Americas has been interrupted. By

Table 2. Number of Districts with Less Than One Case of Neonatal Tetanus per 1,000 Live Births by Country: 15 Latin American Countries, 1994

Country	Districts	Districts with NNT Rate < 1/1,000 Live Births	
		Number	Percentage
Argentina	490	487	99.4
Bolivia	83	82	98.8
Brazil	4,267	4,207	98.6
Colombia	1,023	986	96.4
Dominican Republic	129	126	97.7
Ecuador	177	155	88.6
El Salvador	243	239	98.4
Guatemala	331	323	97.6
Honduras	291	287	98.6
Mexico	2,404	2,377	98.9
Nicaragua	147	147	100.0
Panama	66	64	96.9
Paraguay	214	210	98.1
Peru	1,773	1,711	96.5
Venezuela	750	736	98.1
TOTAL	12,388	12,137	98.0

Source: EPI/PAHO

the time of the 118th Meeting of the Executive Committee in June 1996, nearly five years will have elapsed since the last case in Peru. In spite of the progress made by the global eradication program over the last four years and the considerable decline in the number of cases worldwide, the disease still occurs in other parts of the world. Therefore, it is critical that surveillance for cases of acute flaccid paralysis (AFP) continues at a high level. The analysis of the AFP surveillance indicators that were recommended to be monitored by the ICCPE are presented in Table 3 for the first 12 weeks of 1996.

Table 3. Indicators for Evaluating AFP Surveillance in Latin America, 1996

Country	80% Units Reporting Weekly	80% of Cases Investigated in 48 Hours	80% of Cases with One Adequate Stool Sample Taken	AFP Rate
Colombia				
Ecuador				
Honduras				
Nicaragua				
Brazil				
Chile				
Cuba				
Mexico				
Paraguay				
Venezuela				
Bolivia				
El Salvador				
Peru				
Costa Rica				
Dominican Republic		---	---	---
Guatemala				
Panama		---	---	---
Uruguay	---	---	---	---
Argentina	NR	NR	NR	NR
Haiti	NR	NR	NR	NR



Meet criteria



Do not meet criteria

NR No report

--- Reported zero cases

Source: EPI/PAHO Polio Eradication Surveillance System (PESS)
Data as of 23 March 1996

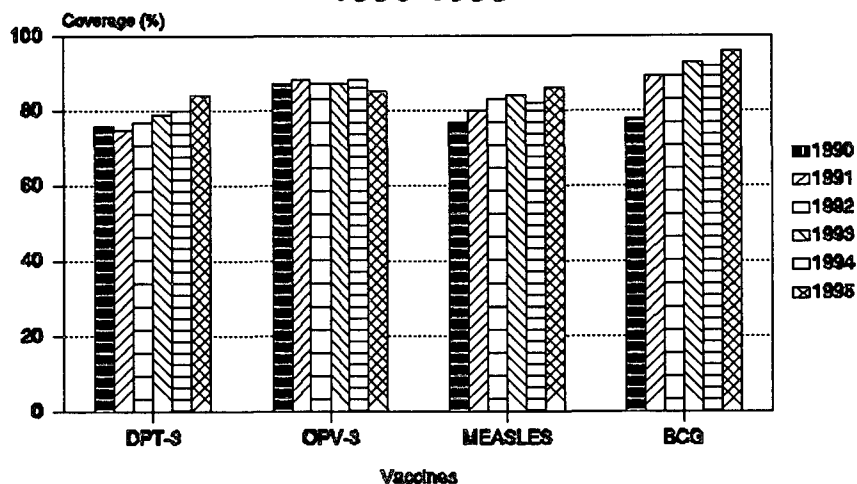
Most countries maintained good surveillance for the disease during 1995. However, for the first three months of 1996, it appears that some activities have not been maintained in some countries. It is therefore important that additional efforts be made to ensure that good surveillance remains in place, in order that cases are detected should an importation occur. Such a possibility is real, as was demonstrated by the 1993 importation of wild poliovirus from the Netherlands into Canada. Because good surveillance was in place, the importation was detected in a timely manner, control measures were instituted, and the outbreak was contained with no spread to other communities in Canada or elsewhere in the Americas.

Countries are urged to ensure that surveillance personnel have the proper resources to follow-up cases of acute flaccid paralysis and that enterovirus laboratories are well equipped and staffed for the necessary diagnostic support.

2.4 Vaccination Coverage

Figure 3 presents the vaccination coverage rates from 1990 through 1995 for children under 1 year of age for DTP, polio, measles, and BCG vaccines. Data for 1995 is still provisional for some countries, e.g., Brazil. As can be seen, coverage has been maintained at levels above 75% over this period, showed a slight declining tendency between 1992 and 1994, but with an apparent increase for 1995.

**Figure 3. Vaccination coverage of children
< 1 year of age, Region of the Americas
1990-1995***



Source: Country data
* Provisional data

The data represent regional averages; therefore, there are countries and areas within countries for which coverage is considerably lower (Table 4). It will be extremely difficult, if not impossible, to eliminate measles transmission should vaccination coverage not be maintained at very high levels in every district of every country, to avoid the rapid build-up of susceptible children.

Table 4. Vaccination Coverage in Children under 1 Year of Age in the Region of the Americas, 1995

Region	Country	DPT-3	OPV-3	MEASLES	BCG
Andean	Bolivia	87.87	89.38	82.61	77.33
	Colombia	90.83	91.82	77.36	99.32
	Ecuador	73.63	88.90	72.93	100.00
	Peru	94.39	92.49	97.47	95.30
	Venezuela	67.82	85.06	67.33	92.00
Brazil	Brazil	79.97	78.81	87.96	99.22
Central America	Belize	82.88	83.23	87.44	92.08
	Costa Rica	85.00	84.00	94.00	99.00
	El Salvador	99.94	94.20	93.58	100.00
	Guatemala	78.10	83.31	83.70	79.20
	Honduras	96.00	96.00	90.00	99.00
	Nicaragua	84.76	96.08	81.16	100.00
	Panama	86.00	86.00	84.00	99.00
English Caribbean	Anguilla	97.24	98.90	92.27	100.00
	Bahamas	87.02	86.01	90.01	-
	Barbados	93.00	93.00	92.02	-
	Cayman Islands	97.99	97.99	95.07	75.91
	Grenada	95.01	77.01	88.04	-
	Guyana	86.00	87.00	77.00	93.00
	Jamaica	90.17	90.22	89.31	97.63
	Montserrat	100.00	100.00	100.00	100.00
	Saint Kitts and Nevis	99.04	99.04	99.04	-
	Saint Lucia	98.02	98.02	94.01	98.02
	Saint Vincent & Grenadines	97.02	97.02	100.00	99.01
	Suriname	84.00	81.00	79.00	-
	Trinidad and Tobago	89.00	90.00	90.00	-
	Turks and Caicos	100.00	100.00	99.08	100.00
	British Virgin Islands	100.00	100.00	100.00	100.00
Latin Caribbean	Cuba	100.00	94.94	100.00	99.41
	Dominican Republic	83.40	80.00	85.30	75.50
Mexico	Mexico	91.50	91.90	89.90	97.90
North America	Bermuda	83.40	92.10	86.03	-
Southern Cone	Argentina	66.08	70.24	75.53	96.11
	Chile	97.85	97.85	95.00	80.00
	Paraguay	77.14	77.30	76.32	89.28
	Uruguay	86.87	86.87	83.93	89.93
Total		83.96	85.33	85.60	96.02

* 1995 provisional data as of 2 April 1996

Source: EPI/PAHO

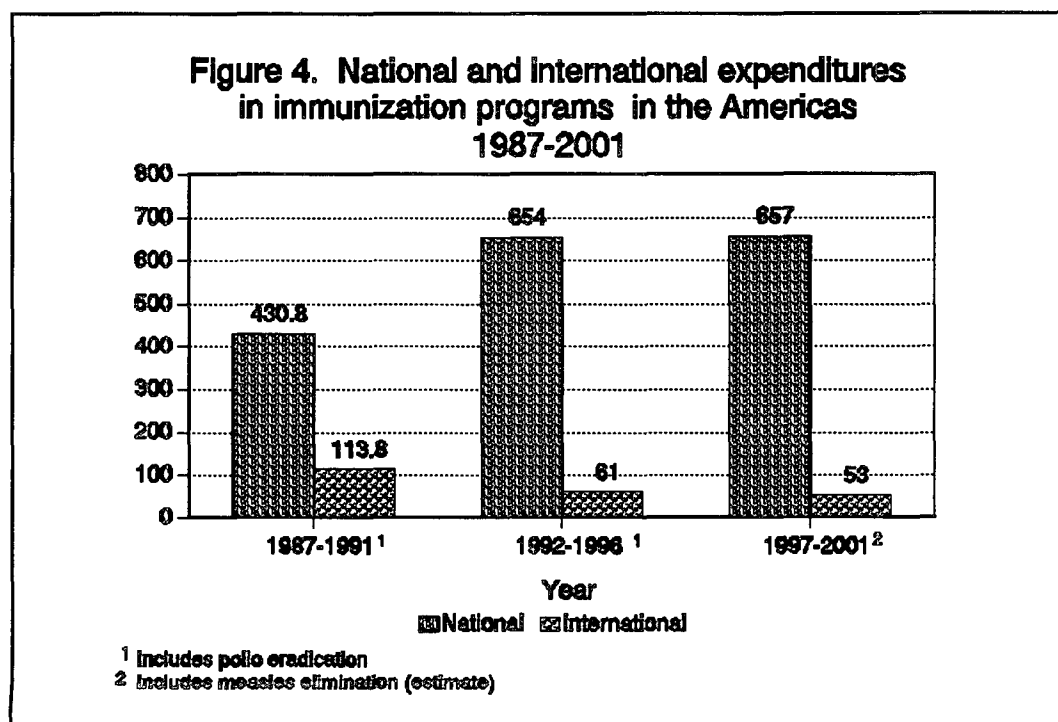
3. Financial and Management Issues

The Plan of Action for Measles Elimination estimates that for the period 1997-2001 the total cost of immunization programs in Latin America and the Caribbean, including the activities aimed at the elimination of measles, is on the order of US\$ 710 million. Of this, it is estimated that approximately \$53 million (7.5%) will be financed by external resources and approximately \$657 million (92.5%) will be financed by resources available at the national level.

During the period 1987-1991 investments in immunization programs were approximately \$544 million, with \$113 million (21%) from external sources and \$430 million (79%) from national resources.

For the period 1992-1996, which is now being completed, it is estimated that investments will be on the order of \$715 million, with \$61 million (8.5%) financed from external sources and \$654 million (91.5%) from national funding. National contributions for immunization programs have steadily increased in comparison with external resources, further ensuring the sustainability of these programs.

Figure 4 shows the trend of these expenditures and demonstrates an increase in national investments and a decrease in external inputs.



Source: EPI/PAHO and national plans of action

A major feature during the implementation of the polio eradication initiative was the initiation of a process of close collaboration and coordination of international agencies through the mechanism that became known as the Inter-Agency Coordination Committee (ICC). Initially, the ICC included representatives of the major collaborators of the program, which at the time were the Inter-American Development Bank (IDB), PAHO, the Rotary Foundation of Rotary International, the United Nations Children's Fund (UNICEF), and the United States Agency for International Development (USAID). Subsequently the Canadian Public Health Association (CPHA) joined the ICC and, most importantly, ICCs were formed at national level and additional partners, both bilateral and private volunteer organizations (PVOs), were also included. Initially, memorandums of understanding were signed between the governments and the ICC member agencies for collaboration during the 5-year period 1987-1991. These memorandums of understanding were accompanied by a 5-year national plan of action in which the objectives, activities, inputs, and expected outcomes were spelled out, permitting a mechanism of follow-up and evaluation.

Following the positive experiences with the polio eradication effort, the Plan of Action for Measles Elimination also calls for international collaboration in support of the initiative. It is expected that between 1996 and 2000 several multilateral and bilateral agencies, such as the Canadian International Development Agency (CIDA), IDB, the Japan International Cooperation Agency (JICA), the Office of International Cooperation of the Netherlands, the Spanish Agency for International Cooperation (AECI), the Swedish International Development Agency (SIDA), UNICEF, USAID, and several nongovernmental and private volunteer organizations will collaborate with the program through both multilateral and bilateral support. Examples of agencies providing bilateral support are Belgian cooperation in Bolivia, French and Japanese cooperation in Haiti, and USAID cooperation throughout the Region. In the past there were also donations of measles vaccine within the Region, e.g., Brazil donated seven million doses of vaccine for the first Central American measles vaccination campaign in 1992.

Several of the above-listed agencies have already been consulted by PAHO about their interest in supporting the program, and some have already responded positively. The Spanish Agency for International Cooperation, for example, has already provided a grant to PAHO of \$650,000 and one associate expert to the program. PAHO is now in the final phases of discussions with USAID on a grant agreement on the order of \$8 million, as indicated by the First Lady of the United States in her historical address at PAHO on World Health Day, 1995, and subsequently during the Fifth Meeting of First Ladies and Spouses of Heads of State of the Americas, held in Asunción, Paraguay, in September 1995. The Inter-American Development Bank has approved a grant to PAHO of approximately \$2 million, and IDB and PAHO officials are now negotiating the terms of disbursement and utilization of these resources.

While the collaboration of the external agencies is critical for program success, the bulk of resources will have to be provided by the countries themselves. It is imperative that governments assign the necessary resources for program implementation, in particular those for the purchase of vaccines, syringes, and needles, as well as those related to recurrent costs of program implementation and supervision, such as transportation and per diem for health workers. An excellent example of national commitment is the recent establishment of a budget line for the national immunization activities in the national budget of Guatemala. Similar laws should be enacted in all countries to ensure the permanence of these programs. PAHO is actively collaborating with legislators in various countries to facilitate this process.

Table 5 shows the percentage of vaccines financed with national resources in selected countries in 1990 and 1995. While in 1990 most vaccines used in these countries were financed by outside sources, the bulk of the vaccine purchased in 1995 was financed within national budgets, a strong indication of the priority accorded to this highly cost-effective health intervention.

**Table 5. Percentage of Vaccines Financed with National Resources
in Selected Countries, 1990 and 1995**

Country	1990	1995
Bolivia	10.4%	67.3%
Dominican Republic	78.7%	100.0%
Ecuador	76.6%	100.0%
El Salvador	32.8%	86.1%
Guatemala	3.2%	100.0%
Haiti	0.0%	0.0%
Honduras	87.1%	98.3%
Nicaragua	0.0%	77.4%
Peru	27.2%	98.5%

Source: EPI/PAHO and national plans of action

The continued involvement of high-level officials brought about by the successful polio eradication strategy has stimulated the participation of other sectors, nongovernmental organizations, and voluntary groups. This trend is likely to continue if properly stimulated. For example, reports of the 1994 and 1995 national ICC meetings held in the Region show a marked increase in the participation of nongovernmental and private voluntary organizations in immunization programs (Table 6). This has had a positive

impact on the mobilization of national resources in support of immunization programs and their sustainability within the national health infrastructure. In the Andean Region, for example, preliminary information indicates that the majority of the resources in their 5-year plans for 1996-2000 will come from the countries themselves.

Table 6. Number of PVO's Collaborating with Immunization Programs in Selected Countries, 1994 and 1995

Country	1994	1995
Bolivia	12	53
Dominican Republic	4	8
Ecuador	-	5
El Salvador	42	66
Guatemala	12	7
Honduras	5	20
Nicaragua	4	20
Peru	8	10

Source: EPI/PAHO, and reports of national ICC meetings

These data are a good indicator of the strengthening of the health infrastructure. This has been noted by the report of the Taylor Commission, which documented the positive impact of the immunization programs and the polio eradication initiative on the health services and systems in the Americas, as well as the sustainability of such programs, which are now a high priority in the health agendas of most countries.

The regional initiatives to eradicate poliomyelitis and now to eliminate measles, and the ongoing efforts to maintain high vaccination coverage levels and to control other communicable diseases, attest to the impact of well-coordinated approaches that can only be implemented once there is national commitment and allocation of the necessary resources to carry on the activities at regional and country levels. This continued national and international commitment will be critical if these challenges are to be faced successfully.

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