directing council

PAN AMERICAN HEALTH ORGANIZATION

XXXI Meeting

regional committee

WORLD HEALTH ORGANIZATION

XXXVII Meeting

Washington, D.C.
September-October 1985

Provisional Agenda Item 22

CD31/7 (Eng.)
Corrigendum
6 September 1985
ENGLISH/SPANISH

EXPANDED PROGRAM ON IMMUNIZATION IN THE AMERICAS

Corrigendum

Please substitute the attached pages 22 and 23 of Annex III for those of the same number appearing in Document CD31/7.

APPENDIX III

COST COMPONENTS

Personnel ($1,850,000 already available at PAHO) $7,100,000

Full time - 11 at $30,000/year x 5 years = $1,650,000
Sub-regional - 4 at $100,000/year x 5 years
STC's - $8,000/month x 200 months - $1,600,000

Administration, Information and Documentation $1,100,000

Vaccine $10,773,000

12 x 10^6 children < 1 year olds (1984) x 5 = 60 x 10^6 (1st yr)
12 x 10^6 children < 1 year olds (1984) x 4 years = 48 x 10^6
Total = 108 x 10^6 children to be immunized
at 3 doses/child = 324 x 10^6 doses x 1.33 (wastage) = 430 x 10^6
at $0.025 dose = $10,773,000
(Year 1 = $5,985,000)
(Years 2, 3, 4, 5 at $1,197,000/year)

Meetings . . . . . .(approximately) $950,000

TAG -- 3 meetings/year x 5 years = $257,250
7 persons x 3 days/meeting at $150/day = $3,150
Travel at $2,000/Person = $14,000

PEP -- (Polio eradication personnel - country coordinators)
36 countries x 2 persons/country = 72 persons
15 regional staff
5 expert consultants
Travel at $1,000/person = $92,000
Per diem at $100/day/person x 3 days = $300
1 meeting/year x 5 years = $598,000

ICC - (Interagency Coordinating Committee)
3 meetings/year x 5 years = $90,000
10 persons x 1 day/meeting at $100/day = $1,000
Travel at $500/person = $5,000

Laboratories $550,000

6 Viral diagnostic laboratories at $40,000/lab = $240,000

2 Laboratories with oligonucleotide mapping capabilities at $80,000/lab = $160,000

Supplies for viral diagnostic labs at $10,000/year x 5 years = $50,000

Supplies for oligonucleotide mapping labs at $10,000/year x 5 years = $50,000

Shipping of specimens - at
$20 specimen x 500 specimen/year = $10,000
10,000 x 5 years = $50,000

Mobilization costs for national personnel $5,250,000
(travel and per diem)

Promotional costs $3,750,000
(media time: radio, TV, press)

Training $2,000,000

Cold Chain $3,000,000

Evaluations $2,000,000

Coverage surveys - $35,000/survey x 10 surveys/year x 4 years = $1,400,000
Country evaluations $15,000/evaluation x 10 evaluations/year x 4 years = $600,000

Research $2,000,000

Contingency Funds $6,000,000

GRAND TOTAL $44,473,000
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directing council

PAN AMERICAN HEALTH ORGANIZATION

XXXI Meeting

regional committee

WORLD HEALTH ORGANIZATION

XXXVII Meeting

Washington, D.C.
September-October 1985

Provisional Agenda Item 22

CD31/7 (Eng.)
30 July 1985
ORIGINAL: ENGLISH

EXPANDED PROGRAM ON IMMUNIZATION IN THE AMERICAS

The attached progress report (Document CE95/15, Rev. 1) (Annex I) is presented to the XXXI Meeting of the Directing Council for review, in response to Resolution CD29.R16 (1983). The 95th Meeting of the Executive Committee, after reviewing the report, adopted Resolution XIV, which is presented below.

Following the adoption of this resolution by the Executive Committee, the Director established a Technical Advisory Group (TAG) constituted by experts in the field of disease control, and convened the first meeting of this group in July 1985. The TAG reviewed the proposed Plan of Action (Annex II) for eradication of indigenous transmission of wild poliovirus in the Americas. The TAG has advised the Director that operative paragraph 4.c of the Resolution XIV of the Executive Committee, which recommends that the Directing Council urge Member Governments to require proof of immunization from children traveling from countries with documented transmission of wild poliovirus, is not crucial to the achievement of the objectives of the program.

The Director also presented the Plan of Action to an Inter-Agency Coordinating Committee during July 1985. The Committee included participants from the Inter-American Development Bank, UNICEF, USAID, Rotary International and the Task Force for Child Survival, who endorsed the Plan and indicated strong interest in supporting it.

The Directing Council is asked to consider the attached report and Resolution XIV, as well as the possible deletion of operative paragraph 4.c from the proposed resolution, which reads as follows:

THE 95th MEETING OF THE EXECUTIVE COMMITTEE,

Having considered the Director's report on the Expanded Program on Immunization in the Americas (EPI) (Document CE95/15 and ADD. I),

RESOLVES:

To recommend to the XXXI Meeting of the Directing Council the adoption of a resolution along the following lines:

THE XXXI MEETING OF THE DIRECTING COUNCIL,

Having considered the Director's report on the Expanded Program on Immunization in the Americas (EPI) and the report of the 95th Meeting of the Executive Committee;

Noting the overall improvement made at national level in the implementation of this program and the impact already achieved in reducing morbidity by poliomyelitis;

Believing that an attempt to eradicate poliomyelitis presents a challenge and a stimulus to the world to mobilize the resources to achieve the objective, and that the support required is available nationally and internationally; and

Recognizing that the realization of this objective will enhance the overall success of the EPI,

RESOLVES:

1. To congratulate the Director on the report presented.

2. To reassure its full commitment to reach the overall goals of the EPI by 1990.

3. To accept the Proposal for Action for the eradication of irdigenous transmission of wild poliovirus from the Americas by 1990 and declare the goals established in the Proposal for Action as one of the major objectives of the Organization.

4. To urge Member Governments:

a) To take the necessary steps to accelerate their EPI programs to assure the achievement of the overall objectives of the EPI and of the eradication of indigenous transmission of wild poliovirus from the Americas by 1990;

b) To make the needed commitment and allocate the necessary resources for program implementation;

c) To require proof of immunization against poliomyelitis from children less than five years of age traveling from countries with documented transmission of wild poliovirus;

d) To promote support towards these goals within those technical and financial multilateral agencies of which they are also members.

5. To draw the attention of the Member Governments to the necessity that:

a) Inmunization programs not be implemented at the expense of efforts to develop the infrastructure of health services and their overall promotion, prevention and care activities;

b) The strategy of campaigns and the tactic of national vaccination days be viewed as ad hoc measures, to be gradually replaced by regular immunization services performed routinely by health services.

6. To request the Director:

a) To seek the additional political and material support needed for the realization of these goals from multilateral, bilateral and nongovernmental agencies;

b) To initiate immediate action as outlined in the Proposal for Action to assure the necessary technical and financial support for the eradication of indigenous transmission of wild poliovirus from the Americas by 1990;

c) To submit a progress report to the 97th Meeting of the Executive Committee and the XXII Pan American Sanitary Conference in 1986.

Annexes

executive committee of the directing council

PAN AMERICAN HEALTH ORGANIZATION

working party of the regional committee

WORLD HEALTH ORGANIZATION

95th Meeting
Washington, D.C.
June 1985

Agenda Item 16

CE95/15, Rev. 1 (Eng.)
30 July 1985
ORIGINAL: ENGLISH

EXPANDED PROGRAM ON IMMUNIZATION IN THE AMERICAS

Progress Report

This progress report is presented to the 95th Meeting of the Executive Committee for review, in response to Resolution XVI of the XXIX Meeting of the Directing Council (1983). The Report describes the progress achieved in this program in the Region since its launching in 1977, particularly the commitment of all countries to its success. It also reports the overall improvement in vaccination coverages and program organization at country level.

Because of the specially notable progress made in the control of poliomyelitis, the Report proposes that the Region of the Americas adopt as a goal the eradication of indigenous transmission of wild poliovirus by 1990. To achieve this objective and to sustain the achievement, it is recommended that national and regional surveillance systems be greatly strengthened. These measures and the attainment of poliomyelitis eradication should serve to strengthen the overall EPI and, ultimately, primary health services throughout the Hemisphere.

CONTENTS

EXECUTIVE SUMMARY

The Expanded Program on Immunization (EPI) was initiated by a 1974 World Health Assembly resolution. The EPI was endorsed for the Americas by the Pan American Health Organization (PAHO) Directing Council in 1977. Since its inception in 1977, the EPI program in the Americas has made considerable progress. More than 15,000 health workers have been trained in EPI workshops. A cold chain regional focal point in Cali, Colombia has trained over 150 technicians in cold chain equipment, maintenance and repair. Schools of Public Health in the Region have been actively involved in EPI training. Most countries have made notable strides in improving and expanding the equipment and procedures used in the cold chain to assure the potency of vaccines. PAHO created the EPI Revolving Fund which has assisted countries in the Region with vaccine purchases worth more than US$19 million. This Fund has contributed to improved vaccine quality and ready the availability of vaccines at the country level. Since November 1980, PAHO has collaborated with 18 countries in the Region in conducting comprehensive EPI program evaluations. Six countries have carried out follow-up evaluations. The Organization has worked with countries to provide technical updates and recent program data through the PAHO EPI Newsletter, which is published bimonthly in English and Spanish and distributed to more than 10,000 health workers in the Americas. PAHO has collaborated with other organizations which support immunization activities including UNICEF, USAID, Rotary International and the Bellagio Task Force for Child Survival.

The improvements in the control of paralytic poliomyelitis in the Americas since the start of the EPI initiative have been remarkable. In the Americas, the proportion of children less than one year of age who have received the recommended three doses of polio vaccine has increased from 34.6% in 1978 to more than 75% in 1984. The number of reported cases of paralytic polio has decreased by 90% from the 4,728 reported cases in 1979 to 525 in 1984. The number of countries reporting cases decreased from 19 in 1975 to only 11 in 1984, and the number of cases decreased by 10 times in the period 1975-1984 (Table A). A major contribution to the increased polio vaccine coverage and decreased paralytic polio morbidity have been special immunization programs emphasizing oral polio vaccination in Bolivia, Brazil, Colombia, Mexico, Dominican Republic, and Nicaragua.

Given that all countries in the Region now have national immunization programs and that 26 countries are considered to have already achieved control of poliomyelitis, an additional effort in priority countries specifically directed at polio can lead to the interruption of indigenous poliovirus transmission in the Western Hemisphere in a short period of time. The eradication of indigenous

transmission of wild poliovirus in the Americas deserves immediate Hemispheric action. It is unacceptable, given the technology presently available, that any child in this Hemisphere should suffer paralytic poliomyelitis. PAHO proposes a plan of action with the following objectives:

a) To promote the overall development of the Expanded Program on Inmunization in the Region, to speed up the attainment of the objectives.

b) To eradicate indigenous transmission of wild poliovirus in the American Region by the year 1990.

c) To set up a surveillance system at regional and national levels, so that all suspected cases of poliomyelitis are immediately investigated and control measures to stop transmission are rapidly implemented.

The most critical elements for the success of this initiative are political commitment of the national governments and support of international agencies. PAHO will coordinate securing additional financial and technical assistance. It is estimated that an additional US$30 million will be needed over the next five years to cover additional personnel, laboratory support, improved surveillance and outbreak control, vaccine quality assurance, and cold chain development.

Intensified surveillance is critical for the success of this initiative and the EPI in general. All suspect cases of poliomyelitis must be considered public health emergencies and thoroughly investigated immediately. The chain of transmission must be identified and field investigations (with laboratory support) carried out to determine the extent of the outbreak focus. The laboratory support for virus isolation and serologic testing in the Region must be strengthened. It is proposed that every six months PAHO should convene a meeting of all national EPI managers to review progress in the polio eradication initiative.

The Director of PAHO proposes decisive action of Member Governments to achieve hemispheric eradication of indigenous transmission of wild poliovirus by 1990.

Table A. Number of polio cases in the Americas by country, 1975-1984

Country	Mean No. of cases		No. of cases			
	1975-77	1978-80	1981	1982	1983	1984
Bermuda	-	-	-	-	-	-
Canada	1	4	-	-	-	1
U.S.A.	13	20	7	9	12	7
Anguilla	-	-	-	-	-	-
Antigua and Barbuda	-	-	-	-	-	-
Bahamas	-	-	-	-	-	-
Barbados	-	-	-	-	-	-
British Virgin Islands	-	-	-	-	-	-
Cayman Islands	-	-	-	-	-	-
Cuba	-	-	-	-	-	-
Dominica	-	-	-	-	-	-
Dominican Republic	63	107	72	70	7	-
French Guyana	-	-	-	-	1	-
Grenada	-	-	-	-	-	-
Haiti	25	16	35	35	62	63
Jamaica	-	-	-	58	-	-
Montserrat	-	-	-	-	-	-
Saint Lucia	-	-	-	-	-	-
St. Kitts/Nevis	-	-	-	-	-	-
St. Vincent	-	-	-	-	-	-
Trinidad and Tobago	-	-	-	-	-	-
Turks and Caicos Islands	-	-	-	-	-	-
Belize	-	2	-	-	-	-
Costa Rica	-	-	-	-	-	-
El Salvador	38	23	52	16	88	19
Guatemala	39	116	42	136	208	17
Honduras	78	101	18	8	8	76
Mexico	710	966	186	98	232	137
Nicaragua	26	36	46	-	-	-
Panama	-	-	-	-	-	-
Bolivia	138	121	15	10	7	-
Brazil	2,807	1,854	122	69	45	82
Colombia	525	305	576	187	88	18
Ecuador	45	10	11	11	5	-
Guyana	2	-	-	-	-	-
Paraguay	74	20	60	71	11	3
Peru	136	120	149	150	111	102
Suriname	-	-	-	1	-	-
Venezuela	44	34	68	30	-	-
Argentina	2	22	5	10	26	-
Chile	-	-	-	-	-	-
Uruguay	6	-	-	-	-	-
TOTAL	4,772	3,877	1,464	969	911	525
NUMBER OF COUNTRIES REPORTING CASES	19	18	16	17	15	11

EXPANDED PROGRAM ON IMMUNIZATION (EPI) IN THE AMERICAS

1. BACKGROUND AND POLICY BASIS

The Expanded Program on Immunization (EPI) has its basis in resolution WHA27.57, adopted by the World Health Assembly in May 1974. General program policies, including the EPI goal of providing immunization services for all children of the world by 1990, were approved in Resolution WHA30.53, adopted in May 1977. These goals and policies were endorsed by Resolution CD25.R27 of the XXV Meeting of the PAHO Directing Council in September 1977. EPI's importance as an essential component of maternal and child health and primary health care was emphasized in Resolution WHA31.53, adopted in May 1978, and in the Declaration of Alma Ata in September 1978.

In September 1978, Resolution XVI of the XX Pan American Sanitary Conference established an EPI Revolving Fund for the purchase of vaccines, and in September 1979 Resolution CD26.R21 of the XXVI Meeting of the Directing Council requested the Director to reallocate funds and other resources from related programs to strengthen the EPI program and to establish a regional focal point for the continued development of the cold chain.

In May 1982 the World Health Assembly, through Resolution WHA35.31, urged Member States to take action on a five-point action program geared at strengthening the progress of EPI towards reaching its goals by 1990.

Resolution CD29.R16 of the XXIX Meeting of the Directing Council in September 1983 urged countries to set biennial targets for immunization coverage and step up surveillance activities to measure its impact on disease reduction, particularly monitoring poliomyelitis, measles and neonatal tetanus incidences as indicators of impact of the program.

The long-term objectives of the EPI are to:

- reduce morbidity and mortality from diphtheria, whooping cough, tetanus, measles, tuberculosis and poliomyelitis by providing immunization services against these diseases for every child in the world by 1990 (other selected diseases may be included when and where applicable);

- promote countries' self-reliance in the delivery of immunization services within the context of comprehensive health services; and

- promote regional self-reliance in matters of vaccine production and quality control.

The EPI requires a long-term commitment to continued immunization activities and is an essential element within PAHO/WHO's strategy to achieve health for all by the year 2000. Immunization coverage has been included among the indicators which will be used to monitor the success of that strategy at regional and global levels.

2. SUMMARY OF PROGRESS TO DATE

2.1 Levels of Coverage and Impact

In response to Resolution CD29.R16 of the XXIX Meeting of the Directing Council, which recognizes that accelerated progress will be necessary to achieve the 1990 EPI goals and urges countries to set biennial targets for immunization coverage and for the reduction of the morbidity and mortality of the EPI diseases, EPI program managers from Latin America and the Caribbean held separate subregional meetings during the past two years to review progress made and to set 1985 immunization coverage targets. In November 1983, EPI managers from 17 English-speaking Caribbean countries met in Port-of-Spain, Trinidad and Tobago, and in March 1984, EPI managers from 20 Latin American countries met in Lima, Peru.

Review of country reports showed that immunization coverage in the Americas has improved considerably since the EPI was launched in 1977. In 1978, for example, a very small proportion of the children under 1 year of age (less than 10%) lived in countries where complete immunization coverage with EPI vaccines was at least 50% for this age group. By 1984, this proportion had risen considerably to over 55% for DPT and measles vaccines and over 80% for polio vaccine (Table 1). An illustration of EPI impact is shown in Figure 1, which plots the incidence rates of polio, tetanus, diphtheria, whooping cough, and measles from 1970 to 1984 in Latin America and the Caribbean.

2.2 Setting 1985 Targets

2.2.1 Latin America

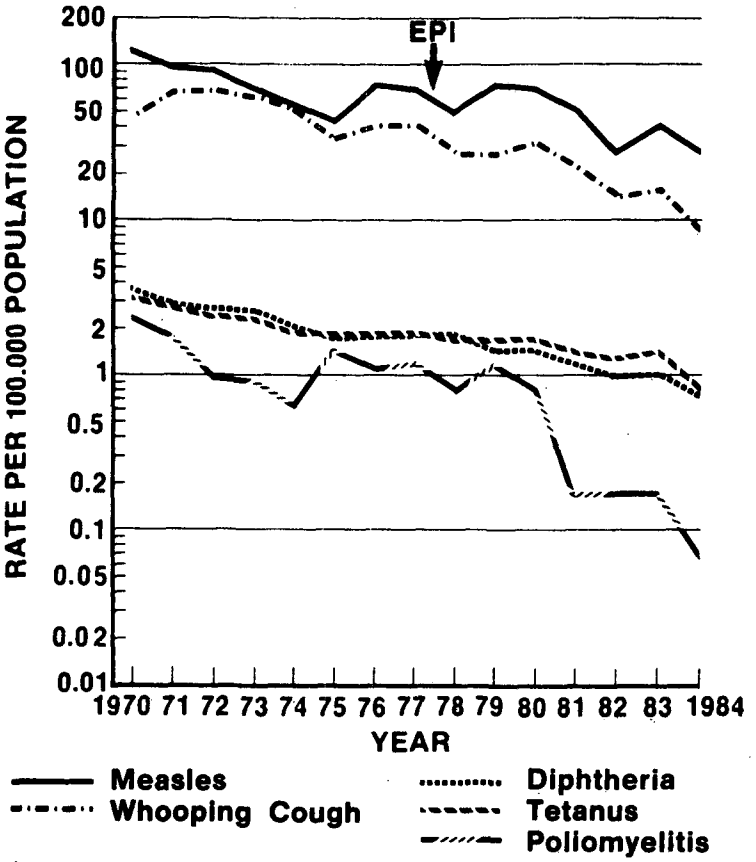
All 20 countries attending the Lima meeting set 1985 vaccination coverage targets for DPT, poliomyelitis, measles and BCG vaccines. These targets, compared to the reported coverages in 1983, are shown in Table 2. Less than half the countries of Latin America reported coverage levels of 50% or more with DPT, polio, and measles vaccines in 1983, with a much smaller fraction reporting coverages of 70% or more. BCG coverage was generally higher, with 10 countries reporting coverages of greater than 50%, six of which were greater than 70%. Figure 2 shows the progress made in increasing immunization coverages from 1978 to 1983, in terms of proportion of less than 1 year olds residing in areas reporting coverages of 50% and 70%, and the dramatic improvement which would result if all countries were successful in meeting their coverage targets by 1985.

Table 1: Vaccination coverage in children under one year of age, by type of vaccine. 1984 (provisional)

Subregion and Country	Population under 1 year of age	Coverage % DPT 3rd Dose	Polio 3rd Dose	Measles	BCG
North America					
Bermuda	800	40	41	42	...
Canada	403000	...	...	...	...
United States	3700000	...	...	...	...
Caribbean					
Anguila	200	69	73	72	75
Antigua & Barbuda	2100	94	92	73	...
Bahamas[c]	6200	62	62	62	...
Barbados	4600	83	77	84	...
Br. Virgin Is.	300	85	85	89	...
Cayman Is.[c]	600	90	90	75	64
Cuba[a,b]	168000	88	99	80	91
Dominica	2500	84	82	85	84
Dominican Rep.	197000	20	99	19	43
Grenada	4000	76	75	31	...
Haiti	200000	12	12	13	58
Jamaica	59000	57	56	60	48
Montserrat	300	84	82	...	81
St Christopher/Nevis	1800	97	97	85	...
Saint Lucia	4300	83	84	60	80
St Vincent/Grenada	3500	86	90	92	32
Trinidad & Tobago	23000	65	66	10	...
Turks & Caicos Is.	170	60	70	44	99
Continental Middle America					
Belize	5700	54	54	44	82
Costa Rica[c]	68000	82	81	83	...
El Salvador[a]	200000	44	44	41	21
Guatemala[a]	294000	54	53	27	37
Honduras	169000	48	84	51	47
Mexico	2622000	26	91	30	24
Nicaragua	133000	32	73	30	24
Panama[b]	60000	70	70	72	79
Tropical South America					
Bolivia[b]	243000	24	56	17	24
Brazil[a]	3845000	67	99	80	79
Colombia	798000	60	60	52	67
Ecuador	347000	36	36	40	79
Guyana[c]	25000	43	41	33	49
Paraguay	122000	58	59	53	70
Peru	672000	26	26	32	59
Suriname[b,c]	11000	80	79	83	...
Venezuela[b]	557000	27	59	25	23
Temperate South America					
Argentina[b]	602000	66	64	90	72
Chile	285000	84	86	77	87
Uruguay	57000	57	83	17	...
TOTAL[d]		49	78	53	57

a) 2nd dose only.
b) Projected coverage.
c) Measles coverage for one year olds.
d) Includes only countries with available data.
... Information not available.

FIGURE 1
INCIDENCE OF FIVE VACCINE-PREVENTABLE DISEASES, REGION OF THE AMERICAS, *1970-1984



* Excluding Bermuda, Canada and the United States

Provisional Data for Measles, Whooping Cough, *Diphteria* and Tetanus, for the year 1984.

FIGURE 2
PROPORTION OF LATIN AMERICAN CHILDREN UNDER 1 YEAR OF AGE IN COUNTRIES WHERE INMUNIZATION COVERAGE IS AT LEAST 50 OR 70 PERCENT. 1978 AND 1983 (REPORTED COVERAGES), AND 1985 (COVERAGE TARGETS)

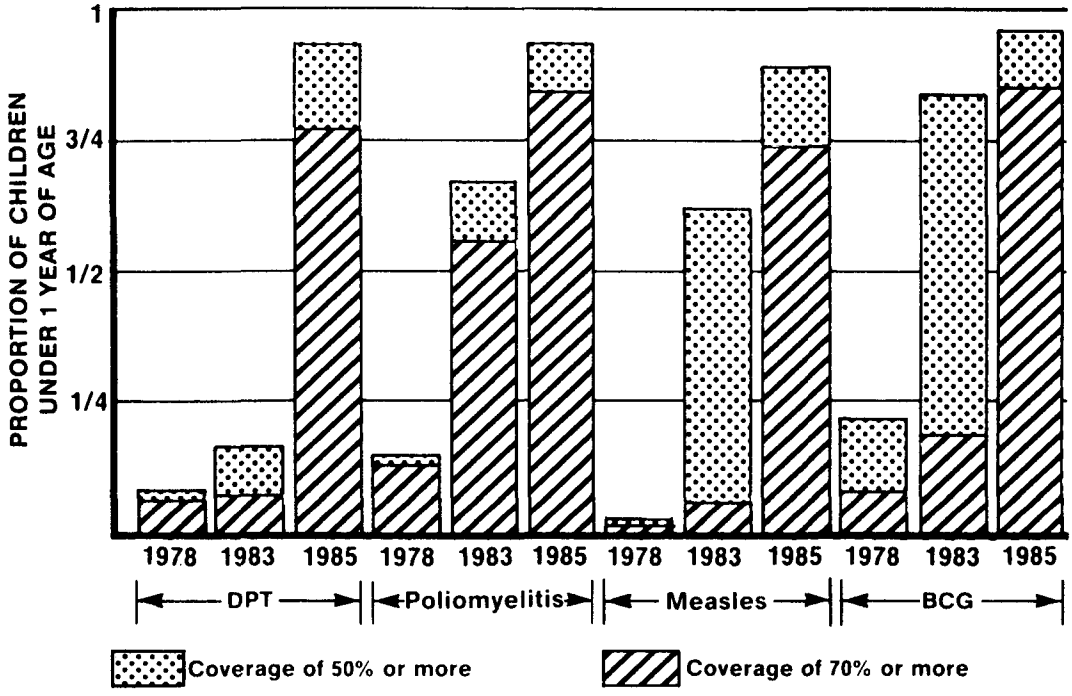


Table 2: 1983 vaccination coverages (%) compared with 1985 vaccination coverage targets in children less than 1 year of age, established at the 1984 meeting of EPI program managers of 20 Latin American countries

Country	DPT-3		Polio-3		Measles		BCG	
	1983	1985 targets	1983	1985 targets	1983	1985 targets	1983	1985 targets
Argentina	65	70	94	90	62	80	64	85
Bolivia	7	60	11[a]	85	14	60	30	70
Brazil	49	80	99[b,c]	95	52	95	56	75
Chile	70	90	63	90	99	95	85	95
Colombia	41	80	42	80	42	80	78	85
Costa Rica	56	85	54	85	73[d]	95	...	95
Cuba	91[e]	95	93[c]	95	71	95	91[e]	98
Dominican Rep.	24	70	22	90	23	60	41	60
Ecuador	23[e]	60	27[e]	60	28[e]	60	64[e]	80
El Salvador	45[c,e]	85	41[c,e]	85	47[d]	85	49[e]	85
Guatemala	44[c]	55	44[c]	55	12	40	25	45
Haiti	...	55	...	55	...	55	...	65
Honduras	70	80	68	80	66	85	74	85
Mexico	30	80	85	80	85[d]	80	...	80
Nicaragua	24	70	29[a]	80	23	80	89	90
Panama	61	80	60	80	60	80	81	85
Paraguay	38	80/40[f]	47	80/40[f]	37	80/40[f]	54	80/40[f]
Peru	20[e]	30	19[e]	35	27	43	58[e]	62
Uruguay	70	85	74[c]	90	62	95	95	95
Venzuela	49	65	67	80	42	60	48	80

a) Does not include national polio campaigns.
b) Reported number of doses exceeded estimated target population.
c) Second dose.
d) 1 year of age.
e) Projected.
f) Dual targets: urban/rural.

... information not available.

2.2.2 Caribbean

Table 3 shows the 1985 coverage targets for complete immunization of children under 1 year of age with DPT, polio, BCG and measles vaccines, together with reported 1983 coverages for each of the countries attending the meeting in Port-of-Spain.

Table 3: 1983 vaccination coverages (%) compared with 1985 vaccination coverage targets in children less than 1 year of age, established at the 1983 meeting of EPI Program Managers of 19 Caribbean countries

Country	DPT-3		Polio-3		Measles		BCG	
	1983	1985 targets	1983	1985 targets	1983	1985 targets	1983	1985 targets
Anguilla	97	95	99	95	70	95	96	95
Antigua & Barbuda	99	90	99	90	48	a	b	a
Bahamas	65	80	65	80	66	80	b	a
Barbados	69	75	62	75	55	65	c	a
Belize	59	60	61	60	43	50	81	75
Bermuda	53	a,d	53	a,d	60[e]	a,d	b	a,d
British Virgin Is.	90	95	75	95	83	95	b	a
Cayman Islands	89	95	90	95	87[e,f]	95[e,f]	69	95[g]
Dominica	93	a	92	a	63	a	99	a
Grenada	68	85	72	85	7	80	b	a
Guyana	56	75	59	75	44[g]	85[g]	73	85
Jamaica	...	65	...	70	...	60	...	70
Montserrat	95	94	95	86	83[e]	51[e]	91	99[h]
Saint Lucia	81	99	80	99	36	a	69	a
St. Kitts-Nevis	90	90	91	90	b	80	c	75[i]
St. Vincent and the Grenadines	80	95	84	90	59	75[i]	b	85
Suriname	85	90	83	90	71[j]	90[k]	b	a
Trinidad & Tobago	60	80	61	80	b	a	b	a
Turks & Caicos Is.	70	a,d	7	a,d	80	a,d	98	a,d

a) Immunization coverage target for 1985 not established.
b) Vaccine not included in national program in 1983.
c) 5 years.
d) Did not attend Trinidad meeting.
e) MMR vaccine used.
f) 15 months.
g) 1 year
h) 0-5 years.
i) 2 years.
j) 12-35 months.
k) 1-3 years.

... Information not available

Source: CAREC, 1983

Since 1980, all 19 countries served by the Caribbean Epidemiology Center (CAREC) have been submitting reports of immunization coverage. All 19 countries routinely administer DPT and polio vaccines, with most countries reporting coverages in the 60-90% range.

BCG and measles immunizations have been introduced more recently in most national programs. By the end of 1984, 11 countries were administering BCG and 17 were giving measles vaccine. Because of this, coverages with these vaccines tend to be lower.

Immunization coverage has generally improved from 1980 to 1984, especially in the 12 smaller countries of the subregion with populations of less than 130,000 (in order of ascending population size: Anguilla, Turks and Caicos Islands, British Virgin Islands, Montserrat, Cayman Islands, St. Kitts/Nevis, Bermuda, Antigua and Barbuda, Dominica, Grenada, St. Vincent and the Grenadines, and Saint Lucia). Seven of the larger countries (Belize, Bahamas, Barbados, Guyana, Suriname, Trinidad and Tobago, and Jamaica) have also improved their coverages, but none as yet has reached levels greater than 85% with any vaccine.

If all countries meet their 1985 targets, immunization coverages for DPT and polio will range from 60 to 100%, with most countries attaining coverages of over 80%. For measles, 1985 targets range from 50 to 95% coverage, and for BCG, from 70 to 99%.

2.3 Status of EPI Related Activities

2.3.1 Training

In the period since EPI training activities were launched in early 1979 through the end of 1984, it is estimated that at least 15,000 health workers have attended EPI workshops. In addition, over 12,000 EPI training modules have been distributed in the Region, either directly by the EPI Program or through the PAHO Textbooks Program.

In 1983 and 1984, the Cold Chain Regional Focal Point established by PAHO in collaboration with the University of Valle in Cali, Colombia, held special training workshops on cold chain equipment maintenance and repair in Bolivia, Colombia and Nicaragua. An additional 30 technicians were trained in Brazil. As of September 1984, over 150 technicians in the Region have been trained. UNICEF and PAHO sponsored the first subregional course held in Guatemala for training cold chain supervisors, at which 20 participants from Central America and Panama attended.

The EPI training activities of schools of public health in the Region were reviewed at a meeting held in Washington, D.C. in the latter part of 1983. It was noted that, since the first meeting with these institutions in 1980, all are now highly motivated to continue EPI training activities and are using EPI training materials which have been adapted to meet national needs. New materials, particularly in the area of EPI disease surveillance, were produced by the National School of Public Health in Rio de Janeiro, Brazil, through an agreement with PAHO, and five national courses were held in that country. Participants from Bolivia and Peru also attended these courses.

A similar agreement was recently reached with the School of Public Health of Buenos Aires, Argentina, for the production of training materials on operational research issues in immunizations.

2.3.2 Vaccine Production and Quality Control

2.3.2.1 Vaccine Production

National vaccine production differs considerably according to the sub-region of the Americas. In North America, Canada, United States and Mexico have the capability to produce all of the EPI vaccines and the former two are self-sufficient. Central America and the Caribbean, with the exception of Cuba, do not have facilities for vaccine production. South America has capabilities for vaccine production in some of the countries.

Overall, 11 countries in the Americas are able to produce bacterial vaccines such as DPT, DT, and BCG (Table 4). The production capacity for these countries is about 60 million doses, but the majority are not producing up to capacity.

Table 4: Countries producing bacterial vaccines in Latin America, 1984

Vaccine	Type	Country	Laboratory	Strain
BCG	Lyophilized	Argentina	Cordoba	Paris 1173
		Brazil	A. Paiva	Moreau
		Cuba	C. Finlay	Moreau
		Mexico	National Institute of Hygiene	Copen. 1331
	Liquid	Ecuador	National Institute of Hygiene	Gottemburg
		Uruguay	Lab. Calmette	Paris 1173
DPT	Submerged Culture	Brazil	Butantan	
		Venezuela	National Institute of Hygiene	
		Mexico	National Institute of Hygiene	
		Chile	Institute of Public Health	
Tetanus	Submerged Culture	Brazil	Butantan	
		Mexico	National Institute of Hygiene	
DPT	Conventional	Argentina	Instituto Malbran	
		Ecuador	National Institute of Hygiene	
		Peru	National Institute of Health	
		Cuba	Carlos Finlay	
		Brazil	Butantan, Fiocruz	
		Chile	Institute of Public Health	
		Colombia	National Institute of Health	
		Peru	National Institute of Health	
		Venezuela	National Institute of Hygiene	

At present, only two countries in Latin America, Brazil and Mexico, are producing viral vaccines. Both are producing measles vaccine. Cuba is in the process of developing production capability of measles vaccine with support from PAHO and UNDP (Table 5). Only Mexico has developed the production capability for oral polio vaccine. As with bacterial vaccines, the production capacities of the viral vaccines exceed the actual production outputs.

Table 5: Countries producing viral vaccines in Latin America, 1984

Vaccine	Country	Laboratory	Strain	Type	Annual* Production
Polio (oral)	Mexico	National Institute of Virology	Sabin	1	6
Measles	Brazil	Bio Manguinhos	CAM-70		9
	Cuba	C. Finlay	Leningrad 16		In Development
	Mexico	National Institute of Virology	Edmonston-Zagreb		5

* Millions of doses

Estimates are that by 1990, Latin America and the Caribbean will have approximately 15 million newborns and 18 million pregnant women who will require vaccination. To provide 100% coverage of these populations, it is estimated that 71 million doses of viral vaccines and 135 million doses of bacterial vaccines will be needed (Table 6).

Table 6: EPI vaccines in Latin America and, estimated needs for 1990 production capabilities (in millions of doses)

Vaccine	Estimated Needs 1990 (*)	Production Capability (1984)[a]	
		Nominal	Actual
Polio	53	30	10
Measles	18	24	14
DPT	58.5	33	14
TT[a]	46.8	32	14
BCG	30	34	26

(*) Estimated 15 million children under one year of age, plus 20% wastage.
a) 18 million pregnant women estimated for 1990.

The majority of producers face diverse problems in achieving production of consistently good quality vaccines in sufficient quantities. As a result, the availability of good quality vaccines at the national level is limited and the locally produced vaccines are more expensive than the imported ones.

The major obstacles to achievement of the goal for regional self-sufficiency in vaccine production are related to a lack of financial resources, where vaccine production is not high on the list of national investment priorities. As a consequence, it is difficult to maintain high quality personnel in the field of vaccine production. Other constraints relate to procurement and maintenance of costly equipment necessary for vaccine production, and a lack of up-to-date management procedures. There is a need for a system of management control with greater operational flexibility, facilities for the importation of necessary supplies, incentives for profesionals, resources to carry out applied research and development of technology for production improvement.

Another obstacle in vaccine production is the lack of coordination among the producers and the users at the ministerial level with respect to programming of production needs. This requires national authorities to determine vaccine needs well in advance and to allocate adequate funds to the national laboratories in order to initiate the procedures for importation of critical supplies. Production of biologics requires a lead time of 10-18 months for polio vaccine from the procurement of the monkeys to the filling of the vials.

2.3.2.2 Quality Control

Other impediments to production of vaccines that meet the established WHO requirements relate to weaknesses in quality control in the laboratories. Quality controls are deficient in terms of both inspection procedures and in checking the high relative costs. Contributing to the deficiencies in quality control are shortages of both animals and necessary reagents used in biologicals assays. There is a need to establish animal colonies to implement necessary testing with minimal biological variance. In addition, there is the need of standardized reagents, in order to evaluate the potency of the vaccine with reproducibility of the assays. At present, PAHO assists the countries in procurement of reagents from regional and international sources.

PAHO provides strict control of vaccines procured through the EPI Revolving Fund. Control starts with the selection of the supplier. Laboratories are inspected for manufacturing procedures and product control. Vaccine potency is monitored at the delivery point and in the national storage facilities. To assist in surveillance of vaccine potency, a network of public health laboratories for testing of polio vaccine was developed. There are three levels of this network and they are coordinated by the PAHO Biologics Unit. At the national level, 11 countries perform vaccine titrations (Argentina, Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, Honduras, Mexico, Peru and Venezuela). At the subregional level, the National Reference Laboratory and the National Institute of Virology in Mexico assist in the development of national level laboratories through training of personnel. At the regional level, quality control of the national and sub-regional laboratories is performed through verification of vaccine potency

testing by the Office of Biologics, Research and Review of the National Center for Drugs and Biologics of the United States Food and Drug Administration. PAHO Headquarters coordinates all quality control operations. In addition, in order to maintain high levels of quality, an external system for controlling the laboratory network will be instituted in May 1985.

2.3.3. Cold Chain

Most countries have made notable strides in improving and expanding the cold chain, although cold chain failures have been identified through investigations of vaccine failures. Acquisition of new freezers, refrigerators, cold boxes, and thermometers is an ongoing activity in most programs, as is the training of technicians in the repair and maintenance of cold chain equipment. Several countries have had problems obtaining tools and spare parts in adequate quantities to keep their equipment running. A few countries are testing solar refrigeration equipment and have programmed activities related to this new technology.

The Regional Focal Point for the EPI cold chain in Cali, Colombia, continues to provide testing services aimed at the identification of suitable equipment for storage and transport of vaccines. Evaluations of solar refrigeration equipment are being increasingly emphasized. The Department of Thermal Sciences at the University of Valle has tested three solar refrigerators of different cooling sources to determine their efficiency for potential utilization in the program. Thus far, traditional compression-run motors have shown to be more reliable.

A 0.5 liter vaccine container developed at the center is now ready for production. The container is intended for use in health establishments and by vaccinators who work in urban areas; its cold life is 28 hours at ambient temperatures of 43°C and 37.5 hours at 32°C. The funds to produce a limited quantity of these units are still being sought.

The cold chain focal point is in a position to provide technical cooperation in the following areas: technical advice on the size of solar refrigeration systems and assistance in their installation; provision of ice-pack molds in two different sizes and assistance in production of the ice packs; provision of training and necessary materials for inspection and repair of domestic refrigerators; technical advice on the design and construction of cold rooms used for vaccine storage; and technical advice on the adaptation and/or conversion of equipment for use in the cold chain.

2.3.4 Revolving Fund for vaccine procurement

During its six years of operation, the EPI Revolving Fund placed vaccine orders worth over US$19 million (Table 7).

Table 7: Dollar value of vaccines purchased through the EPI Revolving Fund, 1979-1985

Year	Value (US$ - FOB)
1979	2,259,064
1980	3,250,178
1981	4,303,246
1982	4,209,548
1983	2,763,235
1984	2,342,473
1985	2,749,444 (projected)
Total	21,877,188

PAHO's Revolving Fund (for the purchase of vaccines and related supplies) received strong support from the United States through a contribution of US$ 1,686,000 to aid in the capitalization of the Fund. This contribution, together with a UNICEF contribution of US$500,000 in 1983, raises the level of capitalization to $4,531,112. In the face of the economic crisis facing many countries of the Region, Revolving Fund procurements have helped to control vaccine costs during a time of rapid inflation. The number of doses of each of the five vaccines procured through the Revolving Fund for the period 1979-1984 and the estimated procurements for 1985 are shown in Table 8. There has been a substantial increase in the amount of vaccines purchased over the six year period.

All countries are receiving adequate quantities of vaccines to cover their target populations, with a large majority obtaining vaccines through the EPI Revolving Fund. The strains of the economic crisis are being noted, as many countries are beginning to have difficulties in availability of local currencies to cover orders from the Fund.

Table 8: EPI Revolving Fund vaccine procurements, in doses, 1979-1985 (doses in millions)

Year	DPT	Poliomyelitis	Measles	BCG	Tetanus Toxoid
1979	9.2	17.0	5.5	6.2	1.6
1980	11.0	17.4	4.7	7.5	3.1
1981	18.3	24.6	5.4	10.4	6.0
1982	14.9	22.1	5.4	12.2	8.2
1983	12.3	26.2	6.7	11.4	6.9
1984	18.6	26.0	6.7	9.5	5.8
1985*	11.4	22.9	8.3	5.9	8.9

*Estimated

2.3.5 Evaluation

Most countries are gearing activities towards an increase in immunization coverages, particularly directed towards the high-risk populations of children under 1 year of age and pregnant women. To evaluate the programs, PAHO has developed and tested a comprehensive multidisciplinary methodology. This evaluation methodology is based on participation of a multidisciplinary team, with involvement of various units of the Health Ministry working jointly during two weeks. The analyses performed and the recommendations generated are directed at the following components of the program: programming, strategies, supervision, vaccine supply and cold chain logistics, community promotion and participation, intra- and inter-institutional coordination, training, information systems, and financing. A detailed plan of work for the following year is then prepared, which identifies all recommended activities and the unit within the Ministry of Health responsible for carrying them out, as well as international cooperation needed.

Since November 1980, 18 countries have conducted comprehensive EPI evaluations. Six countries have also held follow up evaluations (Table 9) directed at an assessment of the implementation of the recommendations from the first evaluation.

Ten countries have planned evaluations of their national programs during 1985, four of them for the first time (Mexico, Paraguay, Haiti and Suriname).

The evaluations have shown that overall declines in disease incidences have resulted from the progress made in each country's immunization program. Though programs are at different stages of development, it can generally be said that important advances have been made in the areas of vaccine supply, extension of the cold chain, selection of effective vaccination strategies tailored to special needs, training, evaluation, and community participation. Most countries still face significant difficulties in the areas of supervision and information systems--particularly epidemiologic surveillance.

An important advance in most country programs has been the identification of appropriate combinations of vaccination strategies to meet specific country needs. In addition to vaccination in fixed health centers, these strategies include house-to-house vaccination in urban areas, mini-campaigns in rural areas, national immunizations days for selected vaccines (polio, DPT, measles), and mobile brigades to reach remote areas. Many countries already have legislation making vaccination mandatory, and others are working to have such legislation passed in the near future.

The importance of community participation and mass media for a successful immunization program has also been identified in the evaluations. Activities in these areas can be divided into two general areas: use of the mass media (radio, press and television) to educate and motivate the community; and use of community organizations to promote and, in some countries, actively take part in delivery of immunization services. Several

Table 9: EPI evaluations in the Region of the Americas, 1980-1985

	1980	1981	1982	1983	1984	1985*
1.	Colombia		Colombia		Colombia	
2.	Bolivia			Bolivia		Bolivia
3.		Argentina				Argentina
4.		Cuba				
5.		Ecuador	Ecuador			Ecuador
6.			Peru			Peru
7.			Dominican Rep.		Dominican Rep.	
8.			Honduras		Honduras	
9.			Uruguay		Uruguay	
10.				Guatemala		Guatemala
11.				Nicaragua		Nicaragua
12.				Jamaica		
13.				Brazil		
14.					Belize	
15.					Chile	
16.					El Salvador	
17.					Venezuela	
18.					Panama	
19.						Paraguay
20.						Mexico
21.						Haiti
22.						Suriname

*Scheduled

countries use pre-existing community organizations such as agricultural cooperatives, neighborhood committees, and volunteer service groups, while others train community leaders to identify individuals in the target populations, schedule vaccination appointments, and follow-up on those who fail to appear for appointments.

The importance of supervision is being increasingly emphasized in many countries. Unless programmed as a permanent ongoing activity, supervisory visits are often only made sporadically, in response to problems which have reached a critical state. To overcome this difficulty, approximately three-quarters of the countries are planning activities, such as scheduling a minimum acceptable number of supervisory visits at each level of the health system; acquiring additional vehicles; budgeting more per diem money for supervisory personnel; conducting training courses for supervisors; and publishing and distributing supervisory guidelines.

Information systems are a critical component of EPI activities. Both epidemiologic surveillance and immunization activity reporting systems are areas which are receiving increasing attention in most countries. Most countries evaluated (generally those with relatively more advanced programs) have programmed specific activities addressed at the information system needs, such as surveys to determine coverage levels of target populations; weekly telephonic reporting systems; implementation of monitoring systems for reactions following vaccination; and inclusion of laboratory surveillance systems. It is recognized that effective epidemiologic surveillance depends on the degree of commitment to disease reduction at the country and regional levels.

2.3.6 Dissemination of information

Another key to program development is the dissemination of information to all levels. The main vehicle has been the PAHO EPI Newsletter, which is distributed bimonthly to health workers at all levels of attention in the health system. This newsletter publishes information on program development in the countries, as well as articles on the epidemiology of the EPI diseases. It also includes information on new technologies available in all facets of the program. Over 10,000 health workers receive this publication, which is distributed in English and Spanish.

Periodically, PAHO also distributes other materials, such as abstracts of articles related to the EPI diseases and vaccines, educational aids aimed at disease surveillance, and flip-charts to aid training of local health workers in the norms of cold chain logistics and maintenance.

A comprehensive review of EPI vaccine-related literature was published and distributed in 1983 as the PAHO Scientific Publication No. 451, "Recent Advances in Immunization: A Bibliographic Review" (available in English and Spanish). This publication covers a wide range of questions frequently asked about the EPI vaccines and vaccination schedules, and defines the current

state-of-the-art and its implications for the EPI. A Spanish translation of the American Public Health Association's booklet "Immunizations: Issues for Action," was made available as a PAHO Scientific Publication in mid-1984. The Spanish translations of the Proceedings of the International Symposium on Measles Immunization and the Proceedings of the International Symposium on Polio Control will be published during 1985.

2.3.7 International cooperation

Following a memorandum of understanding signed by PAHO and UNICEF in 1983, a greater cooperation and involvement of UNICEF has been seen in all countries in the Region in support of immunization programs and general child survival.

Other bilateral and non-governmental organizations such as USAID and Rotary International have also increased participation and support for these activities. Efforts of these agencies were aided by the Bellagio Task Force for Child Survival, which concentrated world attention towards the support of immunization programs.

3. REVIEW OF POLIOMYELITIS IN THE AMERICAS, 1969-1984

The major advances in the EPI in the Region since its implementation in 1978 are clearly illustrated in a review of poliomyelitis, where a significant impact on morbidity has been seen. This serves as an excellent example of what can be accomplished when a commitment is present.

3.1 Morbidity trends

During the 16-year period 1969-1984, there were a total of 53,251 cases of poliomyelitis reported to have occurred in the 46 countries and territories that comprise the American Region. This number may have been much higher due to inadequacy of reporting particularly during the 70's.

The Ten-Year Health Plan for the Americas in the 1970's took as a goal to reduce the morbidity due to poliomyelitis to less than 0.1 cases per 100,000 population. Assuming that a country has achieved control of poliomyelitis when five or more consecutive years have gone by with an annual reported incidence of less than 0.1 cases per 100,000 population (allowing for two expected epidemic cycles to have passed), by 1984, 26 (56.5%) countries had achieved control (Table 10).

Table 10: Poliomyelitis in the Americas : Countries reporting incidences of less than 0.1 per 100,000 population for five or more years.

1984

Anguilla	Martinique
Antigua and Barbuda	Montserrat
Bahamas	Panama
Barbados	Puerto Rico
Bermuda	St. Kitts-Nevis
Canada	Saint Lucia
Chile	St. Vincent and the Grenadines
Cayman Islands	Trinidad and Tobago
Costa Rica	Turks and Caicos Islands
Cuba	United States of America
Dominica	Uruguay
Guadeloupe	Virgin Islands (UK)
Grenada	Virgin Islands (USA)

Figure 3 shows the annual incidence (per 100,000 population) of paralytic poliomyelitis for the Americas during the period 1969-1984. In 1984, for the first time, the reported incidence was below the stated 1979 goal. Figure 4 shows the annual reported incidences of poliomyelitis by geographic subregion in the Americas for the same period. (Caribbean Middle America has been excluded from the graph because of reported rates of zero in 1975, 1976, 1980, 1981, 1983, and 1984 and the graphing technique does not allow for zero rates.) North America, Caribbean Middle America and Temperate South America have achieved and maintained the stated goal since the early 1970's. In 1984, for the first year, Tropical South America reported rates of less than 0.1 per 100,000 population.

The EPI was ratified in the Americas in 1977, with implementation of its strategies begun in 1978. Table 11 shows the mean number of cases of paralytic poliomyelitis reported annually (by geographic region) for two time periods: the first, 1969-1977 (pre-EPI implementation); the second, 1978-1984 (post-EPI implementation); and the percentage reduction in reported cases for the latter period. All regions in the Americas have shown a decrease in reporting of cases of poliomyelitis since the implementation of the EPI.

FIGURE 3

ANNUAL REPORTED MORBIDITY DUE TO POLIOMYELITIS (PER 100.000 POPULATION) AMERICAS 1969-1984

FIGURE 4

ANNUAL REPORTED MORBIDITY (PER 100.000 POPULATION) DUE TO POLIOMYELITIS. AMERICAS, BY SUB-REGION 1969-1984

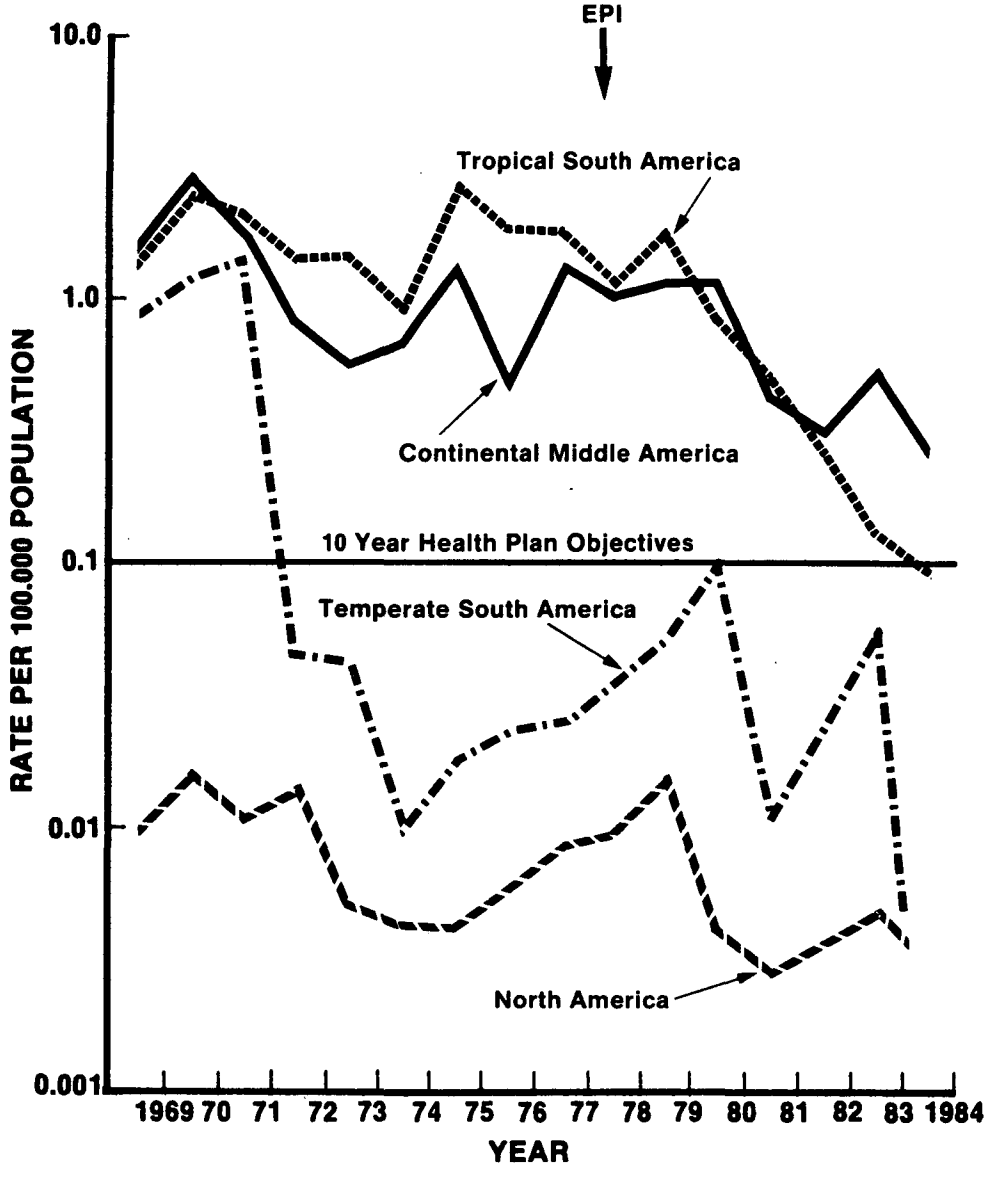


Table 11: Mean number of cases of poliomyelitis reported annually in the Americas pre- versus post-EPI implementation and percentage reduction, by region.

Region	Pre-EPI implementation 1969-1977	Post-EPI implementation 1978-1984	% reduction
North America	20	15	25
Middle America			
Continental	1,062	731	31
Caribbean	29	9	69
South America			
Tropical	3,011	1,342	55
Temperate	151	15	90
TOTAL	4,274	2,112	50

More impressive is to evaluate the number of reported cases at different stages of implementation of EPI: the first (1978-1980) representing the training period and early implementation; the second (1981-1983) representing the acceleration of the program, and the third, the most recent year, 1984 (Table 12). By 1983 all regions had shown major reductions in the number of cases reported annually from pre-EPI days, ranging from 34% in Caribbean Middle America to 91% in Temperate South America. Overall, there was a 74% reduction in the number of cases reported in the Americas. In 1984, two regions (Caribbean Middle America and Temperate South America) reported no cases of paralytic poliomyelitis, representing a 100% reduction in poliomyelitis activity from the pre-EPI era. Tropical South America reported a 93% reduction in cases, and overall in the Americas, there was an 89% reduction in numbers of cases.

Several countries have made considerable progress in reducing the reported morbidity due to poliomyelitis through increases in vaccination coverages. These countries include Argentina, Chile, Costa Rica, Cuba, Dominican Republic, Mexico, Nicaragua, Panama, Uruguay, and all countries in the English-speaking Caribbean. A few examples of accelerations in immunization activities that have occurred in the past four years are presented in the following sections on Brazil, Colombia, Mexico and Bolivia (3.1.1 - 3.1.3) .

Table 12: Mean number of cases of poliomyelitis reported annually in the Americas by stages post-EPI implementation and percentage change from pre-EPI, by region.

Region	Pre-EPI implementation 1969-1977	Stage 1 Post-EPI 1978-1980		Stage 2 Post-EPI 1981-1983		Stage 3 Post-EPI 1984	
	N°	N°	%	N°	%	N°	%
North America	20	23	+15	9	-55	8	-60
Middle America							
Continental	1,062	1,140	+ 7	473	-55	276	-74
Caribbean	29	1	-97	19	-34	0	-100
South America							
Tropical	3,011	2,465	-18	599	-80	205	-93
Temperate	151	22	-85	14	-91	0	-100
TOTAL	4,274	3,651	-15	1,115	-74	489	-89

While the populations of these four countries represent 37% of the population of the Americas, during the 1970's the number of cases reported from these three countries represented 81% of all reported cases in the Region (ranging from 60% in 1971 to 90% in 1976).

3.1.1 Brazil

The success of Brazil in controlling polio (Figure 5) serves as an excellent indication that, given the appropriate political commitment, allocation of resources, sound epidemiological approach and management, poliomyelitis is a controllable disease.

During the 1970's, Brazil was reporting 2000-3000 cases of polio annually, with a recognized under-reporting due to a weak disease surveillance system in the country. In 1980, recognizing that polio was a major public health problem, a commitment was made for its control. Given this, there was the adoption of a strategy of two polio vaccination days annually in June and August, during which time a large mobilization of resources in the country was dedicated to increasing coverage with polio vaccine. Since the implementation of the polio vaccination days, the coverage of the target population (less than five years old) has been reported to approach 100%, and the reported incidence of poliomyelitis has dropped dramatically--from 2.2 per 100,000 population in 1979 to 0.062 per 100,000 population in 1984 (Figure 6). This is highly significant, particularly as it has been coupled with an increase in surveillance activities, including active case follow-ups, searching for additional suspect cases and increased laboratory support.

**FIGURE 5 - POLIOMYELITIS CASES BY FOUR-WEEK PERIODS
BRAZIL, 1975-1984**

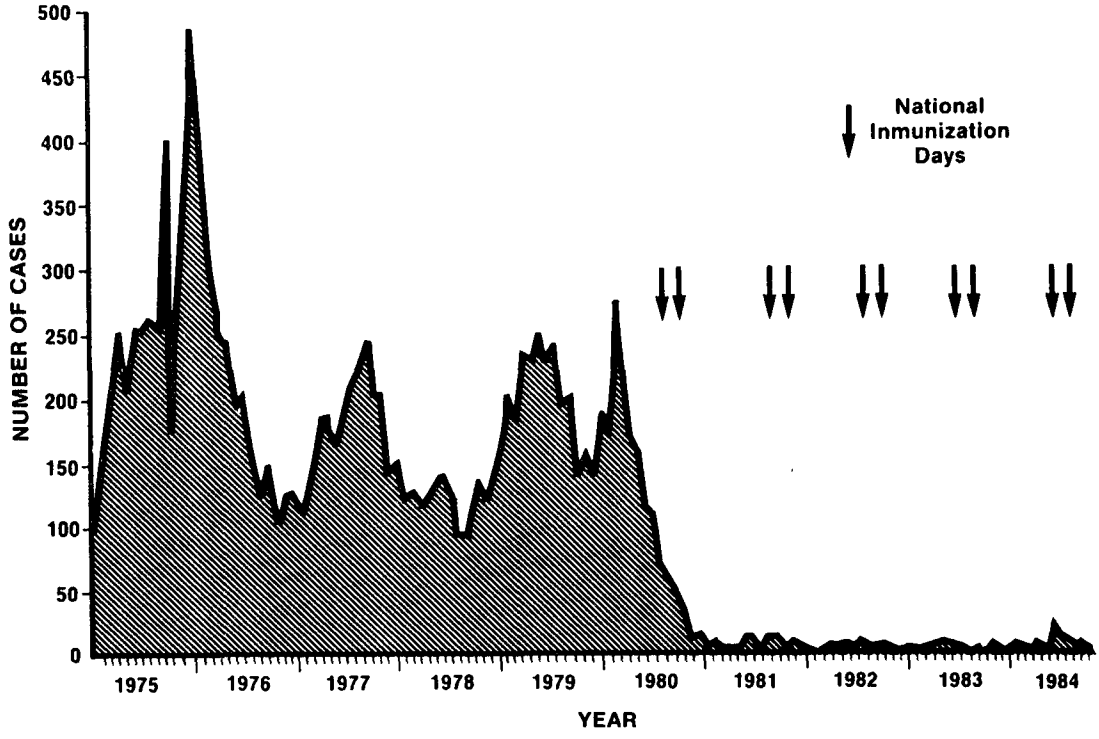
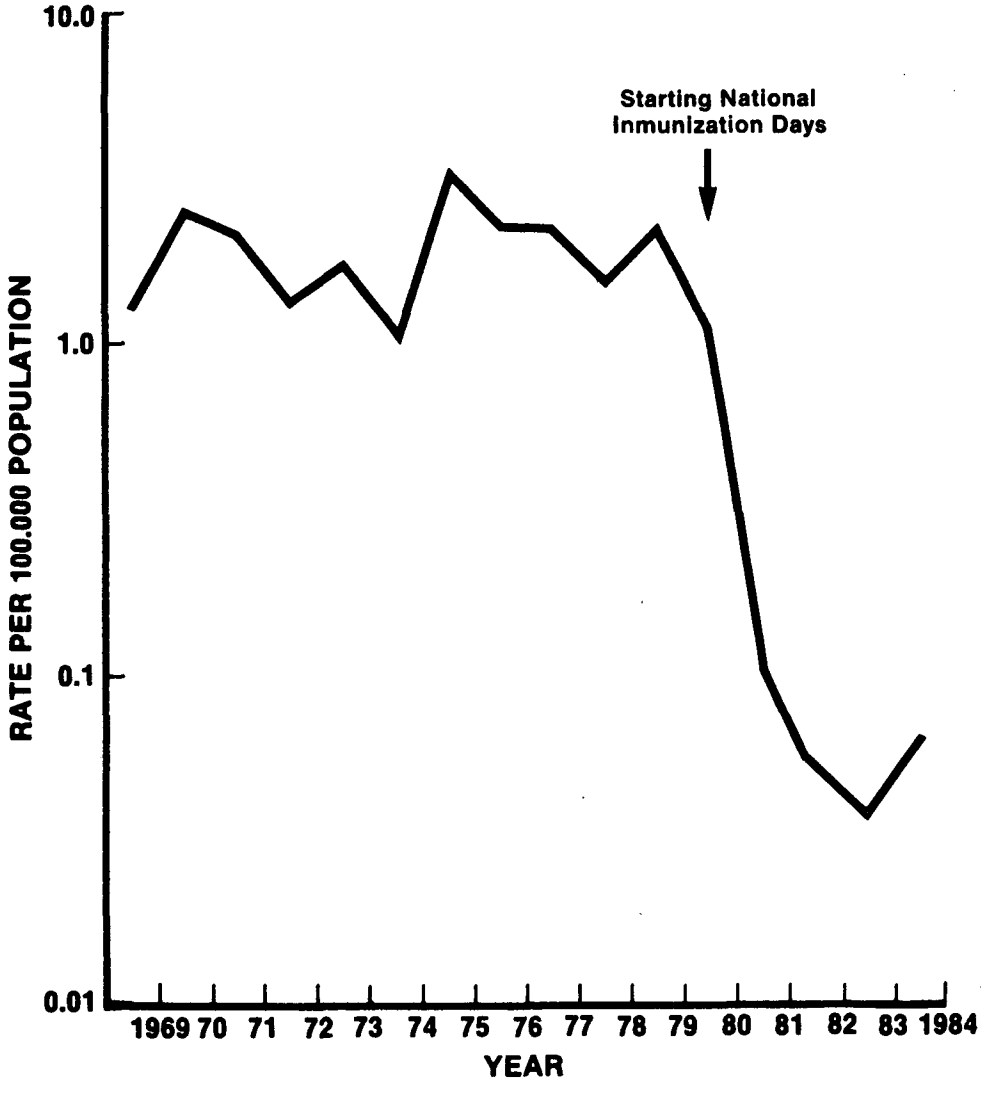


FIGURE 6

ANNUAL REPORTED MORBIDITY (PER 100.000 POPULATION) DUE TO POLIOMYELITIS. BRAZIL, 1969-1984.



3.1.2 Colombia

Figure 7 shows the annual reported morbidity due to poliomyelitis for 1969-1984 in Colombia. Immunization activities in Colombia are incorporated into the National Health System. With the technical assistance of PAHO, EPI activities have been developed in the country since 1979. As a result of the first EPI evaluation conducted in 1980, the Ministry of Health decided to implement a new strategy called "canalization" in order to increase the coverage rates with the EPI vaccines. Canalization uses the assistance of community leaders to identify susceptible children (never vaccinated or incompletely vaccinated) in the community and assure that they appear at the health centers and posts to complete their series. This new strategy produced a rapid increase in vaccination coverages from less than 17% to approximately 42% in three years.

In 1984, National Vaccination Days were conducted in June, July and August with strong support of other international organizations such as UNICEF and UNDP for a major mobilization of all sectors of the society. These National Immunization days further increased coverages to around 60%. The result of these changes in immunization strategies has been a major reduction in the annual reported incidence of poliomyelitis.

3.1.3 Bolivia and Mexico

In 1980/1981 in Bolivia, the coverages achieved through the use of fixed health facility delivery of vaccinations did not exceed 25-30% with third dose of DPT and polio vaccines. Following the EPI evaluation in 1982 (which noted leading causes for low coverages to be a lack of political commitment, a lack of participation by the public, poor coordination of the program with the general health services, rigid and variable administrative standards, the abstractness of technical norms, and poor public information), there emerged the strategy of mobilization of the population through local health committees in order to help improve vaccination coverages. Results of this new strategy are seen in Figure 8. In 1984, Bolivia reported no cases of poliomyelitis to have occurred.

Figure 9 shows the impact a renewed commitment towards control of poliomyelitis that has occurred in Mexico since 1981, when mass vaccinations were restarted. While the reported incidence is not yet below 0.1 cases per 100,000 population, there has been a considerable reduction in reported cases since the late 1970's. Nevertheless, there is still the need to increase activities further in order to control poliomyelitis.

3.2 Vaccination Coverages

Table 13 presents the reported coverages of the less-than-one-year-old population with three or more doses of polio vaccine during the period 1978-1984, since the adoption of the EPI in the Americas. During this period, the proportion of countries reporting coverages have increased from 68% in 1978 to 95% in 1983 (Canada and the United States of America do not report coverages for the less-than-one-year-old-population). Overall, the proportion of less-than-one-year-olds with three or more doses of polio vaccine in the Americas has increased from 34.6% in 1978 to greater than 75% in 1984. Of

FIGURE 7

ANNUAL REPORTED MORBIDITY (PER 100.000 POPULATION) DUE TO POLIOMYELITIS.COLOMBIA, 1969-1984

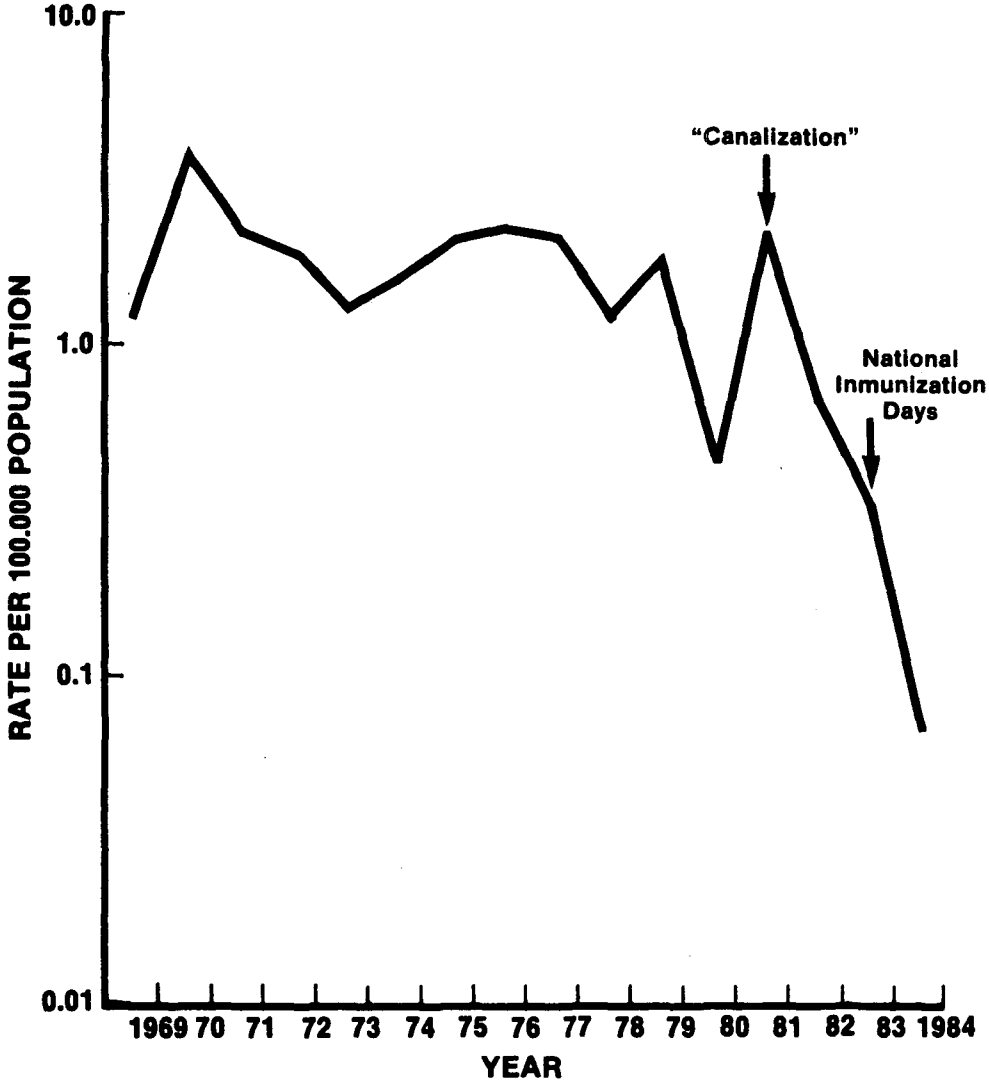


FIGURE 8
ANNUAL REPORTED MORBIDITY (PER 100.000 POPULATION) DUE TO POLIOMYELITIS, BOLIVIA, 1969-1984.

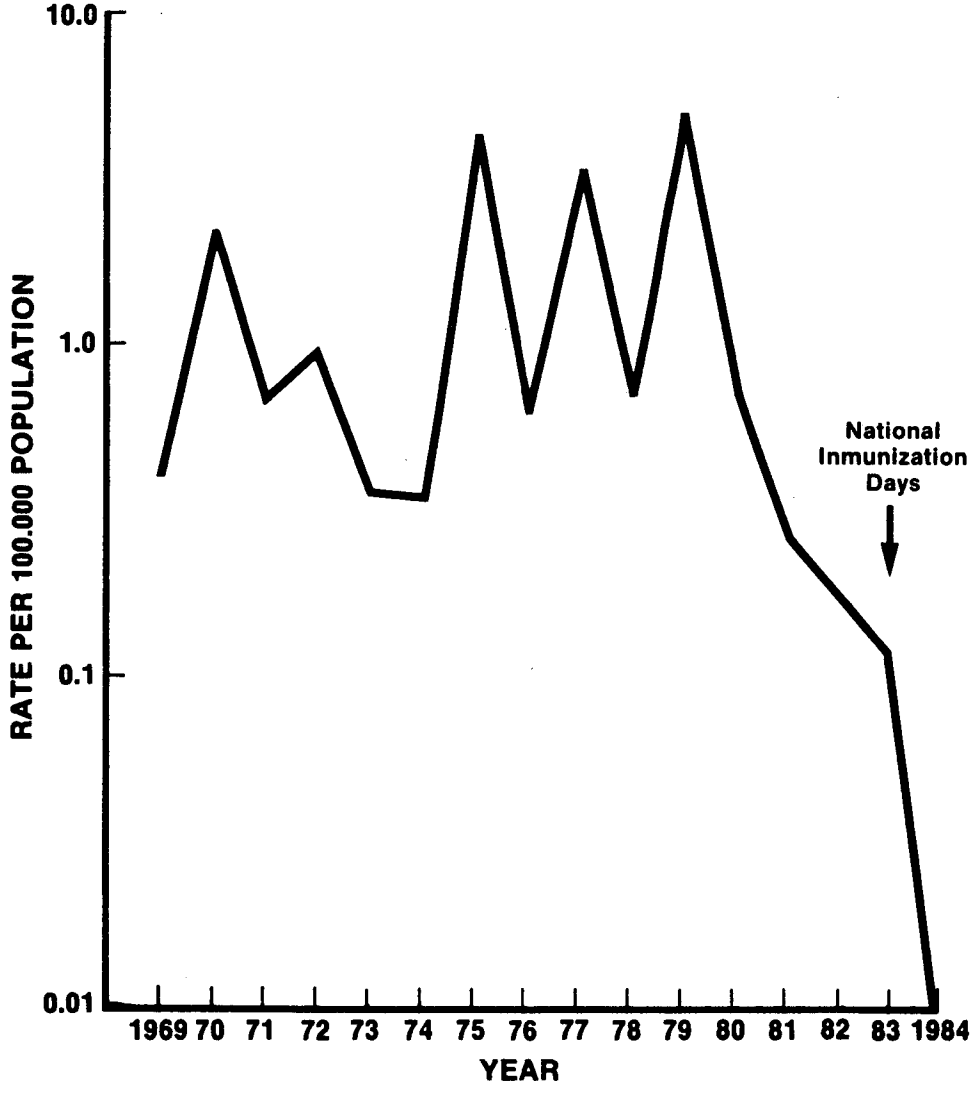


FIGURE 9

ANNUAL REPORTED MORBIDITY (PER 1000,000 POPULATION) DUE TO POLIOMYELITIS. MEXICO, 1969-1984

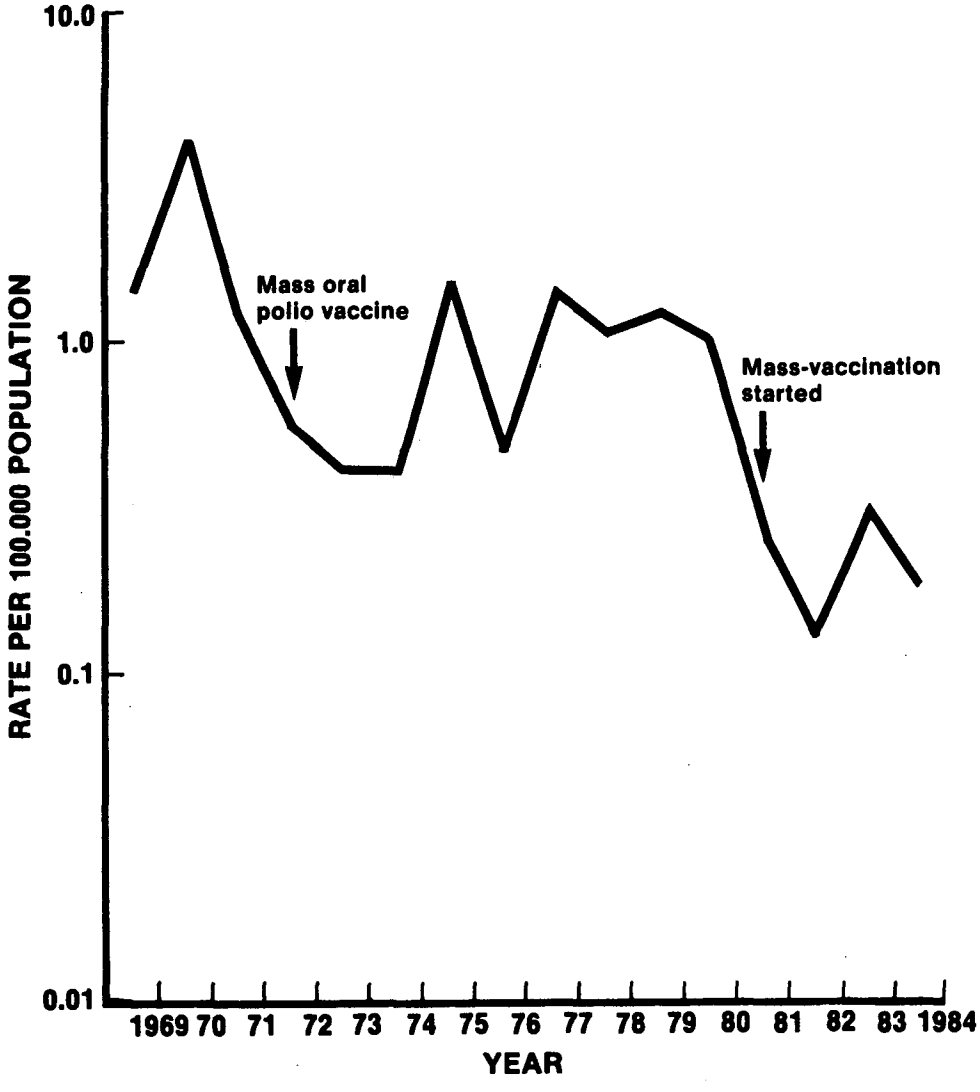


Table 13: Coverages of the less than one year old population with three or more doses of polio vaccine by country in the Americas, 1978-1984

Subregion and Country	% coverage by year						
	1978	1979	1980	1981	1982	1983	1984
North America							
Bermuda	...	...	39	...	68	53	48
Canada	...	...	...	...	...	...	...
United States	...	...	...	...	...	...	...
Caribbean							
Anguilla	77	48	86	81	86	99	73
Antigua & Barbuda	53	...	36	47	90	99	93
Bahamas	99	27	35	40	67	65	62
Barbados	56	60	99	54	63	62	77
British Virgin Is.	...	14	95	70	94	75	85
Cayman Islands	31	52	47	63	91	90	90
Cuba[a]	99	97	99	82	82	95	99
Dominica	20	31	53	97	73	92	82
Dominican Republic	28	35	46	42	37	22	99
Grenada	...	6	32	41	61	72	75
Haiti	1	3	2	3	7	6	12
Jamaica	...	...	34	37	68	47	56
Montserrat	63	5	38	55	95	95	82
Saint Lucia	32	...	58	65	81	80	84
St. Kitts/Nevis	...	25	76	71	93	91	97
St. Vincent	5	...	26	33	99	84	90
Trinidad & Tobago	45	28	38	55	59	61	66
Turks & Caicos Is.	...	21	44	27	80	79	70
Continental Mid America							
Belize	45	42	21	51	52	61	54
Costa Rica	58	44	67	85	78	54	81
El Salvador[a]	...	57	42	38	42	48	44
Guatemala[a]	...	62	43	42	45	44	37
Honduras	7	25	32	37	53	70	84
Mexico	...	11	43	85	85	74	91
Nicaragua	18	...	99	52	50	30	73
Panama	41	57	45	50	61	60	70
Tropical South America							
Bolivia	3	12	14	15	15	11	57
Brazil[a]	34	49	99	99	99	99	89
Colombia	17	19	16	22	27	42	60
Ecuador	10	16	14	19	36	34	36
Guyana	31	37	42	37	73	59	41
Paraguay	2	5	14	26	39	47	59
Peru	21	19	16	20	23	18	26
Suriname	...	20	24	22	53	83	79
Venezuela	83	88	95	75	77	67	59
Temperate South America							
Argentina	...	5	31	38	94	94	64
Chile	98	97	91	93	98	93	87
Uruguay[a]	52	58	59	58	72	74	83
TOTAL[b]	34	34	59	69	74	72	78

a) Second instead of third dose data.
b) Includes only countries with available data.
... Data not available.

significance is the fact that during the period 1978-1983, 19 countries demonstrated steadily increasing trends of coverage, suggestive of major success in their immunization programs.

In addition to Brazil other countries have also taken steps, including a commitment to control poliomyelitis, through an acceleration of their programs. These include Mexico, Colombia, Bolivia, Dominican Republic, Nicaragua and El Salvador. Coverages of the target populations greater than 90% resulted in a disappearance of polio cases in 1984 in Nicaragua, Bolivia and the Dominican Republic.

3.3 Importations from other Regions

In 1978-1979 there was an epidemic of polio that involved the Netherlands, Canada and United States of America--three countries that have controlled polio since the late 1960's. The epidemic deserves special mention for several reasons. One is that the epidemics occurred among population groups that refused immunizations for religious reasons. In all three countries, these populations tend to live congregated in small geographic regions, with the populations in the United States and Canada being somewhat socially isolated. The epidemic first began in the Netherlands, with rapid spread throughout the country, between April and October of 1978. During the month of August, there were several cases reported in Canada in families and communities that had had visitors from Netherlands. In October 1978, a family from one of the affected communities in Canada moved to the United States, and in January 1979 the first case occurred in a neighboring community. A second case occurred in April and, because of a wedding, there was spread of the virus to several communities quite geographically separated. Isolates from all three epidemics were shown through oligonucleatide mapping to be the same virus, also identical to a Kuwaiti strain, suggesting an initial importation from a polio endemic area. The occurrence of epidemic activity resulting from an importation in countries with high immunization coverages (greater than 90%) illustrates the difficulties faced in maintenance of regional eradication when there are pockets of susceptibles remaining. The lack of spread of the wild poliovirus into the general population in these countries is a testimony to the high levels of coverage with the vaccines, and to rapid detection of cases with effective control measures.

4. PROPOSAL FOR ACTION

4.1 Rationale

Significant progress has been achieved during the past few years in the American Region with regard to the delivery of health services, appropriate strategies for vaccination, increasing immunization coverages, program evaluation and disease surveillance. All countries in the Region are now engaged in national immunization programs. The epidemiological situation of poliomyelitis is particularly promising and deserves special attention, as a striking reduction in incidence already has been observed, primarily as a

result of intensified vaccination strategies developed in several countries of the Region. The number of reported cases has decreased from 4,728 in 1979 to 525 in 1984. Only 11 countries reported cases caused by wild poliovirus in 1984. Because of inadequate surveillance systems in some countries, it is believed that the actual number of cases which occurred is perhaps twice or even three times this number. Even so, the number is sufficiently small to encourage the belief that with concerted effort and a well coordinated commitment by all countries, the number could soon reach zero.

The data presented confirm that an additional effort directed specifically at this disease in priority countries, can lead to the interruption of indigenous poliovirus transmission in the Hemisphere in a short period of time. Polio vaccination differs in many aspects from other EPI vaccinations permitting use of special strategies already demonstrated to produce a rapid impact on poliomyelitis activity, as seen in Brazil, Colombia, Dominican Republic, Nicaragua, and Bolivia. In addition, the paralytic forms of the disease are easy to recognize and serve as a satisfactory indicator of wild poliovirus circulation, thereby permitting an early identification of its presence and facilitating rapid implementation of control measures. Once transmission is stopped in the Hemisphere, the possibilities of reintroduction of the disease are limited from a geographical and epidemiological standpoint. Effective measures can be organized to control possible spread that might occur following reintroduction of the wild poliovirus.

Recurrence would require that the virus be introduced from other continents. The experience of the United States of America and Canada in the past decade illustrates the implication. In both countries, wild poliovirus transmission ceased in the early 1970's, but only in one occasion has wild poliovirus been introduced which resulted in the occurrence of paralitic cases. Although both countries have continuing antipolio vaccination programs, they have areas where immunization coverage is not optimal and where, if the virus where constantly present, outbreaks would be expected. They have not occurred, however. If the same status were achieved in all countries of the Americas, cases would cease, even in those population groups which are specially difficult to reach with vaccination programs.

The eradication of indigenous transmission of wild poliovirus in the American Region deserves immediate Hemispheric action. The necessary elements to ensure program success are assured by the strong commitment presently shown by the countries and several multilateral, bilateral and non-governmental organizations towards immunization and child survival.

The observation that reported cases in 1984 were at an all time low, further indicates that the timing is propitious and that eradication of indigenous transmission in the Americas is feasible now.

It is unacceptable, given the technology presently available, that any child in this Hemisphere should suffer from poliomyelitis. The targeted eradication of transmission of wild poliovirus in the Americas focuses EPI objectives on disease surveillance and control. Training field epidemiologists and program managers in poliomyelitis eradication strategies, combined with well targeted objectives, will be a considerable contribution towards improving disease control in general in the Hemisphere.

4.2 Objectives

The proposed plan of action aims at three primary objectives:

a) To promote the overall development of the Expanded Program on Immunization in the Region, to speed up the attainment of its objectives.

b) To eradicate indigenous transmission of wild poliovirus in the American Region by the year 1990.

c) To set up a surveillance system at regional and national levels, so that all suspected cases of poliomyelitis are immediately investigated and control measures to stop transmission are rapidly implemented.

4.3 Requirements

4.3.1 Political commitment and international support

The successes of the recent history of the EPI in the Americas demonstrate that there are no major technical problems to be overcome in order to interrupt indigenous transmission of wild poliovirus in the Region. The variable results in the EPI and in polio control seen in the different countries are not related to stages in their economic development, but rather to the degree of political commitment of the respective governments.

To implement the hemispheric effort to eradicate indigenous transmission of wild poliovirus, a high level of coordination among the countries and the international agencies is absolutely necessary. Under the leadership of PAHO, the international agencies should play an important role in urging the national governments to join this enterprise to ensure the needed political and administrative support. PAHO will assume a major role in securing additional financial and technical assistance and in coordinating all inputs. It is estimated that an additional US$30 million over the next five years will be necessary to achieve this goal. These funds will be used for such expenses as additional personnel; laboratory development and maintenance, including supplies; activities related to surveillance and outbreak control; vaccine quality control; and cold chain development. Funds will be sought from regular budgetary allocations, extrabudgetary sources from multilateral, bilateral and nongovernmental organizations and for direct aid at the country level.

Governments of the countries must be encouraged to strengthen their EPI staff. Specific national responsibilities for polio control activities must be assigned in each country so that appropriate coordination among vaccination, surveillance and outbreak control activities is ensured. PAHO will strengthen its capacity to deliver technical cooperation, including assignment of additional professional staff to ensure adequate technical and managerial support at country and intercountry levels. Countries with special problems impeding success will be identified for placement of these professionals, and the intercountry professionals will assist where needed. In addition, PAHO will maximize coordination among all agencies supporting the hemispheric eradication of wild poliovirus transmission and coordinate implementation of operational research needed to address problems that are identified and also verify that eradication has occurred in countries so reporting.

This proposal for action must be the joint venture of all nations in this Hemisphere, and it calls for mobilization of national resources, including communities. It will require technical cooperation among countries with the support of PAHO and other international agencies.

4.3.2 Surveillance and control

Intensive surveillance is the most critical element for the success of the EPI. One of the major problems to be addressed in a polio eradication effort in the Region is related to surveillance. Many of the countries have serious under-reporting through their disease surveillance systems. These problems are related to a lack of interest on the part of health sector personnel in peripheral units and major hospitals, combined with failure of cases to come to the attention of the health sector and inaccurate diagnoses, which increase the delay before adequate control measures can be implemented.

If there is to be regional eradication of indigenous transmission of wild poliovirus, all suspected poliomyelitis cases must be thoroughly investigated immediately, with appropriate control measures instituted as soon as possible, especially in areas where there has been no polio activity and there is importation of a case.

All possible attempts must be made for tracing the chain of transmission, and field and laboratory investigations should be carried out to determine the extent of virus circulation in the community. This is of particular importance because, for every paralytic case of poliomyelitis, approximately 50-1,000 individuals may have been infected but remain asymptomatic. This allows transmission to continue. Surveillance of poliomyelitis shall include:

a) Establishment of a reporting system for all paralytic illness compatible with poliomyelitis, using standarized procedures and definitions. This system must incorporate all institutions which are likely to see cases, and it will also help to strengthen disease surveillance in general.

b) Each suspected case should be regarded as a public health emergency and investigated immediately. For operational purposes, the definition of an outbreak is the occurrence of one probable or confirmed case of poliomyelitis. Upon identification of a probable or confirmed case, control measures will be instituted immediately, with assistance from international support teams of professionals skilled in outbreak investigation, under the coordination of PAHO.

c) The development of laboratory support networks to analyze stool samples and paired sera from all suspected cases. Reference laboratories should be established to provide more sophisticated tests, including genetic characterization of poliovirus isolates.

4.3.3 Laboratory support

With the decrease in the number of cases occurring and the increases in the coverages of the populations with the oral poliovirus vaccine, it is important to develop capabilities to determine if a poliovirus isolate is the wild virus. Laboratories capable of this type of determination in the Region are located in the United States of America (CDC), Canada (LCDC) and Brazil (IOC). Through the fingerprinting technique, the United States, Canada and Netherlands were able to confirm that their epidemics, while suggestively related epidemiologically, were actually caused by an identical strain of virus. With the appearance of isolated cases in countries, it will be important to identify if the cases are due to wild strains or due to other viruses. This will require assistance from laboratories with these capabilities.

While serological confirmation of poliovirus antibodies is available in most countries, there are still problems inherent in the collection of appropriate specimens, and many of the cases are not confirmed. In some countries, suspected cases are discarded due to an absence of laboratory confirmation. The problems behind the low laboratory confirmation rates relate to delayed notification of the cases and to inabilities to develop the logistic systems necessary to transport the specimens from the field into the laboratories. Development of these logistics systems will have a high priority in the proposed plan of action.

A complete evaluation of the existing laboratory facilities for diagnosis of poliovirus in the Region should be undertaken immediately, in order to define a network of reliable institutions for program support. Assistance from the Centers for Disease Control in Atlanta, Georgia, will be solicited to function as a reference center for all laboratories, and to accept responsibilities for training, supervision, performance of sophisticated testing and ensuring that good quality reagents for laboratory tests are available in all laboratories identified.

4.3.4 Ongoing evaluation and information dissemination

Every six months, PAHO should convene a meeting with participation of all national managers to discuss the overall performance of the program and results achieved within the period. This is of great importance as a means of exchanging information and sustaining motivation of the personnel.

A special section dedicated to poliomyelitis eradication topics should be included in every issue of the EPI Newsletter, and its circulation should be increased.

5. CONCLUSION

The progress achieved so far by the countries of this Region in the implementation of their immunization programs serves as a reassurance that the EPI goals are attainable.

In view of the major successes noted, the Director of the Pan American Sanitary Bureau proposes strong action by Member Government to achieve hemispheric eradication of the indigenous transmission of wild poliovirus by 1990.

PAN AMERICAN HEALTH ORGANIZATION
Pan American Sanitary Bureau, Regional Office of the
WORLD HEALTH ORGANIZATION

EPI-85-102

ERADICATION OF INDIGENOUS TRANSMISSION OF WILD POLIOVIRUS IN THE AMERICAS

PLAN OF ACTION
July 1985

PREFACE

The Director of the Pan American Health Organization has appointed a Technical Advisory Group (TAG) to advise the Organization on the acceleration of the Expanded Program on Immunization and the eradication of the indigenous transmission of wild poliovirus in the Americas. This group is composed of the following five members:

- Dr. José Manuel Borgoño
  Chief, Office of International Affairs
  Ministry of Health
  Santiago, Chile

- Dr. Donald A. Henderson (Chairman)
  Dean, Johns Hopkins University
  School of Hygiene and Public Health
  Baltimore, Maryland

- Dr. Alan Hinman
  Director, Division of Immunization
  Centers for Disease Control
  Atlanta, Georgia

- Dr. Jesús Kumate Rodríguez
  Vice Secretary of Health Services
  Secretariat of Health
  Mexico D.F., Mexico

- Dr. Joao Baptista Risi, Jr.
  Secretary, National Secretariat of Basic
  Health Actions, Ministry of Health
  Brasilia, Brazil

The Technical Advisory Group held its first meeting in Washington, D.C. on 11-12 July 1985 to discuss and revise the Plan of Action for the eradication of indigenous transmission of wild poliovirus in the Americas. The proposed Plan of Action is contained in the following pages.

1. INTRODUCTION

The Expanded Program on Immunization (EPI) has its basis in resolution WHA 27.57, adopted by the World Health Assembly in May 1974. General program policies, including the EPI goal of providing immunization services for all children of the world by 1990 (resolution WHA 30.53, 1977) were endorsed by resolution CD 25.27 of the Pan American Health Organization (PAHO) Directing Council in September 1977.

The long-term objectives of the EPI are to:

- reduce morbidity and mortality from diphtheria, whooping cough, tetanus, measles, tuberculosis and poliomyelitis by providing immunization services against these diseases for every child in the world by 1990 (other selected diseases may be included when and where applicable);
- promote countries' self-reliance in the delivery of immunization services within the context of comprehensive health services; and
- promote regional self-reliance in matters of vaccine production and quality control.

Since the EPI was launched in the Region of the Americas in 1977, immunization coverages have improved considerably. In 1978, less than 10% of the children under one year of age lived in countries where coverage with the EPI vaccines was at least 50%; by 1984, nearly 50% of the children in this age group lived in countries with coverage of at least 50% for DPT vaccine, of over 50% for measles and BCG vaccines, and of over 80% for polio vaccine.

The impact of the high coverages with polio vaccine can be seen in Figure 1, which shows the annual reported incidence of poliomyelitis in the Region of the Americas during the period 1969-1984, and in Figure 2, which shows the absolute number of cases reported each year during the same period.

Figure 1. Annual reported incidence of poliomyelitis (per 100,000 population), Region of the Americas, 1969-1984

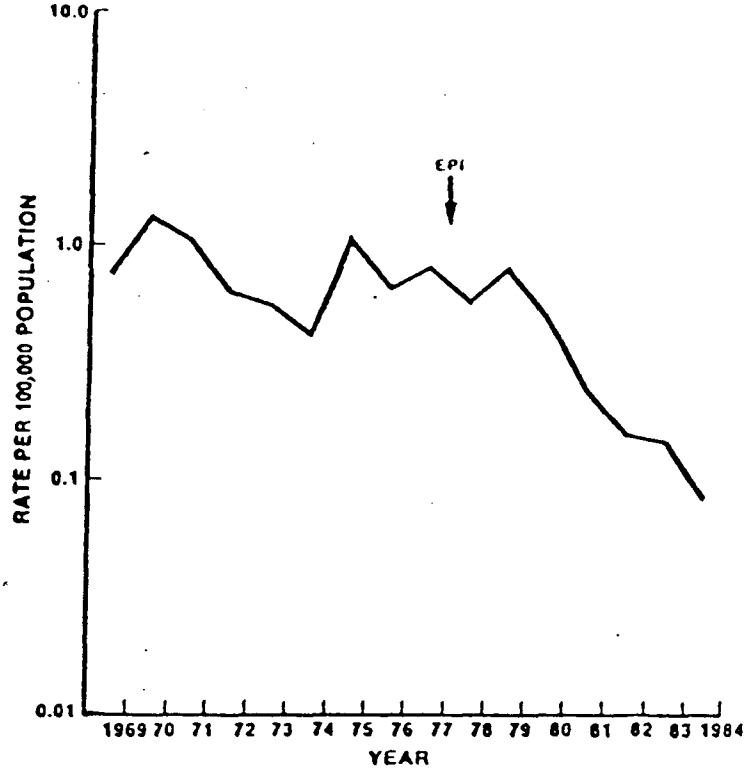


Figure 2. Annual number of reported cases of poliomyelitis, Region of the Americas, 1969-1984

Table 1 gives a breakdown of the annual number of reported cases by country between 1975 and 1984. In 1978, 11 countries in the Region reported no cases of poliomyelitis. By 1984, 19 countries had reported no cases of poliomyelitis, almost double the number of countries reporting no cases only six years earlier.

This impressive, rapid reduction in the disease burden resulting from increased coverages with the polio vaccine has paved the way for the decision to eradicate transmission of wild poliovirus in the American Hemisphere by 1990.

In keeping with this, on 14 May 1985 the Director of PAHO announced PAHO's commitment to this goal and called for support from all member countries and other international agencies. At the time of the announcement, many of the member countries and the international agencies gave their endorsements to the achievement of eradication of indigenous transmission of wild poliovirus in the Hemisphere by 1990.

The Director of PAHO emphasized that activities related to the eradication of diseases preventable by immunization must be considered within the context of the EPI, directed at the control of the six priority diseases.

The proposed Plan of Action aims at three primary objectives:

a) To promote the overall development of the Expanded Program on Immunization in the Region, to speed up the attainment of its objectives.
b) To eradicate indigenous transmission of wild polioviruses in the American Region by the year 1990.
c) To set up a surveillance system at regional and national levels, so that all suspected cases of poliomyelitis are immediately investigated and appropriate control measures to stop transmission are rapidly implemented.

The succeeding sections of this document detail the proposed Plan of Action.

2. STRATEGIES AND TECHNICAL COMPONENTS

The primary prerequisite to achieve the stated objectives will be the level of national political commitment, as expressed by:

- Approval by the PAHO Directing Council in September 1985 of the Resolution to eradicate indigenous transmission of the wild poliovirus from the Americas by 1990;
- Legislative action by member countries, whenever necessary;
- Availability and allocation of national resources for the effort.

Table 1. Number of poliomyelitis cases in the Americas, by country, 1975-1984

Country	Mean number of cases/year		Number of cases			
	1975-1977	1978-1980	1981	1982	1983	1984
NORTHERN AMERICA						
Bermuda	-	-	-	-	-	-
Canada	1	4	-	-	-	1
United States	13	20	7	9	12	7
CARIBBEAN						
Anguilla	-	-	-	-	-	-
Antigua and Barbuda	-	-	-	-	-	-
Bahamas	-	-	-	-	-	-
Barbados	-	-	-	-	-	-
British Virgin Is.	-	-	-	-	-	-
Cayman Islands	-	-	-	-	-	-
Cuba	-	-	-	-	-	-
Dominica	-	-	-	-	-	-
Dominican Republic	63	107	72	70	7	-
Grenada	-	-	-	-	-	-
Guadeloupe	-	-	-	-	-	-
Haiti	25	16	35	35	62	63
Jamaica	-	-	-	58	-	-
Martinique	-	-	-	-	-	-
Montserrat	-	-	-	-	-	-
Netherlands Antilles	-	-	-	-	-	-
Puerto Rico	-	-	-	-	-	
Saint Lucia	-	-	-	-	-	-
St. Martens and St. Bartholomew	-	-	-	-	-	-
St. Kitts-Nevis	-	-	-	-	-	-
St. Vincent and the Grenadines	-	-	-	-	-	-
Trinidad and Tobago	-	-	-	-	-	-
Turks and Caicos Is.	-	-	-	-	-	-
U.S. Virgin Islands	-	-	-	-	-	-
CONTINENTAL MIDDLE AMERICA						
Belize	-	2	-	-	-	-
Costa Rica	-	-	-	-	-	-
El Salvador	38	23	52	16	88	19
Guatemala	39	116	42	136	208	17
Honduras	78	101	18	8	8	76
Mexico	710	966	186	98	232	137
Nicaragua	26	36	46	-	-	-
Panama	-	-	-	-	-	-
TROPICAL SOUTH AMERICA						
Bolivia	138	121	15	10	7	-
Brazil	2,807	1,854	122	69	45	82
Colombia	525	305	576	187	88	18
Ecuador	45	10	11	11	5	-
French Guiana	-	-	-	-	1	-
Guyana	2	-	-	-	-	-
Paraguay	74	20	60	71	11	3
Peru	136	120	149	150	111	102
Suriname	-	-	-	1	-	-
Venezuela	44	34	68	30	-	-
TEMPERATE SOUTH AMERICA						
Argentina	2	22	5	10	26	-
Chile	-	-	-	-	-	-
Uruguay	6	-	-	-	-	-
Total	4,772	3,877	1,464	969	911	525
Number of countries reporting cases	19	18	16	17	15	11

- no cases

In order to meet the goal of eradication of indigenous transmission of wild poliovirus in the Americas by 1990, it will be necessary to intensify all components of the EPI strategies presently being implemented and to adapt many of the EPI approaches. Other essential elements are coordination of international agencies at the Regional and country levels, and availability of sufficient funds from both national and international sources to cover all activities related to this goal.

The key strategies to be adopted in this effort are:

1. Mobilization of national resources;
2. Achievement and maintenance of vaccine coverages of greater than 80% of the target population;
3. Surveillance activities adequate to detect promptly all cases of poliomyelitis, with thorough investigations and institution of control measures;
4. Laboratory diagnostic services available to all countries, to permit laboratory studies of all probable cases of poliomyelitis reported;
5. Information dissemination within countries and throughout the Region;
6. Identification of research needs with subsequent funding for execution;
7. Development of a certification protocol to declare the countries and the Region free of indigenous transmission; and
8. Evaluation of all ongoing program activities.

For each of the key strategies, a series of technical components are recommended to ensure their success.

2.1 Mobilization of Country Resources

Recognizing the limited resources available within the Ministries of Health in many of the countries, it will be crucial to concentrate efforts on the mobilization of all country resources to complement those available.

To this end, inter-sectorial coordination will be essential to estimate the potential of existing resources and to mobilize the necessary additional resources. The education and agriculture sectors, social security and other organizations will be essential elements in this endeavour.

Finally, communities and community groups will be called on to collaborate and add their resources and talents towards the achievement of the objective. Private voluntary organizations, religious groups, and mass media organizations will also be tapped to assist in promotional activities, distribution of supplies and personnel and participation in vaccination activities. Cooperative strategies will be developed for combined actions of several countries and technical cooperation between countries for purposes of planning, implementation and evaluation of programs, particularly in the areas of outbreak investigation and control, as well as laboratory support.

2.2 Immunization Activities

2.2.1 Classification of countries by level of poliomyelitis activity and vaccination coverage

Countries will initially be classified into the following two groups:

- GROUP I: Polio-infected countries. Those countries reporting indigenous cases due to transmission of wild poliovirus within the previous three years.

- GROUP II: Polio-free countries. Those countries reporting no indigenous cases due to transmission of wild poliovirus within the previous three years. This group will be subdivided into the following two categories:

  Group II-A: Higher-risk countries. Those countries which have had vaccination coverages of less than 80% of children under one year of age in any of the previous three years.

  Group II-B: Lower-risk countries. Those countries which have maintained vaccination coverages of greater than or equal to 80% of children under one year of age in each of the previous three years.

2.2.2 Vaccination tactics

The vaccination tactics recommended to achieve the goal will vary depending upon each country's level of poliomyelitis activity, existing vaccination coverage and health infrastructure. Trivalent oral poliomyelitis vaccine (TOPV) will be the primary means of achieving eradication of indigeneous transmission of wild poliovirus in the Americas. The appropriate role of inactivated poliomyelitis vaccine (IPV) in the polio eradication effort will be reviewed on a continuing basis.

National immunization days, to be held at least twice a year, will be recommended for countries classified in Group I. Their success will require intensive planning of the logistics of both supply and demand. The use of the mass media and professional advertising firms to sell the concept of vaccination will be encouraged. Mobilization of all resources, both intra- and extra-sectorial, and participation of non-governmental sectors in these efforts will be essential for success. This tactic should be viewed as an *ad hoc* measure, to be gradually replaced by regular immunization services performed routinely by health services.

Advantage should be taken of the national immunization days to administer DPT and measles vaccine as well.

Countries classified in Group II will need to maintain coverages of at least 80% of the target population by reinforcing routine immunization services and maintaining high levels of surveillance.

2.2.3 Logistical support

All countries should ensure that the vaccines used in the program meet WHO requirements. Vaccine distribution will be a key component of immunization activities. Efficient distribution systems will be essential to ensure that vaccines are available at the delivery points on the scheduled days. To guarantee that immunization activities will not be interrupted, a stockpile of vaccines will be maintained at the Regional level for use in case of emergency. Manufacturers will be requested to have 5 million doses on hand for emergency use at all times. PAHO will oversee the inventory of these emergency stocks and allocate distribution when needed. Countries are expected to order vaccine supplies as needed on a routine basis.

By the time country work plans are prepared, cold chain deficiencies will be identified and the plans will reflect the needs to be fulfilled. Cooperation from donor agencies should include the procurement and maintenance of necessary cold chain equipment. To address the recognized problems with cold chain equipment maintenance, countries will be encouraged to design cold chain systems that rely upon low-maintenance equipment.

2.2.4 Training

There will be a major emphasis on training personnel in the additional components of program operations critical for success. To assist in this endeavor, PAHO will prepare a manual on the technical basis of poliomyelitis eradication for distribution to all member countries. This manual will serve as a prototype for countries to produce country-specific manuals adapted to local circumstances. PAHO will provide technical assistance to the countries for the adaptation of the manual and for its production and distribution, as well as for the planning and execution of training courses as needed.

2.3 Epidemiological Surveillance and Outbreak Control

In view of the relatively small number of cases being reported annually in the Region, it is urged that every suspected case be investigated immediately. This is one of the most critical components of the eradication effort. Case investigation should be carried out according to the definitions set out in the manual referrred to in section 2.2.4. For operational purposes, the following provisional definitions are proposed:

- Suspected poliomyelitis case. Any acute onset of paralysis in a person less than 15 years of age.

- Probable poliomyelitis case. Any acute onset of flaccid paralysis without sensory loss or other identified cause.

- Confirmed poliomyelitis case. Any probable case with laboratory confirmation or linkage to another probable or confirmed case or presence of residual paralysis 60 days after onset.

2.3.1 Case identification and reporting

Surveillance will be both active and passive. All potential sources of notification of suspected cases of poliomyelitis in the countries will be contacted and incorporated in the surveillance activities. Weekly calls to all facilities that might see acute or convalescent cases should be part of the surveillance mechanism. The types of facilities to be called include: all acute care hospitals (public and private, general and specialized) and rehabilitation centers. Once suspected cases are identified, thorough community investigations for additional cases will be conducted. Each country will telex to PAHO weekly reports of probable and confirmed cases of poliomyelitis.

In the event of an outbreak, all countries in the Region will be notified immediately by telex from PAHO/Washington, so that traveller's advisories can be issued.

PAHO will ensure that expert international personnel are available to help strengthen epidemiological surveillance in the Region. In Group I countries these personnel will be made available to assist countries in developing or improving surveillance activities, and to review case records of other diseases included in the differential diagnosis of poliomyelitis, such as Guillain-Barrí Syndrome (GBS) and transverse myelitis.

In Group II countries, monetary rewards may be offered to individuals finding a case of poliomyelitis. PAHO personnel will be available to assist in confirming the validity of the reports. These personnel will also be available to assist in performing evaluations of facilities that are likely to see polio cases, following up diagnosed cases of GBS (to verify that the distinction between GBS and polio was clearly present), and instituting the reward mechanism for cases found.

2.3.2 Outbreak investigation and control

Each suspected case will be investigated immediately. Detailed standardized case investigation forms will be designed and implemented. For operational purposes, the definition of an outbreak is the occurrence of one probable or confirmed case of poliomyelitis. Upon identification of a probable or confirmed case, the Ministry of Health should make an official announcement alerting all health personnel and the general population to the situation in order to increase public awareness of the need for immunization, and the need to report all suspected cases promptly. The PAHO country office should also be notified immediately.

PAHO will offer assistance in case investigation and outbreak control by providing investigation teams which will be mobilized within 24 to 48 hours of notification of a case to participate in the investigation of the outbreak, the search for additional (secondary) cases, and implementation of control measures. Thorough investigations into the source of the cases will be conducted.

Adequate stocks of TOPV must be available to the countries to mount control measures immediately . The control measures will aim to provide TOPV to all persons at risk; in Group I countries this will usually be children less than 5 years of age. Due to the rapid, wide and silent spread of the poliovirus, immunization is recommended not just of the surrounding neighborhood, but also of a wider area.

Part of outbreak investigation and control will be the rapid identification of poliovirus type. Upon identification of a probable case, specimens will be collected immediately and sent to the nearest laboratory for virus isolation studies. In addition, the probable epidemiological classification of the case will be determined within 24-48 hours of notification. In the event of a probable vaccine-associated case, immediate control measures will not be required.

Reports on all outbreaks and case importations will be published and disseminated. When intra-regional importation has occurred, the country of origin of the case will be notified and an investigation team will be available to assist in the investigation.

2.4 Laboratory Support

2.4.1 Support to surveillance activities

A major component of surveillance activities will be laboratory confirmation of probable cases of poliomyelitis. For all probable cases, specimens will be collected for isolation studies. Oligonucleotide mapping or other testing of the isolates will be performed to attempt confirmation of the origin of the virus. The more sophisticated laboratories in the network will provide this reference service to the Region. The close participation of the laboratories in the epidemiological evaluation process is imperative. If clinically and epidemiologically compatible cases of poliomyelitis are identified but isolation studies are either negative or yield a non-polio enterovirus, original specimens and the non-polio enterovirus isolate will be sent to reference laboratories for further study.

2.4.2 Laboratory evaluations

All countries should have access to laboratory facilities for poliomyelitis studies and PAHO will assist with the necessary laboratory support. A team of internationally recognized virologists, under the auspices of PAHO, will evaluate laboratory facilities available in the Region to identify those to be included in a Regional network. This process will be completed by December 1985. In addition, a network of laboratory personnel available to participate in the investigation team assessments will be developed, thereby permitting a laboratory person to be a member of all teams.

Laboratory and serological capabilities to perform poliovirus and other enterovirus isolation studies will be identified. It is expected that six or seven laboratories in the Region will be certified as reference laboratories.

They will be selected from the WHO collaborating centers and from national laboratory networks and will serve as technical resources for assisting countries to develop their own laboratory facilities.

Capabilities to perform serologic studies will also be identified in the Region, and logistic systems will be strengthened to provide all countries access to the services. Capabilities for complement fixation and neutralization titer assays will be developed. It is expected that most countries will develop capabilities to perform serologic studies on probable cases of poliomyelitis. Capabilities to perform more sophisticated viral identification studies (nucleic acid hybridization and oligonucleotide mapping) will be developed in two or three reference laboratories.

2.4.3 Development of Regional Laboratory Network

In keeping with the general PAHO policy of developing networks of national institutions for technical cooperation among developing countries, a regional laboratory network will be formed. The development of the network of laboratories will involve strengthening the necessary logistics system for both the transport of specimens and the distribution of necessary supplies such as reagents. A continual supply of standardized reagents for the serologic, virus isolation, and genetic characterization studies will be ensured. The CDC in Atlanta will be requested to assist in the development of the laboratory networks and to certify laboratories as reference centers.

For countries without laboratories, reference laboratories will be identified for their assistance. The reference laboratories will assist countries to develop in-country virology support. The reference laboratories will confirm the results of the country laboratories. A regional laboratory supervisory system will guarantee consistent, high quality testing and reliability of results.

As part of the development of the laboratory network, a manual will be produced covering: tests to be performed on all suspected cases, testing procedures, appropriate specimens, methods of collection of specimens, shipping procedures, handling of specimens, quality control procedures, data collection and data processing. This manual will be ready by November 1985 and will be distributed to all participating laboratories.

Training needs will be addressed at the various levels through the development of a workshop for participating laboratory personnel in the network. The first course will be held by February 1986, following the identification of the laboratories.

In addition to the laboratory studies related to surveillance, there is a need to develop further laboratory support for potency testing of vaccines. The laboratories equipped for poliovirus isolation studies will be used as reference centers for testing of vaccine potency, as similar techniques and materials are needed.

2.5 Information Dissemination

2.5.1 Publications

At the Regional level, the PAHO EPI Newsletter will contain a section on poliomyelitis in all issues. This section will include information on the current epidemiology of polio in the Region; the number of cases reported in the interval since the previous issue, by week of reporting and by country; individual case studies of outbreaks and investigations; issues related to the eradication effort; and topics of interest in polio research. Information on polio activities in the Region will be disseminated monthly. It is expected that newsletter circulation will increase so that all health facilities in the Region will receive copies. Information should also be disseminated through other PAHO publications.

Countries will be encouraged to include a section on poliomyelitis in their national epidemiological bulletins, with distribution to all health care workers in the network.

Periodic reviews of the literature on poliomyelitis will be distributed by PAHO throughout the Region.

2.5.2 Information exchange meetings

To maintain momentum and to facilitate communication in the Region, meetings of EPI program managers for Latin American and English speaking Caribbean countries will be held as often as necessary to discuss progress made and problems encountered. These meetings will serve as a forum for mutual assistance and information dissemination and will be attended by technical experts to aid in the resolution of problems encountered. The meetings will consist of country presentations, discussions related to issues raised during the country presentations, and presentations of updates in the field. Outputs of the meetings will include recommendations of the working groups to the countries on strategies to resolve the problems encountered. Findings and recommendations of the meetings should be published and disseminated in the Region.

2.6 Identification of Research Needs

2.6.1 Advisory group review

Recognizing that questions remain to be addressed in the field of poliomyelitis eradication, both in technical and operational areas, support for research will be provided. Research needs identified by the Technical Advisory Group (TAG) will be implemented within the first two years of the project. It is also recognized that questions will continue to arise as some problems are solved and others appear in their place. Participation in addressing research needs will be encouraged by all member nations.

The Technical Advisory Group (See section 3.2) will review ongoing activities and identify areas for research. This will include identification of funding sources for grants, review of protocols and review of research results. The mechanism to initiate research once areas have been identified will be facilitated by PAHO.

2.6.2 Possible areas for research

Some of the issues to be addressed immediately include:

- strategies and tactics to achieve optimal coverages;
- reasons for dropouts and strategies to reduce dropouts;
- optimal surveillance techniques to detect all potential cases, including vaccine-associated ones;
- criteria for certification of eradication of wild poliovirus circulation;
- simpler diagnostic methods; and
- improved inoculation procedures and equipment for injectable vaccine.

2.7 Certification Protocol

The certification of eradication of indigenous transmission of wild poliovirus for the Americas will be accomplished when the following conditions have been met: (1) Three years have elapsed without identification of any indigenous cases of poliomyelitis in the Region, in the presence of adequate surveillance; (2) Extensive case search by international investigation team does not identify any cases having onset in the three years preceding the visit; and (3) In the case of an importation, there are no secondary cases identified within one month of the date of onset of the illness in the imported case.

An international certification commission will review criteria for certification based on findings of studies conducted and the need to include other criteria to detect wild virus. Vaccination activities should continue until such time as global eradication is achieved.

2.8 Evaluation

Recognizing the critical nature of evaluation for monitoring success and detecting and resolving problems, there will be increased emphasis on the EPI evaluation component. International observers will participate in all country evaluations and reports of findings will be widely distributed.

Because of the difficulties inherent in routine information systems, coverage surveys will be performed in most countries. Included in the coverage surveys will be questions on reasons for compliance and non-compliance. Results of these surveys will be used as a basis for modifications of strategies to optimize the efficacy of interventions.

In addition to evaluations of country program operations, the laboratory network will be evaluated annually to guarantee that the high level of support needed is met. Part of the laboratory evaluation process will include a retesting of original specimens by the reference laboratories, as well as reference specimens sent by the reference laboratories to the country laboratories for testing.

3. ORGANIZATION AND ADMINISTRATION

3.1 Country Level

Each country is strongly urged to develop an overall plan for the EPI and to sign a letter of agreement with PAHO and other collaborating agencies. In the agreement, the National Work Plans should identify additional cooperation needed from PAHO and other participating agencies. All participating agencies in a given country should sign the agreement. Those countries that will require long-term technical advisors should approve their placement in the agreement and commit to a prioritization of the effort in terms of resource allocation.

In addition, technical cooperation will be provided for the drafting of country work plans. Full inventories of existing resources will be made, with identification of needs to be complemented in order to maximize inputs into the program activities. Placement of long-term technical advisors will be considered for the countries in Group I.

It is critical that seed funding be available at the time of design of the plans of action and signing of agreements.

At the time of preparation of the national work plans, participation of other international agencies will be encouraged to ensure the necessary level of donor coordination. As each donor agency has its own mandate, the presence of their representatives will ensure that the individual mandates are met and thereby avoid the all too common duplication of efforts that have occurred when there are independent project designs. The National Work Plans will identify the roles of all of the participating agencies in the country's effort.

All resources necessary to achieve the goal of eradication will be identified in the plans of action, with high priority given to the acquisition of these resources.

Countries will be requested to appoint an individual in charge of the polio eradication effort as a member of the central-level EPI unit. This person will be supervised by the national EPI program manager (or may be the same individual), and will have full responsibility for all components of the polio eradication effort, drawing upon resources made available to the EPI unit.

Within each country, all activities in the eradication effort should be under the guidance of the national EPI office to strengthen implementation of the activities and facilitate achivement of the overall EPI objectives. This office will oversee the eradication activities at all levels; ensure that coordination with laboratories is a high priority, that training needs are identified, and that courses addressing these needs are organized. This office will serve as the focal point for identification of all external cooperation and coordination of extra-sectorial assistance.

3.2 External - International Participation

To assist in guiding the activities of the eradication effort a Technical Advisory Group (TAG) will be formed, composed of experts in the field of immunizations and polio (see Annex V for terms of reference). The TAG will be composed of a core of five individuals, and will call on additional experts as needed to address special problem areas. It is important that at least one member of the TAG be a member of the EPI Global Advisory Group (GAG), in order to provide the necessary coordination with global EPI activities. The TAG Chairman or another representative of the group will participate in coordinating meetings with any other agencies or organizations involved in the same effort.

The role of the TAG will be to advise on technical components of the program. Strategies to achieve required vaccine coverages will be reviewed. The recommendations for vaccination schedules and the choice of vaccines will be reviewed on an annual basis. The TAG will assist in the identification of research needs, oversee the progress of the studies under way, and review protocols and results. The TAG will meet as often as necessary (quarterly or semi-annually or annually) to review progress and problems encountered. Recommendations of the TAG will be published and distributed throughout the Region. The PAHO EPI program office will serve as Secretariat to the TAG. The first meeting of the TAG should be held by July 1985, to review this Plan of Action before the Directing Council meeting.

To ensure the coordination of all international agency inputs, an Interagency Coordinating Committee with representation from all of the international agencies (e.g. UNICEF, Rotary, AID, IDB, World Bank, CIDA and the Bellagio Task Force) will participate in the eradication effort . This committee will meet as frequently as necessary (quarterly or semi-annually or annually) to review progress and the needs for additional assistance. The Coordinating Committee will secure interagency participation in the country planning stage to guarantee the coordination of donor inputs into the countries. The first meeting of the Coordinating Committee will be held by September 1985 to review the Regional Plan of Action and identify the types of assistance each of the agencies can provide in the effort. The PAHO EPI program office will serve as Secretariat to the Coordinating Committee.

As a further step to ensure the coordination of interagency assistance, a letter of agreement between the international agencies and PAHO should be signed after discussion of the Plan of Action. This agreement will define the

roles of each participating agency. In this manner, when additional needs are identified, the agencies appropriate to respond will have been pre-identified.

3.3 Internal - PAHO

The Regional EPI office will coordinate all activities related to the eradication effort. All reports and requests from the field for assistance will go through the EPI office, which will in turn coordinate assistance as needed from other units within PAHO. This is critical to ensure a consistent, coordinated effort in the Regional activities.

Technical cooperation in all areas of program operations will be available through PAHO and its member countries. Assistance of expert consultants from outside the organization will be provided as needs arise and may include epidemiologists, virologists, laboratory technicians, cold chain specialists, mass media experts in health education and economists.

It is estimated that 10 or 11 epidemiologists/technical advisors will need to be placed at the country level in countries classified as Group I. These advisors will preferably be nationals and will assist the Ministries of Health (MOH) with the planning and implementation of the eradication effort activities.

The country level personnel will work closely with counterparts in the MOH for the eradication effort.

At the sub-regional level (inter-country), seven epidemiologist posts are needed (five of which are already available) to serve as technical advisors on an international basis and to provide support and supervisory assistance to the in-country personnel (Appendix II). They will assist and cooperate in assessing needs for special intervention in the countries under their jurisdiction, participating in the investigation teams' classification visits, and providing direct technical cooperation when needed.

In addition to the country and sub-regional level personnel, there is a need for additional support personnel available to the EPI program office at the Regional level. This will include support of virologists (with extensive laboratory skills) to assist in the development of the laboratory network in the region (including training, supervision, supplies and quality control). An additional epidemiologist is also needed to assist in the coordination of activities related to epidemiological surveillance, outbreak investigation, immunization strategy design, and provision of supervisory assistance to the sub-regional advisors. The anticipated increase in data collection and processing will require additional statistical support.

4. FUNDING AND FINANCIAL COMPONENTS

4.1 Levels of Funding

In order to meet the objectives by 1990, it is expected that approximately US$110 million will be needed. Approximately two-thirds of this amount will be provided by the member nations for their individual efforts and one-third will be sought from international donor agencies. The additional costs related to certification will be of a lower magnitude, and will be calculated as program implementation gets underway. Monies will be available at the time of design of the country plans of action to permit the immediate implementation of activities. Projected external costs of components of the eradication effort are as follows:

Projected Costs	Total US$
Personnel	$ 7,100,000
Administration, Information, Documentation	1,100,000
Vaccine	10,773,000
Meetings	950,000
Laboratories	550,000
Training	2,000,000
National Mobilization Activities	5,250,000
Promotional Activities	3,750,000
Cold Chain	3,000,000
Evaluations	2,000,000
Research	2,000,000
Contingency Funds	6,000,000
Total External Funding	$44,473,000

A more detailed cost breakdown and preliminary financial analysis are presented in Appendices III and IV.

When individual country plans are designed, an economist should participate in costing the program. Cost figures will be identified and will include salaries for additional personnel, transportation costs (including airfares), per diem costs, expected expenditures for investigation of identified suspected cases, vehicles, gasoline, vaccine, cold chain equipment, and laboratory development costs (including costs for reagents, transportation and shipping of specimens). All recurrent and capital expenditures should be taken into account in the program design. Budgets will also include the cost of media time and production of educational materials.

PAHO will coordinate with all participating agencies to procure the necessary funding to guarantee the achievement of this goal, and could serve as the coordinating agency for all of the financial assistance provided to the effort. Assistance from the Bellagio Task Force will be sought to help identify additional funding sources. It is expected that by the time of the Directing Council Meeting in September 1985, commitments to cover estimated needs for at least the first year of the program will already be identified.

It is important to assure that funds which are committed are allocated and available in a short time to permit rapid implementation of the targeted activities.

TIMETABLE (TENTATIVE)

ACTIVITY	1985							1986					
	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
1. Identification of Technical Advisory Group	=======												
2. EPI Newsletter section on poliomyelitis	==	==	==	==	==	==	==	==	==	==	==	==	==
3. Country Classification Assessments			==========	==========	==========	==========	==========	==========	==========	==========			
4. Evaluation of Laboratories in Region	==========	==========	==========	==========	==========	==========	==========						
5. Identification of polio investigation teams		==========	==========	==========	==========	==========	==========						
6. Identification and placement of PAHO/EPI Regional Office personnel		==========	==========	==========	==========	==========	==========	==========	==========	==========			
7. Identification and placement of PAHO/EPI Sub-regional advisors		==========	==========	==========	==========	==========	==========	==========	==========	==========			
8. Development of country surveillance systems		==========	==========	==========	==========	==========	==========	==========	==========	==========	==========	==========	==========
9. TAG meetings		==			==				==				==
10. TAG review of plan of action		==											
11. Interagency Coordinating Committee meetings		==		==					==				==
12. Training of country level investigation teams			==		==		==			==			
13. Coverage surveys	=======												
14. Letter of Agreement PAHO/International Agencies				==									
15. Identification of Funding sources	==========	==========											
16. Distribution of Spanish translation of Polio Sysmposium				==									
17. Distribution of PAHO manual for poliomyelitis eradication				==									
18. Design of standardized case investigation form		=======											
19. Approval of Resolution by Directing Council				==									
20. Identification and placement of PAHO/EPI country personnel					==========	==========	==========	==========	==========	==========	==========	==========	==========

TIMETABLE (TENTATIVE)

ACTIVITY	1985							1986					
	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
21. Meetings - EPI Managers						==		==					
22. Laboratory manual						==							
23. Identification of research needs (TAG)								==					
24. Laboratory personnel workshop									==				
25. Criteria for certification of eradication										==			

APPENDIX I

PRELIMINARY CLASSIFICATION OF COUNTRIES IN THE AMERICAS ACCORDING TO POLIOMYELITIS ACTIVITY AND VACCINATION COVERAGE

GROUP I: Polio-infected countries. Those countries reporting indigenous cases due to transmission of wild poliovirus within the previous three years.

Argentina	El Salvador*	Mexico*
Bolivia*	French Guiana	Paraguay*
Brazil*	Guatemala*	Peru*
Colombia	Haiti*	Suriname
Dominican Republic	Honduras*	Venezuela
Ecuador*	Jamaica*	

* Countries where in-country technical advisors may be placed.

GROUP II: Polio-free countries. Those countries reporting no indigenous cases due to transmission of wild poliovirus within the previous three years. This group will be subdivided into the following two categories:

Group II-A: Higher-risk countries. Those countries which have had vaccination coverages of less than 80% of children under one year of age in any of the previous three years.

Anguilla	British Virgin Is.	Nicaragua
Bahamas	Costa Rica	Panama
Barbados	Dominica	Trinidad and Tobago
Belize	Grenada	Turks and Caicos Is.
Bermuda	Guyana	Uruguay

Group II-B: Lower-risk countries. Those countries which have maintained vaccination coverages of greater than or equal to 80% of children under one year of age in each of the previous three years.

Antigua and Barbuda	Martinique	St. Martens and and St. Bartholomew
Canada	Montserrat	
Cayman Islands	Netherlands Antilles	St. Vincent and the Grenadines
Chile	Puerto Rico	
Cuba	Saint Lucia	United States of America
Guadeloupe	St. Kitts-Nevis	U.S. Virgin Islands

APPENDIX II

PROPOSED SUBREGIONALIZATION FOR POLIOMYELITIS ERADICATION EFFORT AND LOCATION OF SUBREGIONAL ADVISORS

Location of Advisor	Countries in Subregion
Guatemala	Guatemala El Salvador Nicaragua Panama Honduras
Mexico	Mexico Belize Costa Rica
Haiti	Haiti Dominican Republic
Colombia	Colombia Venezuela Ecuador
Peru	Peru Bolivia
Brazil	Brazil Argentina Uruguay Chile Paraguay
Trinidad and Tobago (CAREC)	English-speaking Caribbean and Suriname

APPENDIX III

COST COMPONENTS

Personnel ($1,850,000 already available at PAHO) $7,100,000

Full time - 11 at $30,000/year x 5 years = $1,650,000
Sub-regional - 2 at $100,000/year x 5 years =$2,000,000
STC's - 2 at $8,000/month x 200 months = $1,600,000

Vaccine $10,773,000

12 x 10^6 children 1 year olds (1984) x 5 = 60 x 10^6 (1st yr)
12 x 10^6 children 1 year olds (1984) x 4 years = 48 x 10^6
Total = 108 x 10^6 children to be immunized
at 3 doses/child = 324 x 10^6 doses x 1.33 (wastage) = 430 x 10^6
at US$0.025/dose = US$10,773,000
(Year 1 = US$5,985,000)
(Years 2, 3, 4, 5 at US$1,197,000/year)

Meetings $950,000

TAG -- 3 meetings/year x 5 years = $257,250
7 persons x 3 days/meeting at $150/day = $3,150
Travel at $2,000/Person = $14,000

PEP -- (Polio eradication personnel - country coordinators) = $1,196,000
36 countries x 2 persons/country = 72 persons
15 regional staff
5 expert consultants
Travel at $1,000/person = $92,000
Per diem at $100/day/person x 3 days = $300
1 meeting/year x 5 years = $598,000

ICC - (Interagency Coordinating Committee)
3 meetings/year x 5 years = $90,000
10 persons x 1 day/meeting at $100/day = $1,000
Travel at $500/person = $5,000

Laboratories $550,000

6 Viral diagnostic laboratories at $40,000/lab = $240,000

2 Laboratories with oligonucleotide mapping capabilities at $80,000/lab = $160,000

Supplies for viral diagnostic labs at $10,000/year x 5 years = $50,000

Supplies for oligonucleotide mapping labs at $10,000/year x 5 years = $50,000

Shipping of specimens - at $200/specimen x 500 specimen/year = $10,000 10,000 x 5 years = $50,000

Mobilization costs for national personnel (travel and per diem) $5,250,000

Promotional costs (media time: radio, TV, press) $3,750,000

Training $2,000,000

Cold Chain $3,000,000

Evaluations $2,000,000

Coverage surveys - $35,000/survey x 10 surveys/year x 4 years = $1,400,000
Country evaluations $15,000/evaluation x 10 evaluations/year x 4 years = $600,000

Research $2,000,000

Contingency Funds $6,000,000

APPENDIX IV

PRELIMINARY FINANCIAL ANALYSIS

Using the 1984 population estimates for the Region, it is estimated that there are 16 million children less than one year of age who will benefit from this program annually. With the plan to immunize all children less than five years of age during the first year, and all less than one-year olds in subsequent years, there will be an estimated 144 million beneficiaries by 1990.

While the total socioeconomic benefits cannot be calculated at present, a cost-benefit analysis of the poliomyelitis control program in Brazil conducted in 1983 showed a savings of US$20,000,000 during the period 1980-1983. (These calculations are based on a cost of US$271 per case for acute care and US$2,400 per case for rehabilitation over ten years; loss of productivity and its cost to society have not been included in this calculation.)

Prior to the implementation of the EPI in the Region of the Americas an average of over 3,000 cases and approximately 350 deaths from poliomyelitis were reported annually in the Region. Recognizing that there is a serious problem with under-reporting, the true morbidity burden can safely be approximated by multiplying these figures by a factor of at least five. A 1977 study estimated that the average cost per patient for acute care of poliomyelitis in hospitals was US$253 (ranging from US$100 to US$800). Using the Brazil estimate of rehabilitation costs of US$2,400 per case, the cost to the Region was approximately US$40 million annually (3,000 cases x 5 x $2,653 per case treated is $39.8 million). This calculation assumes that all cases receive both acute care and rehabilitation; it takes no account of loss of income due to paralysis, nor of the loss of life.

To eradicate indigenous transmission of wild poliovirus will cost the Region about $110 million over five years, or $22 million annually. The saving in medical costs alone over this period would be $200 million, so there would be a net saving about equal to the cost of the eradication program. Of course, the savings will continue after the five-year eradication campaign. From 1990 onward, the cost of keeping children vaccinated and maintaining the eradication of polio should drop to only $5 million per year, while the saving in medical costs--compared to the situation that prevailed before the EPI was instituted--would continue to be about $40 million annually, leaving a net saving of $35 million per year.

Savings obtained in the future must be discounted, for comparison to immediate savings. If a discount rate of ten percent is used (so that $1.00 saved today is worth $1.10 saved next year), then from 1985 through the end of the century the present discounted value (PDV) of the savings from eradicating polio will be no less than $230 million. This estimate includes savings of $83.4 million over the five years of the eradication campaign (less than $100 million because of discounting in 1987-1990), and $146.9 million in savings over the following decade (this is much less than ten years times $35 million,

because the first year's savings, in 1991, is discounted to only $21.7 million and subsequent years are discounted still more). This approximation suggests that by the year 2000, the eradication of polio would pay for itself 2.3 times over in reduced medical costs alone.

This conclusion is of course greatly strengthened if any account is taken of the reduced productivity and therefore lower lifetime income of polio victims. Supposing that only 40 percent of those victims would otherwise have been in the labor force throughout their adult lives, and would therefore have contributed to measured gross national product; and supposing further that they would have earned only one-fifth the average of all workers, because they would be predominantly under-educated, low-productivity workers, the income loss to each one from paralytic polio would still be of the order of $650 annually. Over a production lifetime of as little as 37 working years (ages 18 to 55), the PDV of $1,250 per person, allowing for the fact that polio is usually contracted in the first two years of life, so that income starting at age 20 is heavily discounted. The savings from preventing 15,000 cases of polio are then a further $16.8 million in the first years, or nearly the annual cost of the eradication campaign. From 1985 to the year 2000, the total savings would be $127.6 million, more than the total cost of eradication.

APPENDIX V

TERMS OF REFERENCE OF PAHO EPI TECHNICAL ADVISORY GROUP (TAG)

1. According to the Plan of Action for the eradication of indigenous transmission of wild poliovirus from the Americas by 1990, a Technical Advisory Group (TAG) should be formed to help the PAHO Secretariat with its implementation.

2. To accomplish the above, an outstanding group of consultants will be appointed by the Director, to advise PAHO on the acceleration of the Expanded Program on Immunization in the Americas and on the efforts to eradicate the indigenous transmission of wild poliovirus from the Region by 1990.

   The Technical Advisory Group will be composed of five individuals and will be assisted by additional consultants and/or study panels for any specific purposes they may require.

3. The Technical Advisory Group will:

   a) Advise the PAHO Secretariat with respect to program priorities over the next five years;
   b) Advise and guide the PAHO Secretariat concerning the optimal strategies and tactics to reach the overall goals of the EPI and the eradication of indigenous transmission of wild poliovirus from the Americas by 1990;
   c) Monitor the implementation of the Regional Plan of Action to accomplish the above-stated goals;
   d) Promote understanding and support for the program goals among technical institutions and bilateral, multilateral and private agencies, as well as political leaders; and
   e) Participate in missions at country level for program reviews and meetings

4. Members of the Technical Advisory Group will be appointed by the Director for a period of one year, with extensions to be arranged at his discretion.

5. At least one member of the TAG should also be a member of the EPI Global Advisory Group (GAG). At least one member of the TAG should also participate in meetings with other agencies and organizations to assure proper coordination and exchange of information.

6. TAG meetings will be convened as required, usually twice a year, and a report on each meeting will be prepared and circulated as appropriate.