PD-ABN-208

FINAL NARRATIVE REPORT
EXPANDED PROGRAM ON IMMUNIZATION
1 APRIL - 31 JULY 1996

I BACKGROUND

1.	Project Title:	Accelerated Immunization II Project.
2.	Project Number:	598-0786
3.	Grant Number:	LAC-0786-G-00-1031-00

II PURPOSE OF PROJECT

To increase the efficiency and effectiveness of immunization service delivery by:

1. Reducing missed opportunities to vaccinate,
2. Improving geographical access to immunization services, and
3. Reducing the Drop-out rate.

III PROJECT ACTIVITIES

a. Personnel for Technical Assistance, Supervision, and Coordination

During this reporting period, Dr. Bradley Hersh participated in the following program activities:

1) An informal measles surveillance meeting, in Argentina, on April 23, with the participation of representatives from Argentina, Bolivia, Brazil, Chile, Paraguay and Uruguay (please refer to annex I for the final report); and a meeting with the Ministry of Health in Uruguay to discuss measles surveillance strategies and activities. Both of theses activities took place from 20 to 26 April, 1996.

2) From 5 to 7 June 1996, Dr. Hersh attended the Annual Epidemiology and Surveillance Conference in Jamaica. Please refer to annex II for the trip report.

3) The WHO/CDC/PAHO international meeting on measles eradication, held in Atlanta, Georgia, from 8 to 11 July, 1996. Please see annex III for a copy of the corresponding trip report.

Mr. Peter Carrasco visited Peru and Nicaragua to follow-up and review the installation and operation of the CLM software in Lima, Arequipa, Chiclayo and San Martin, and to discuss the implementation and use of the software in Nicaragua.

Dr. Cristina Nogueira participated in the following program activities during this reporting period:

1) Visited Guatemala in order to review the measles surveillance activities, and Nicaragua to review the details and progress of the bilateral USAID/PAHO project.

2) Participated in the WHO/CDC/PAHO international meeting on measles eradication, held in Atlanta, Georgia, from 8 to 11 July, 1996.

3) Visited WHO Headquarters in Geneva, Switzerland to attend technical consultations: a meeting on Progress Towards the Global Eradication of Poliomyelitis; and a meeting of Regional EPI Advisors. 27 April through 5 May, 1996. This trip was financed by WHO/Geneva.

Dr. Claudio Silveira also participated in the WHO/CDC/PAHO international meeting on measles eradication, held in Atlanta, Georgia, from 8 to 11 July, 1996.

At the end of this reporting period, there were a total of 6 FTE's financed with USAID regional funds.

b. <u>Epidemiological Surveillance and Management Information Systems</u>.

Poliomyelitis:

PAHO/SVI continues to work with all countries to assure that sufficient resources are allocated for the surveillance of Polio and to the investigation of all AFP cases.

During the second quarter of 1996, the polio reference laboratories processed 626 stool samples from 357 AFP cases, and there were no wild poliovirus isolated in any of the stool samples studied.

Please refer to Annex IV for the polio surveillance indicators in Latin America.

Measles:

As of 31 July 1996, a total of 883 total confirmed measles cases have been reported. This represents a 63% reduction from the 2247 confirmed cases reported during the same period of 1995. Of the total confirmed cases, 605 (72.6%) have been laboratory confirmed and 228

(27.4%) have been confirmed on clinical grounds alone, without laboratory investigation. The United States (299 cases) and Canada (291 cases) have accounted for 97% of the laboratory confirmed cases. Most countries in the region have not reported a single laboratory confirmed measles case during 1996. Please refer to annex V for a copy of the Measles Surveillance Bulletin for this period.

The program continued the preparation, publication and distribution of the EPI Newsletter. please see annex IV for the corresponding issue.

c. Meetings

During this reporting period, there were no meetings financed with USAID funds.

d. Laboratories

No Regional funds were used to support this activity during this quarter.

e. Training

There were no training activities financed by USAID regional funds during this quarter.

f. Mobilization for Supervision and Outbreak Surveillance

No Regional funds were used to support this activity during this quarter.

g. Cold Chain and Logistics

During the first quarter of 1996 a mail survey was carried for collecting data on safe syringe practices. The purpose of the survey was to assemble data for determining what mechanisms are in place for monitoring safe syringe practices. The data will be analyzed and reported during the fourth quarter.

Similarly countries were requested to update PAHO on their open vials policy and carry out a survey. The results of this effort will ready during the fourth quarter of 1996.

During the month of July, 1996 PAHO made a presentation of CLM to the Ministry of Health in Nicaragua, and based on their requirements, they have decided to implement the installation of the software to assist in the management of their stocks of vaccines, syringes, and cold chain.

In Peru, PAHO carried out an evaluation of CLM during July, 1996. The evaluation indicated that the regions had had little difficulty in using CLM, and confirmed that the users found CLM to be very useful in improving the inventory and the management of vaccines and

related commodities. However, the evaluation also showed that the central level has yet to make effective use of the CLM.

h. Research

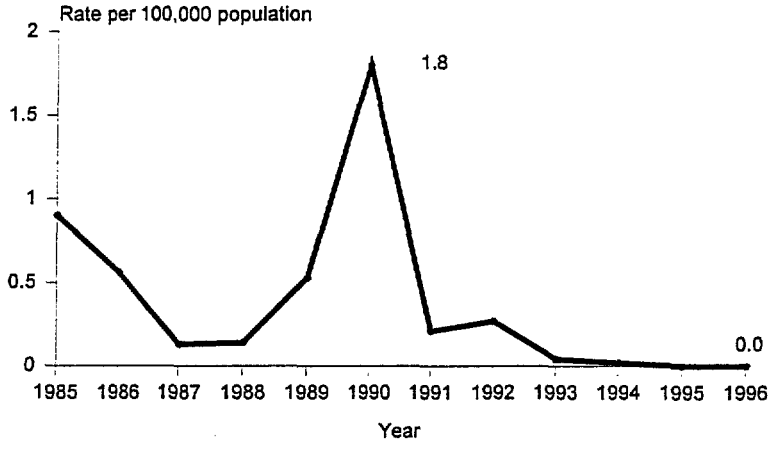
No regional research activities were carried out in this quarter.

V. BASE LINE INDICATORS

1. MORTALITY REDUCTION:

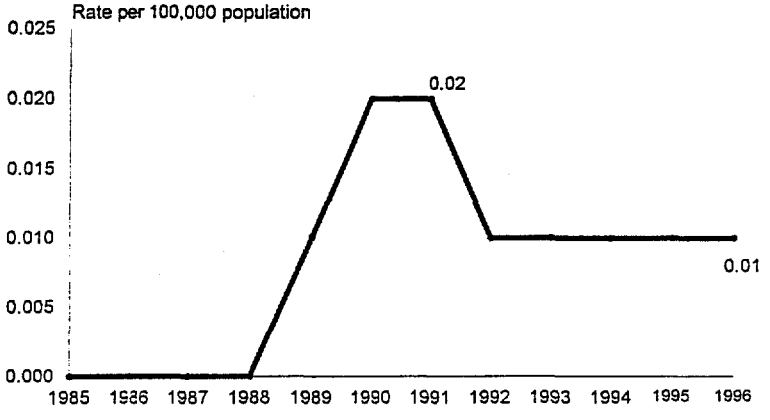
The graphs below show the declining tendency of mortality rates for vaccine preventable diseases in the Region. The data for mortality rates in 1996 is not updated because of delays in consolidating this information at the national level. The rate for polio is zero since 1985.

Annual mortality rate for measles
Region of the Americas, 1985-1996*



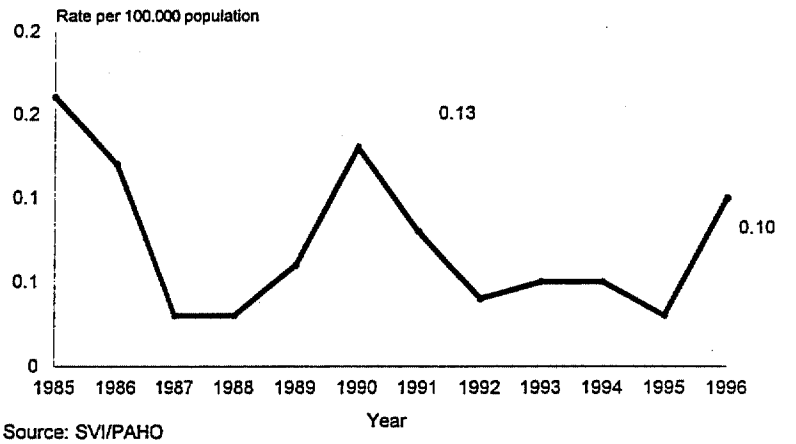
Source: SVI/PAHO
* Provisional data

Annual mortality rates for diphtheria
Region of the Americas, 1978-1996*



Source: SVI/PAHO
* Provisional data

Annual mortality rate for pertussis
Region of the Americas, 1985-1996*



Source: SVI/PAHO
* Provisional data

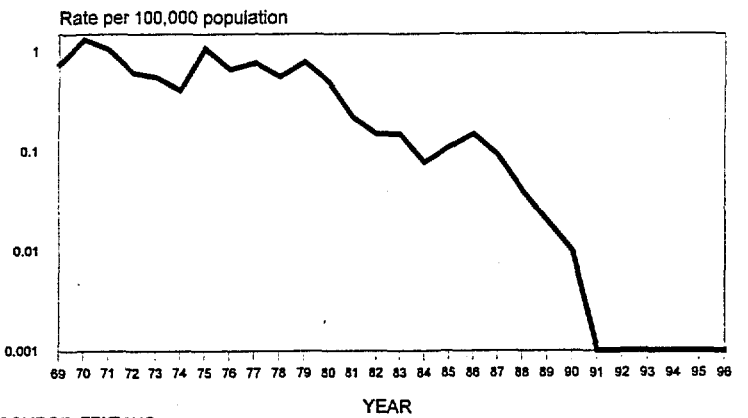
2. MORBIDITY REDUCTION:

As shown in the graphs below, there has been a steady decline in morbidity rates for vaccine preventable diseases during the periods analyzed.

The incidence if diphtheria has declined, with the exception of 1994, when there was an outbreak in Ecuador. The recent epidemic shows that the disease has affected predominantly the population over 15 years of age.

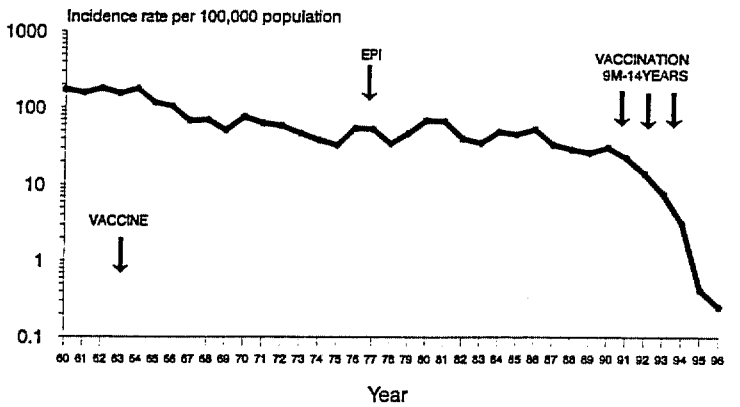
In the case of pertussis, the incidence rates have reached a plateau. The program is looking more closely at the reasons or factors causing this situation.

Annual polio incidence rates
Region of the Americas, 1969-1996*



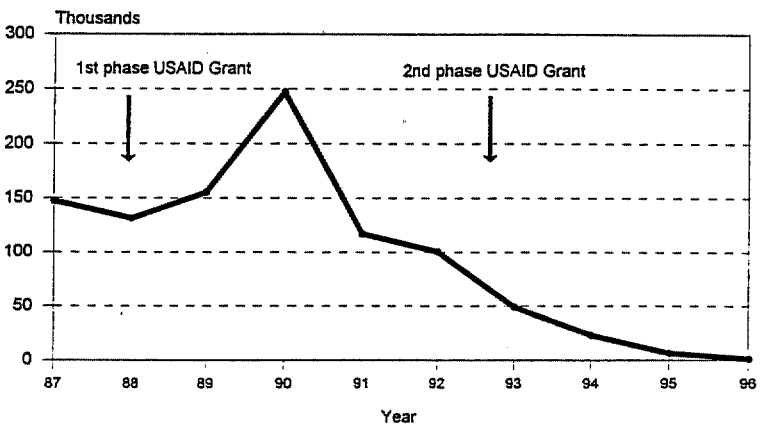
SOURCE: EPI/PAHO
* Data as of 12 September

Annual measles incidence rates
Region of the Americas, 1960 - 1996*



Source: PAHO
* Data as oF 12 September

Number of measles cases notified
Region of the Americas, 1987-1996*

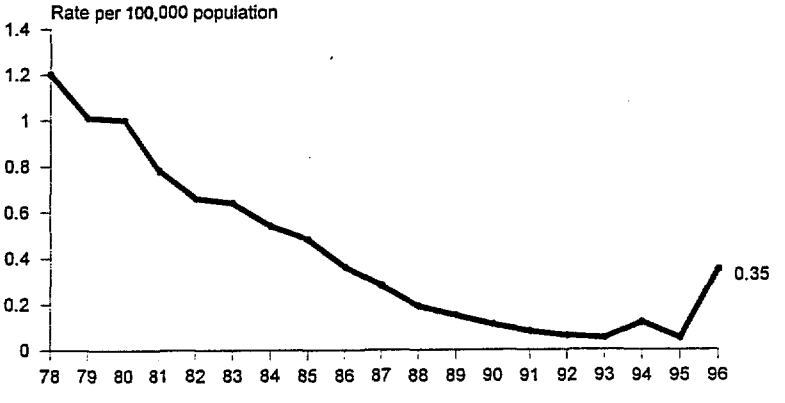


Source: EPI/PAHO
*Data as of 12 September

Annual pertussis incidence rates
Region of the Americas 1978-1996*

Source: SVI/PAHO
* Provisional data

Annual diphtheria incidence rates
Region of the Americas, 1978-1996*

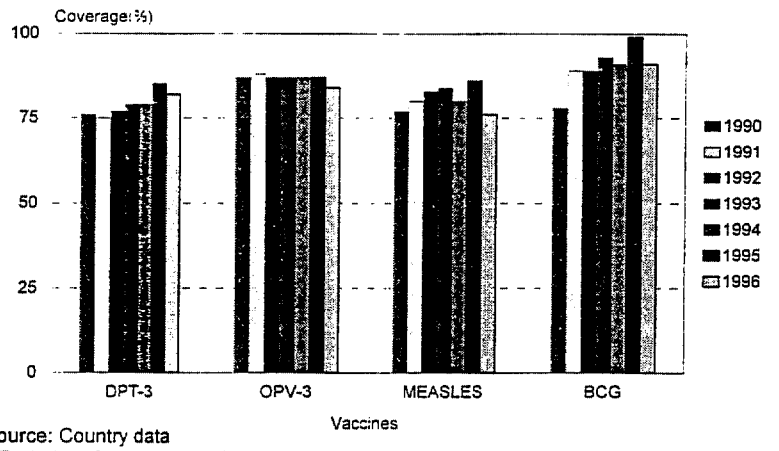


Source: SVI/PAHO
* Provisional data

3. VACCINATION COVERAGE OF CHILDREN:

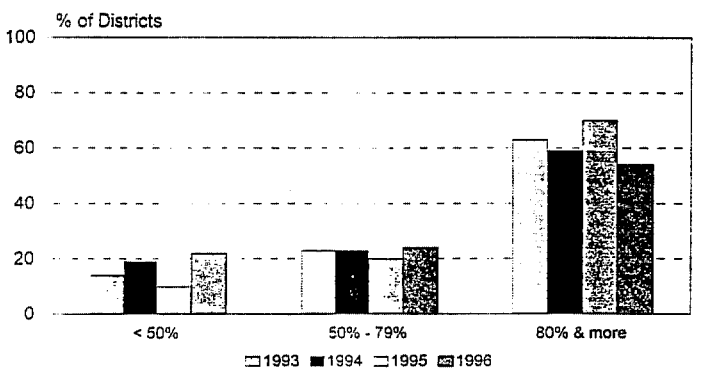
The immunization coverage rates for the EPI vaccines have increased steadily since the program was launched in 1977. The graph below shows that immunization coverage in the period between 1990 and 1995 has been maintained at levels around 80% over this period, showed a slight declining tendency between 1992 and 1994, but with an apparent increase for 1995.

Vaccination coverage of children <1 year of age,
Region of the Americas*, 1990-1996**



Source: Country data
* Excluding Canada and USA
** Provisional data (12 countries)

Distribution of districts by range of measles coverage in children less than one year Latin America, 1993-1996*



Source EPI/PAHO
*Provisional data

The subsequent table shows that coverage rates were not uniform throughout the Region. Therefore, there are counties and districts within countries for which coverage is considerably lower. It will be extremely difficult to eliminate measles transmission should vaccination coverage not be maintained at very high levels in every district of every country to avoid the rapid build-up of susceptible children.

Table of Vaccination Coverage
Americas, 1995-1996

Region/ Country	DPT-3		OPV-3		MEASLES		BCG	
	1996*	1995	1996*	1995	1996*	1995	1996*	1995
Andean								
Bolivia	80.00	87.87	82.00	89.38	82.61	82.61	77.33	77.33
Colombia	91.00	93.95	92.00	95.09	80.20	80.20	100.00	100.00
Ecuador	84.00	73.63	86.00	88.90	72.93	72.93	100.00	100.00
Peru	80.20	94.29	93.26	92.39	97.36	97.36	95.20	95.20
Venezuela	74.00	67.82	82.00	85.06	67.33	67.33	92.00	92.00
Brazil	...	82.69	...	82.94	...	88.30	...	100.00
Central America								
Belize	...	82.88	...	83.23	...	87.44	...	92.08
Costa Rica	...	84.97	...	84.06	...	94.10	...	99.04
El Salvador	100.00	99.94	100.00	94.20	100.00	93.45	100.00	100.00
Guatemala	72.24	77.60	72.63	80.64	70.61	81.00	77.92	76.60
Honduras	96.89	96.00	97.99	96.00	93.86	90.00	95.69	100.00
Nicaragua	81.38	84.76	89.26	96.08	76.67	81.16	97.45	100.00
Panama	93.31	86.00	92.39	86.00	85.72	84.00	100.00	99.00
English-Speaking Caribbean								
Anguilla	...	97.24	...	98.90	...	92.27	...	100.00
Antigua & Barbuda	...	...	...	...	...	...	...	...
Bahamas	...	87.02	...	86.01	...	90.01	...	...
Barbados	...	92.75	...	92.92	...	92.13	...	...
Cayman Islands	...	97.99	...	97.99	...	95.07	...	75.91
Dominica	...	-	...	-	...	...	...	...
Grenada	...	95.01	...	77.01	...	88.04	...	...
Guyana	...	86.00	...	87.00	...	77.00	...	93.00
Jamaica	...	90.17	...	90.22	...	89.31	...	97.63
Monserrat	...	100.00	...	100.00	...	100.00	...	100.00
St. Christopher & Nevis	...	99.04	...	99.04	...	99.04	...	...
St. Lucia	...	98.02	...	98.02	...	94.01	...	98.02
St. Vincent & Grenadines	...	97.02	...	97.02	...	100.00	...	99.01
Suriname	...	84.00	...	81.00	...	79.00	...	...
Trinidad & Tobago	...	89.00	...	90.00	...	90.00	...	...
Turks & Caicos	...	100.00	...	100.00	...	99.08	...	100.00
British Virgin Islands	...	100.00	...	100.00	...	100.00	...	100.00
Latin Caribbean								
Cuba	39.60	100.00	...	94.94	...	100.00	37.40	99.41
Dominican Republic	54.18	83.40	50.75	80.00	49.60	85.30	68.20	75.50
Haiti	...	...	...	-	...	...	...	...
Mexico	...	91.50	...	91.90	...	89.90	...	97.90
North America								
Bermuda	...	86.03	...	92.10	...	86.03	...	...
Southern Cone								
Argentina	...	82.41	...	87.56	...	95.42	...	100.00
Chile	...	97.85	...	97.85	...	95.00	...	80.00
Paraguay	...	79.29	...	79.42	...	74.74	...	91.69
Uruguay	...	86.87	...	86.87	...	83.93	...	89.93
Total	81.58	86.21	83.88	88.01	76.12	87.19	90.34	95.98

* Provisional data

4. CUMULATIVE COVERAGE FOR TT2 IN WCB IN HIGH RISK AREAS:

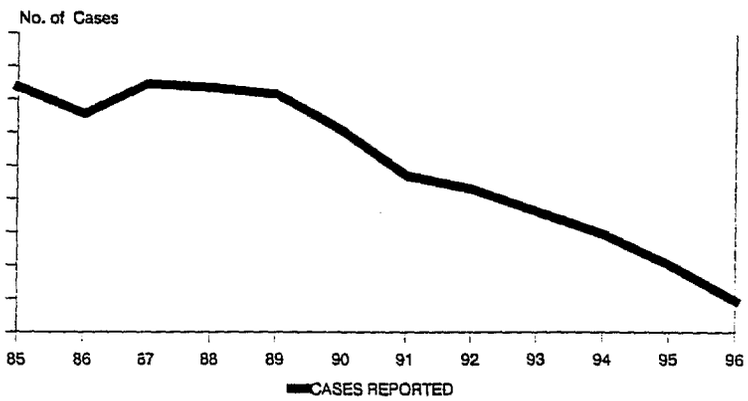
The Americas has reached the World Summit on Children target of neonatal tetanus (NNT) elimination as a public health problem. the graphs below shows that efforts continue to be focused on the identification of high-risk areas and on the vaccination of all women of childbearing ages with at least two doses of tetanus toxoid. Areas at high risk are defined according to national criteria in the various countries, but include one or more characteristics that are common to all countries:

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

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

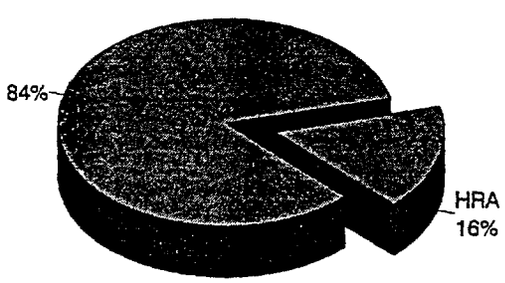
The overall trend of the disease, which in spite of improved surveillance presented a 5-fold decrease since efforts were initiated in 1987. Furthermore, during 1995, over 85% of all reported cases were investigated, in comparison with only 43% in 1990. Most importantly, for 1994, 98% of all districts,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

Neonatal tetanus trends Americas, 1985 - 1996*



16 Latin American countries
Source: PAHO/EPI
* Data as of 10 September

PROPORTION OF HIGH RISK AREAS IN 16 LATIN AMERICAN COUNTRIES 1995



TOTAL DISTRICTS IN 16 COUNTRIES: 12,521
NUMBER OF HIGH RISK AREAS: 2,431

SOURCE: EPI/PAHO

5. IMPROVING GEOGRAPHIC ACCESS TO IMMUNIZATION SERVICES:

The table indicates that more countries reported access to immunization services each year. The majority of countries increase the number of municipalities with 90% coverage of DPT 1. Some countries have shown continuing difficulties toward improving access to immunization services, however, special efforts are being implemented in these areas to increase these rates.

The data for 1996 is incomplete.

PERCENT OF DISTRICTS WITH 90% OR MORE COVERAGE WITH DPT 1, FOR THE NINE USAID PRIORITY COUNTRIES (1994 - 1996)

COUNTRY	TOTAL DISRTICTS	PERCENT OF DISTRICTS WITH COVERAGE OF 90% OR MORE		
		1994	1995	1996
Bolivia	83	53%	75%	59%[1]
Dominican Republic	129	22%	32%	82%[1]
Ecuador	187	76%	-	-
El Salvador	218	69%	80%	83%
Guatemala	331	22%	36%	-
Haiti	15	-	-	-
Honduras	189	57%	57%	66%
Nicaragua	152	60%	-	41%
Peru	1000	30%	-	

Notes:

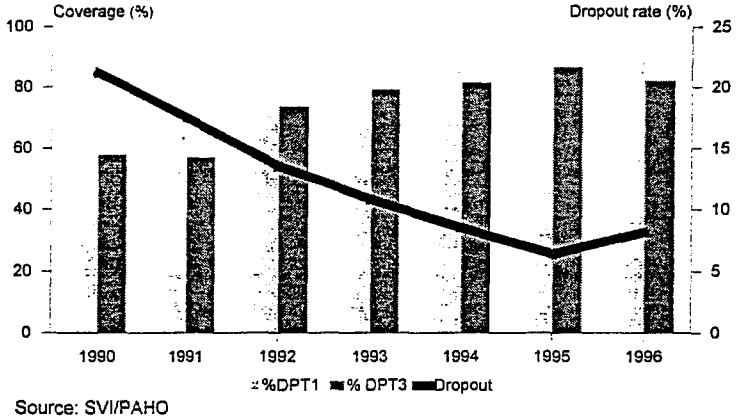
(-) Data not available

1. Figures through March 1996, data not available for April through July 1996

6. DROPOUT RATE IN PRIORITY COUNTRIES IN LATIN AMERICA:

The graph and table below show the tendency towards a lower dropout rate between DPT1 and DPT3. The graph shows that the vaccination on coverage for DPT 1 and DPT 3 has increased. At the same time the dropout rate was reduced by at least 2 times in the majority of countries reporting between 1990 and 1995.

Vaccine coverage and dropout rate for
DPT 1 and DPT 3, in selected countries*
Latin America, 1990-1996**



Source: SVI/PAHO
* Bolivia, Dominican Rep., Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Peru
** DPT1 data for Bolivia and Ecuador not available

Dropout rate in DPT 1 and DPT 3 in selected
countries in Latin America, 1990-1996*

COUNTRY	1990	1991	1992	1993	1994	1995	1996
Bolivia	43.88	25.64	19.60	8.99	18.50	10.76	
Dominican Republic	NR	NR	17.44	13.31	13.00	1.92	
Ecuador	22.79	28.78	20.76	23.01	16.64	24.65	
El Salvador	22.55	23.51	11.67	8.58	0.04	1.32	(1.80)
Guatemala	23.51	16.21	11.59	0.70	4.60	0.02	15.44
Haiti	NR	NR	NR	NR	NR	NR	
Honduras	6.75	0.78	0.00	5.99	5.50	1.03	8.02
Nicaragua	NR	NR	25.22	22.10	23.11	9.25	9.39
Peru	17.41	13.77	10.48	8.49	1.75	2.64	4.72

Source: Country Data NR - No data reported * Provisional Data

7. REDUCING MISSED OPPORTUNITIES TO VACCINATE:

This table shows the percentage of missed opportunities by year in a study undertaken by the USAID in nine selected countries. Data is not available on a regular basis in some countries, therefore, special follow-up surveys will be held in order to complete the required reporting during the remainder of 1995 and the first quarter of 1996.

PERCENT OF MISSED OPPORTUNITIES AND YEAR THAT STUDY UNDERTAKEN BY THE NINE USAID PRIORITY COUNTRIES AND FOLLOW-UP SINCE THEIR INITIAL STUDY

COUNTRY	YEAR OF STUDY	% OF MISSED OPPORTUNITIES	YEAR OF FOLLOW-UP	% OF MISSED OPPORTUNITIES
Bolivia	1990	32%	1996	-
Dominican Republic	1991	40%	-	-
Ecuador	1989	34%	1996	-
El Salvador	1989	45%	1991	14%
Guatemala	1990	51%	1996	-
Haiti	None	None	None	
Honduras	1988	45%	1991	10%
Nicaragua	1987	66%	1995	21%
Peru	1990	57%	1995	13%

Notes: Bolivia, Ecuador and Guatemala have programmed studies in their national plans of action for 1996, using the same methodology.

8. IMPROVED NORMS FOR IMMUNIZATION AND CONTROL OF VACCINE PREVENTABLE DISEASES:

Field guides for Polio and Neonatal Tetanus have been developed and distributed to all countries in the Region. These materials are being used for training activities, bringing local health workers up-to-date, as well as in several health sector institutions both public and private (NGOs, Social Security...).

At this time, the final version of the Measles field guide is being printed for publication, and will be distributed to all the countries in the near future.

All countries have established national norms in accordance with regional standards. We are monitoring this through supervision by in-country staff, periodic supervisory visits by regional staff, by subregional and national meetings, and by field progress reports.

9. ANALYSIS OF MINUTES OF ICC MEETINGS, FINANCIAL MONITORING AND NUMBER OF PARTICIPATING INSTITUTIONS

The table below shows that the priority countries are periodically holding ICC meetings and that participation of NGOs is increasing. This has had a direct result in the increase in mobilization of national resources in support of the EPI program.

ANALYSIS OF MINUTES OF ICC MEETINGS IN SELECTED COUNTRIES, SHOWING FINANCIAL MONITORING OF THEIR PLANS OF ACTION AND NUMBER OF NGOs/PVOs PARTICIPATING IN THE PROGRAM FOR 1994, 1995 AND JANUARY-JULY 1996

COUNTRY	NUMBER OF MEETINGS HELD				FINANCIAL MONITORING OF PLAN			NUMBER OF NGOs/PVOs PARTICIPATING IN EPI		
	1994	1995	1996	2nd QTR	1994	1995	1996	1994	1995	1996
Bolivia	12	1	1	1	Yes	Yes	Yes	12	53	13
Dominican Republic	6	2	3	1	Yes	Yes	Yes	4	8	10
Ecuador	4	2	-	-	Yes	Yes	Yes	-	5	-
El Salvador	5	4	1	1	Yes	Yes	Yes	42	66	31
Guatemala	6	9	1	1	Yes	Yes	Yes	12	9	230
Haiti	7	3	-	-	No	-	-	15	15	-
Honduras	5	4	1	1	Yes	Yes	Yes	5	20	20
Nicaragua	4	5	2	1	Yes	Yes	Yes	4	20	20
Peru	9	4	3	3	Yes	Yes	Yes	8	10	5

(-) = Data not available

10. DECENTRALIZATION OF EPI RESOURCES TO HIGH RISK AREAS

(Data for January - July, 1996)

The table below shows that most countries have decentralizing the resources and have focused their efforts in the high risk areas. This indicates a more efficient optimization of resources.

PERCENTAGE OF RESOURCES DIRECTED TO HIGH RISK AREAS	
COUNTRY	% OF RESOURCES
Bolivia	81.0%
Dominican Republic	65.0%
Ecuador	-
El Salvador	60.0%
Guatemala	80.0%
Haiti	-
Honduras	80.0%
Nicaragua	78.0%
Peru	-

(-) No data available at the printing of this report

IMMUNIZATION PROGRAM SUSTAINABILITY

The table below shows that all the USAID priority countries have increased the portion of their national budget applied to the purchase of biologicals, syringes, and the costs associated with national public health personnel. This table indicates the effort of the countries to attain program sustainability.

COUNTRY	PROPORTION OF RECURRENT COSTS	
	1990	1995
Bolivia	54.4%	84.70%
Dominican Republic	87.6%	99.1%
Ecuador	85.3%	92.9%
El Salvador	79.9%	86.4%
Guatemala	1.3%	75.6%
Haiti	-	-
Honduras	86.8%	95.6%
Nicaragua	-	79.7%
Peru	50.3%	96.5%

(-) = Haiti figures not available at the time of the report.

VI. BUDGET AND FINANCIAL ANALYSIS

The official financial report for both the regional project and the Country Buy-ins, corresponding to the expenditures for this reporting period, will be prepared by our Finance Department and will be mailed to you under a separate cover.

IV. COUNTRY BUY-INS

NICARAGUA

a. Biologics/Logistics/Supplies

During this reporting period, USAID Buy-in funds were used to finance the following activities:

1) Preparation of printing of 200,000 vaccination cards for children below 5 years of age. ($ 3,650.00)

2) Preparation of printing of 100,000 vaccination cards for children above 5 years of age. ($ 7,573.00)

3) Printing of the following registration materials for the 1st National Immunization Day: 10,000 household registration forms; 5,000 vaccination guides; and 2,000 supervisor's guides. ($ 402.00)

4) Printing of 1,500 immunization posters indicating coverage and drop-out rate. ($ 591.00)

5) Purchase of 2,000 vials of Tetanus Immunoglobulin. ($ 16,350.00).

b. Training

The following training activities were supported by Buy-in funds during the second quarter of 1996:

1) A workshop on Epidemiological Surveillance of the Cold Chain directed to the EPI managers and to Cold Chain users of the health centers in the Managua SILAIS. There were 80 participants at a total cost of $414.00.

2) A workshop on Epidemiological Surveillance of the Cold Chain directed to the EPI managers and to Cold Chain users of the health centers in the Leon SILAIS. There were 50 participants at a total cost of $243.00.

3) Training of 3 technicians on the installation of solar refrigerators at a cost of $1,696.00.

4) A Cold Chain workshop to update all EPI staff and cold chain users from the health units from the SILAIS of Chinandega/León, Madriz, Estelí, Nueva Segovia, Chontales, Boaco and the Central level. There were 113 participants at a total cost of $ 3,349.00

5) Reproduction of 120 Cold Chain User manuals. ($ 863.00)

6) 6 Workshop to review and update the Nursing techniques and procedures for the administration of vaccines and the management of the cold chain. The workshop was directed to the Nursing and EPI staff from the SILAIS and the central level. There were 16 participants at a total cost of $335.00.

7) Workshop with Staff of the Central Level to discuss the implementation and supervision of the 1st National Immunization Day and the measles campaign. There were 34 participants at a cost of $ 461.00.

8) Workshop to define the strategies and technical and administrative activities related to the implementation of the 1st National Immunization Day. The workshop was directed to the national epidemiology and EPI of the ministry of health at the central level. There were 15 participants, and the activity cost $ 122.00.

9) Workshop to present and evaluate the use of the CLM software, directed to the EPI and biologics bank from the SILAIS, as well as staff from the ministry of health. There were 40 participants at a cost of $645.00.

10) Workshop on the analysis of measles cases in the SILAIS of Managua, addressed to physicians and auxiliaries, EPI, nursing, and laboratory staff. There were a total of 335 participants and the total cost was $ 1,318.00

11) Workshop on the clinical diagnosis of suspected measles and AFP cases. The workshop was directed to municipal directors, social service physicians, and health unit staff from the various SILAIS. A total of 38 people participated and the cost was $277.00.

12) Workshop to identify pockets of in the SILAIS of Matagalpa, Jinotega, Estelí, Madriz y Nueva Segovia. There were a total of 70 participants at a cost of $1,203.00.

13) Workshop to define the strategies, technical and administrative activities related to the preparation and implementation of the 2nd National Immunization Day. There were 50 participants and the workshop cost $367.00.

c. Social Communication

During this reporting period, USAID Buy-In funds were used to finance the following social communication activities:

1) Reproduction of the documents: "Por una Política de Comunicación" and "Estrategias de Vacunación" ($ 133.00).

2) Framing of posters related to systematic vaccination. ($ 4,260.00)

3) Printing of 200,000 fliers promoting house to house vaccination. ($925.00)

4) Support to the local promotional activities. ($ 1,006.00)

5) Preparation and installation of three "vacunómetros". ($529.00)

6) Logistical support for the National Immunization Day. ($1,946.00)

7) Television spots promoting the National Immunization Day. ($122.00).

8) Financing of 500 pouches and identifications for the field workers, with the logo: "Yo Apoyo a la Vacunación". ($ 366.00).

9) Printing of 1,000 decals for the identification of the materials donated by the project. ($521.00).

d. Vaccines

No vaccines were purchased with Buy-in funds during this quarter.

e. Supervision

From the central level to Local Health Units and to high risk municipios in order to review the local program of intensive vaccination and epidemiological surveillance activities:

f. Epidemiological Surveillance

Buy-in funds continued to support surveillance activities such as:

1) Purchase of reagents for the diagnosis of measles and rubella, and vials for the handling of AFP samples. ($ 2,174.00).

2) Support to the national laboratory for the shipment of samples to the regional reference laboratories. ($ 1,500.00)

3) Support to the preparation and printing of the EPI epidemiological bulletin. ($394.00)

4) Investigation of suspected measles and AFP cases.($ 714.00)

5) Support to the 1st National Immunization Day. ($10,186.00)

6) Printing of investigation forms for the vaccine preventable diseases. ($791.00)

7) House to house vaccination activities in the SILAIS/Managua, - C/S Edgar Lang; Jinotega - indigenous communities from Rio Bocay.

8) Support to the 2nd National Immunization Day. ($14,792.00)

9) Purchase of equipment and supplies needed to install and operate the CLM and the MESS in the 17 SILAIS. ($50,626.00)

g. Research

A Missed Opportunities study is underway.

h. Evaluation/Meetings

Project funds were use to finance the following:

1) Meeting of the EPI and the Ministry of Education to discuss the 1996 plan of action, the development of primary health technical cooperation and educated community. ($ 159.00)

2) Meeting with the participation of the Ministry of Health, PAHO, the Nicaraguan Pediatric Society, and the Nicaraguan Medical Association. ($ 91.00)

3) Meeting to evaluate the process and results from the surveillance activities executed to reach a level of 95% for measles coverage, and to identify any problems or obstacles encountered during the development and execution of the 1st National Immunization Day.($ 1,003.00)

4) Meeting with EPI staff to discuss and evaluate the strategies to use after the 1st National Immunization Day. ($ 692.00)

5) Meeting to discuss the results of the evaluation of the measles surveillance system. ($ 387.00)

6) Support the participation of: a) the National EPI director in the Central American Immunization Conference, in Guatemala. ($ 375.00); b) a technician from the National Laboratory in a meeting on measles diagnosis, in Panama.($ 829.00).

i. Cold Chain

During this reporting period, the following cold chain activities were continued:

1) Supervision and maintenance of the National Biologics Bank (Banco Nacional de Biológicos), and the cold chain of the SILAIS. ($13,358.00)

2) Purchase of tools, supplies and materials for the maintenance of cold chain equipment and cold rooms. ($8,778.00)

3) Purchase of 1,500 thermos, 6,048 cold packs and 100 boxes of RCW-12. ($89,302.00)

j. Operational Costs

Buy-in funds continue to support the contracts of national professionals who support the national EPI program, as well as general operating expenses including office supplies, postage, freight, customs clearance charges, EPI vehicle fuel and maintenance, and repairs and maintenance of office equipment.

DOMINICAN REPUBLIC

a. Biologics/Logistics

No activities reported

b. Training

There were no training activity reported during this quarter.

c. Social communication

Reproduction of 70 documents for distribution to regional and area directors. Also there were 2,000 copies of the EPI bulletin printed and distributed.

d. Supervision/Epidemiological Surveillance

The following epidemiological surveillance activities were financed with buy-in funds during this reporting period: shipment of AFP and Rash and Fever samples to CAREC; support the collection, analysis and tabulation of hepatitis B vaccination data by region, from 1993 - 1996; continued support to the weekly negative notification, and payment of perdiem to technicians who supervised the mop-up activities.

e. Research

No activities reported

f. Meetings

During this quarter, BUY IN funds were used to finance one meeting with 114 participants from the different health areas, to discuss and evaluate the activities relating to the measles elimination plan.

g. Cold Chain

The following program activities were financed with BUY IN funds during this reporting period:

1) Cleaning and maintenance of the Central Level cold rooms.

2) Support in the packaging, transportation and distribution of vaccines and. biologicals by municipality.

3) Purchase of 200 thermometers and 2000 ice packs.

h. Operational Costs

During this reporting period, there were a total of $66.14 of operational costs which paid for the shipping of samples to the regional reference laboratory.

VII. ANNEXES

I - Report of the Measles Surveillance meeting of the Southern Cone countries.

II - Annual National Surveillance Meeting of the Ministry of Health in Jamaica. (Trip report).

III - Report of the CDC/PAHO/WHO meeting on Advances in Measles Elimination

IV - EPI Newsletter, Volume XVIII, Number 3, June 1996.

V - Indicators for evaluating polio surveillance in Latin America.

VI - Weekly measles bulletin (week ending 27 July, 1996).

ANNEX I

Final Report on the Measles Surveillance meeting of the Southern Cone countries

ANNEX II

Annual National Surveillance Meeting of the Jamaica Ministry of Health
(Trip report)

PAN AMERICAN HEALTH ORGANIZATION
TRAVEL REPORT

Summary Sheet

Date/Fecha: June 14, 1996

Name/Nombre	**Division-Unit/División-Unidad**	**Clearance/Visto Bueno:**
Bradley S. Hersh	SVI/EPI	D-SVI

Itinerary/Itinerario Date/Fecha	**Place/Lugar**	**Distribution/Distribución**
5-7 June 1996	Jamaica	SVI PWR-JAM

Objectives/Objetivos

1. To make presentation on measles surveillance and status of measles elimination in the Americas during annual National Surveillance Meeting of the Jamaica Ministry of Health.

2. To discuss status of measles surveillance and measles elimination in Jamaica with MOH personnel

Summary/Resumen

Jamaica recently conducted a "follow-up" measles vaccination campaign among children 1-10 years of age using M-M-R vaccine. National vaccination coverage was 85%. 11 out of 13 Parishes had coverage of at least 80%. Relatively low coverage levels were obtained in Clarendon (70%) and in St. Catherine (74%). Mop-up campaigns are being conducted in areas with low coverage.

In 1995, a total of 133 suspected measles cases were reported. Blood specimens were collected from 118 cases; all were negative for measles. Of the discarded cases, the most common diagnoses were dengue and rubella. There were 15 clinically confirmed cases during the year.

To date in 1996, only 3 suspected measles cases have been reported. Laboratory investigation is pending for these cases.

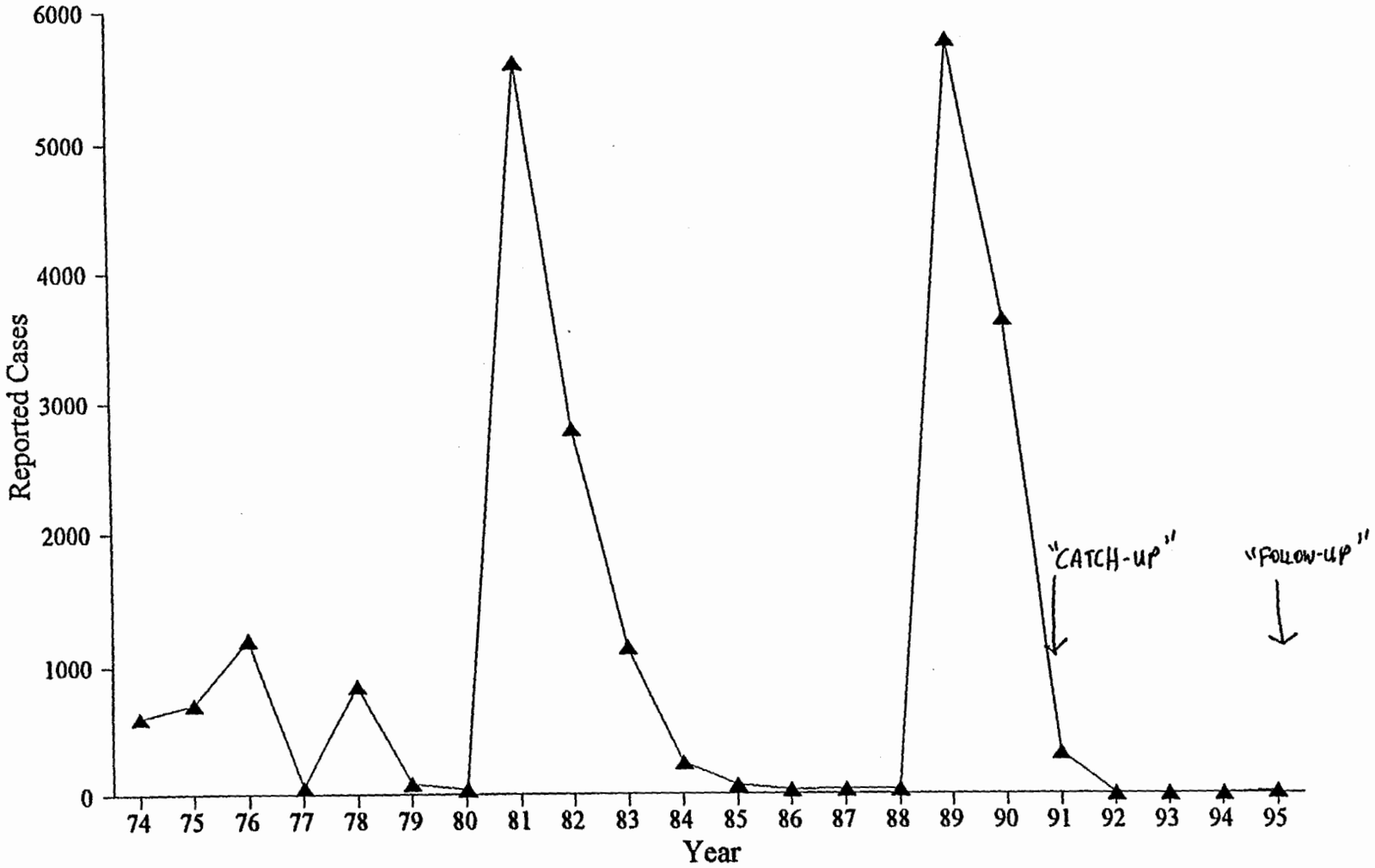
Major Recommendations-Actions to be Taken/Principales Recomendaciones-Acciones Necesarias

1. The low number of suspected measles cases reported in 1996 is somewhat concerning. A possible explanation is that the dengue and rubella outbreaks have ended. Nonetheless, increased efforts are to encourage health care workers throughout the island to report suspected measles cases.

2. Consideration should be given to testing blood specimens from suspected measles cases in a laboratory in Jamaica. The rapid return of laboratory results might stimulate health care workers to report suspected measles cases. PAHO would be able to provide training and reagents to conduct indirect IgM testing. Dr. Figueroa mentioned that the public health laboratory in Kingston is able to perform EIA-HIV testing and he felt that they would be able to easily perform measles testing as well. Dr. Figueroa will contact the lab to see if they will agree to do this testing. Positive specimens by the indirect test will need to be confirmed at the CAREC lab.

cc:

Reported Measles Cases
Jamaica, 1974-95



Measles Mass Immunization Campaign Summary

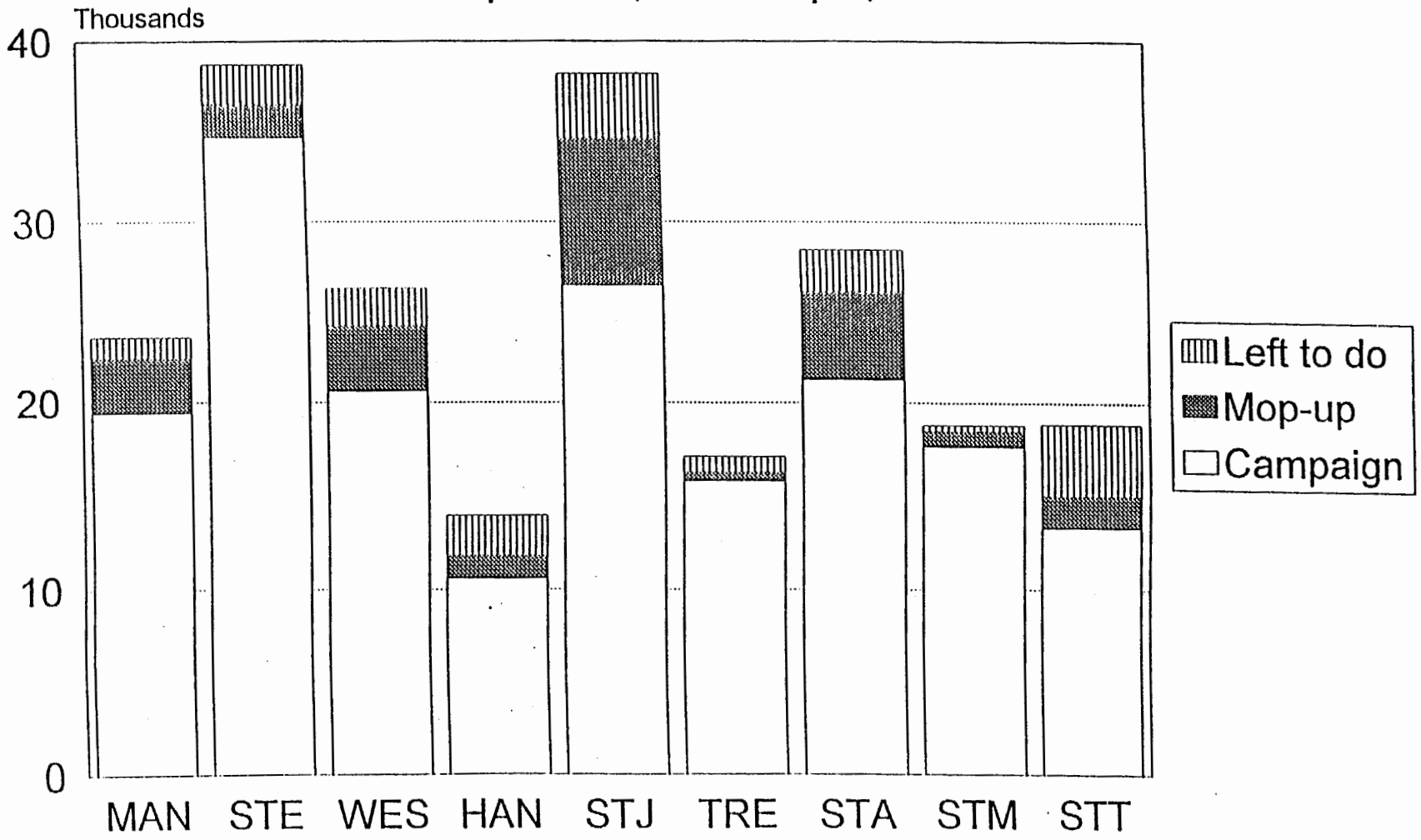
Jamaica, 1995-1996

Parish	Target (1-10 years)	Immunized		Coverage	
		by 31\12\95	by 1\4\96	by 31\12\95	by 1\4\96
KSA	122207	N\A	103847	N\A	84.98
St. Catherine	76938	20669	56958	26.86	74.03
Clarendon	60818	36833	42829	60.56	70.42
Manchester	23589	19440	22442	82.41	95.14
St. Elizabeth	38736	34530	36562	89.14	94.39
Westmoreland	26376	20642	24269	78.26	92.01
Hanover	13900	10608	11810	76.32	84.96
St. James	38249	26561	34515	69.44	90.24
Trelawny	17056	15772	16241	92.47	95.22
St. Ann	28529	21301	26230	74.66	91.94
St. Mary	18759	17625	18433	93.95	98.26
Portland	15736	9203	14091	58.48	89.55
St. Thomas	18830	13282	14996	70.53	79.64
Total	499723	246466	423223	49.32	84.69

02-May-96

Measles Mass Campaign Mopping-up Activities in Jamaica

September, 1995-- April, 1996



Source: Miinistry of Health

Measles Campaign Coverage

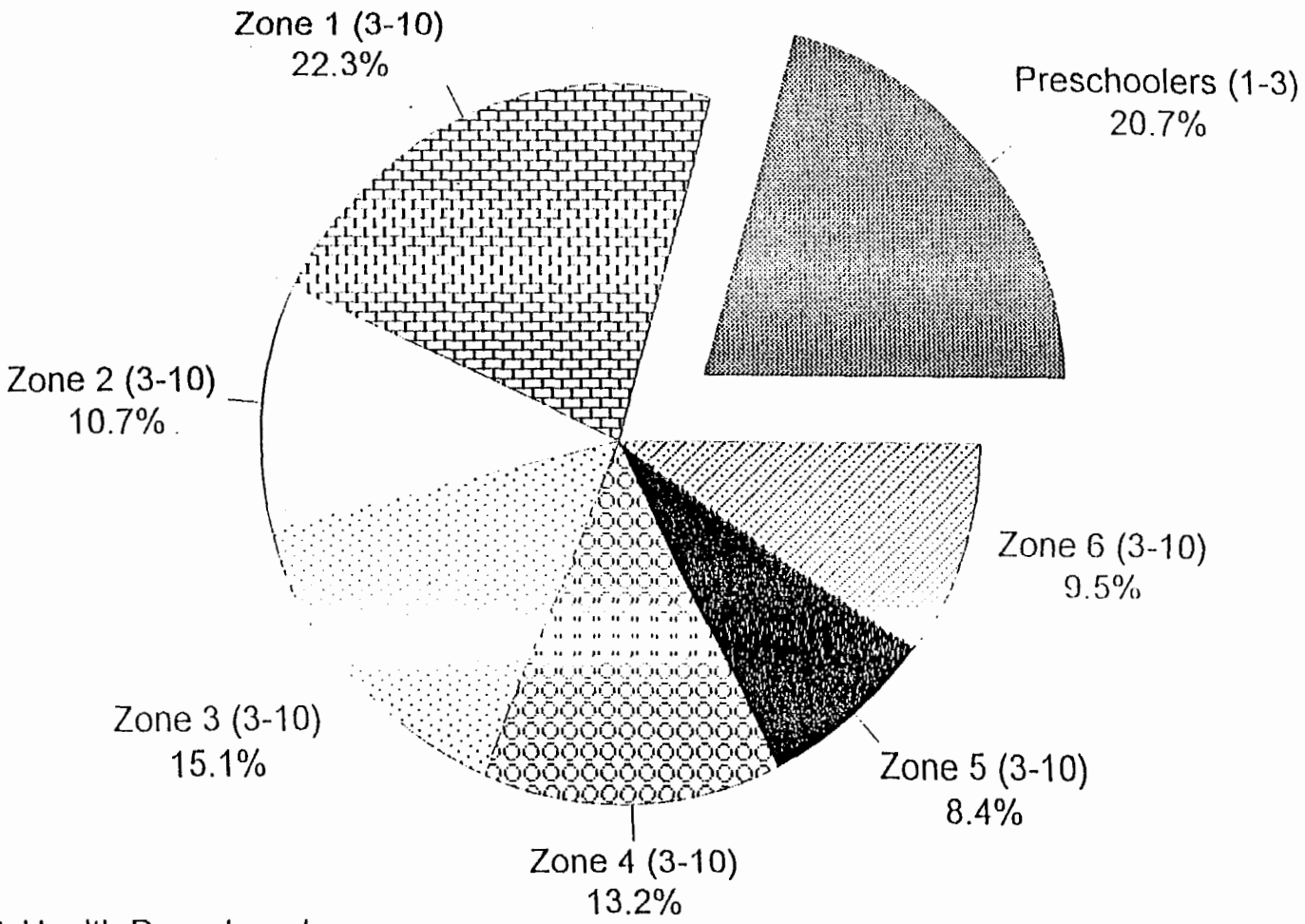
Kingston/ St. Andrew
April 1, 1996

	Target population	Immunized	Coverage
Age 3 to 10	96635	77824	80.5%
Age 2 to 3	21794	21545	98.9%
Age 1 to 2 *	3778	4478	118.5%
Total	122207	103847	85%

* Estimated target population for the 1st quarter

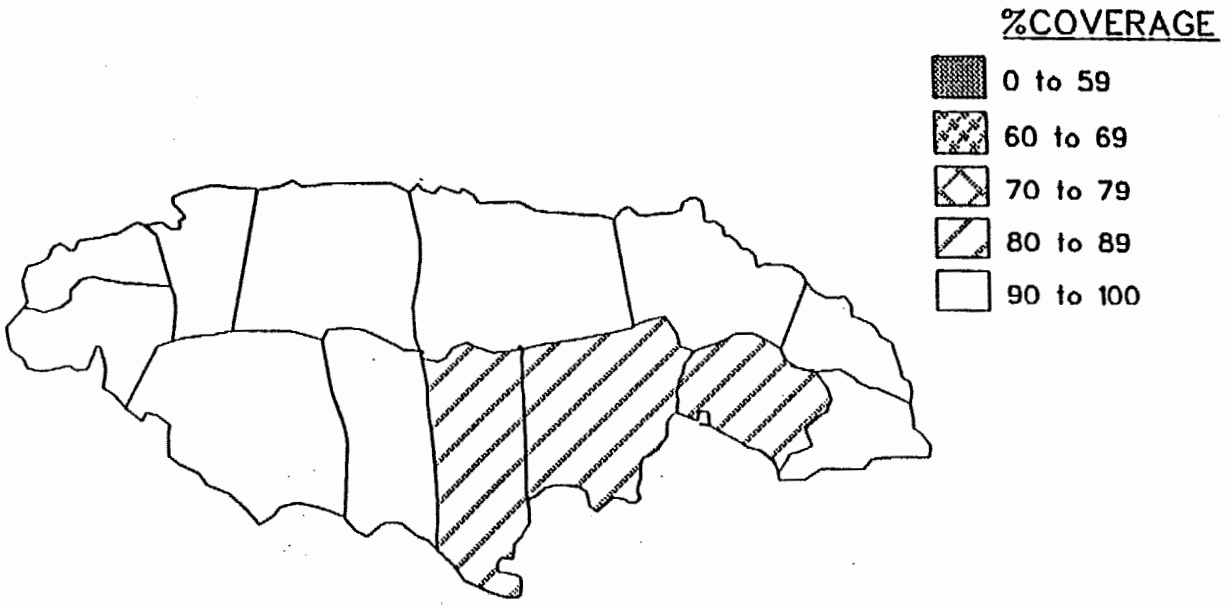
Proportional Distribution of Target Population in Kingston/St. Andrew

Measles Immunization Campaign



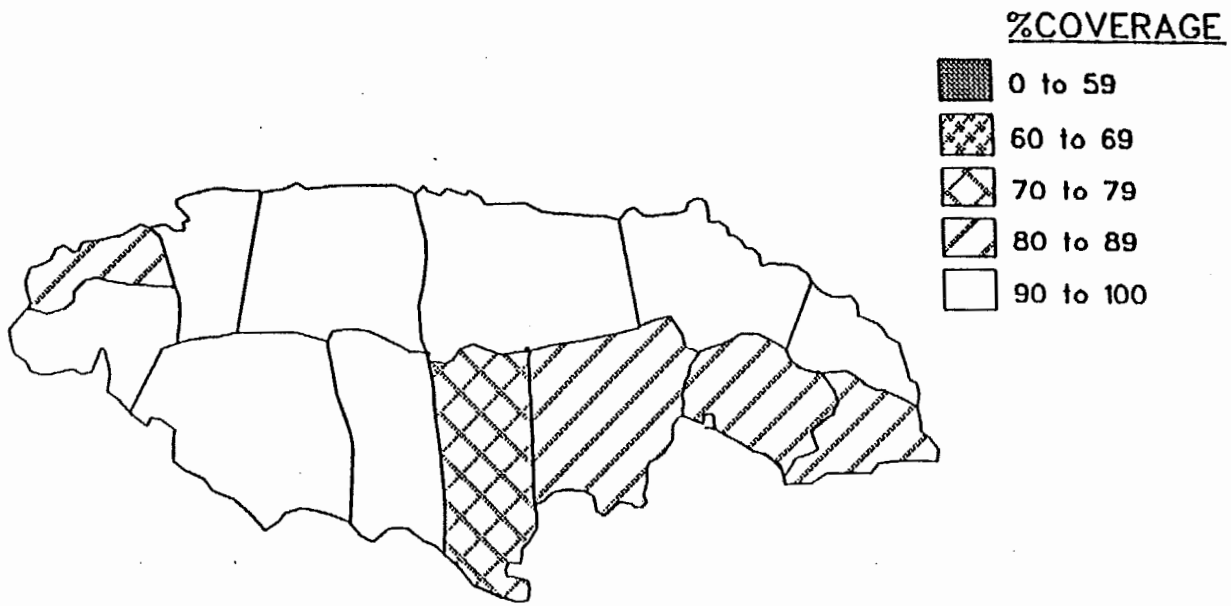
Source: KSA Health Department

MEASLES MASS CAMPAIGN PROJECTION
BY 1 JULY, 1996



MEASLES MASS CAMPAIGN COVERAGE

1 APRIL, 1996



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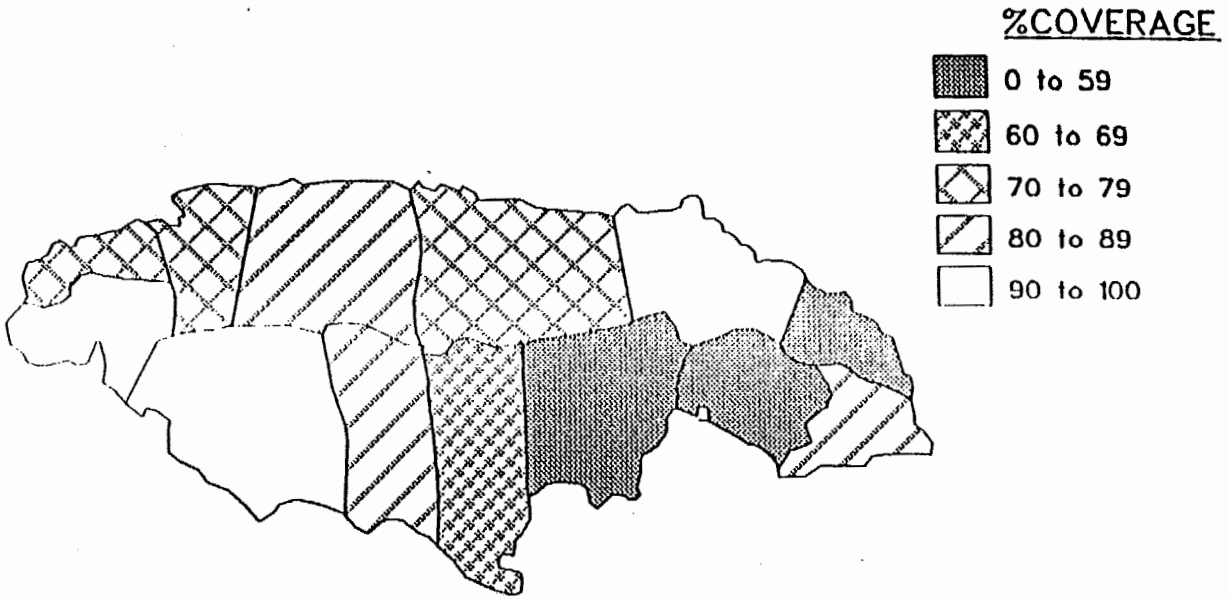
MEASLES MASS CAMPAIGN COVERAGE

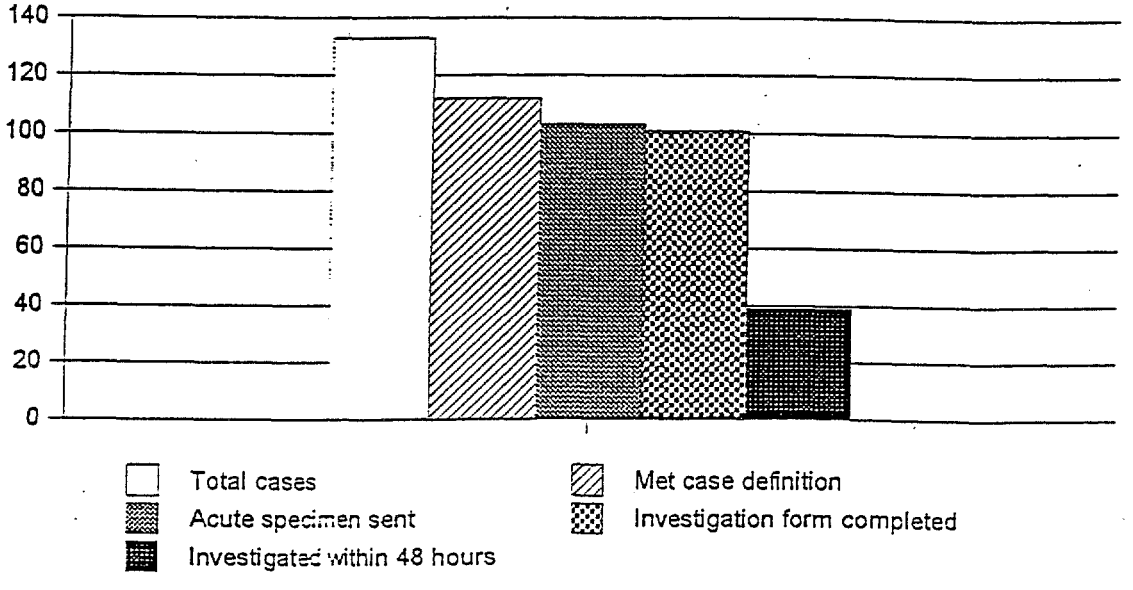
1 JANUARY, 1996



MEASLES SURVEILLANCE INDICATORS

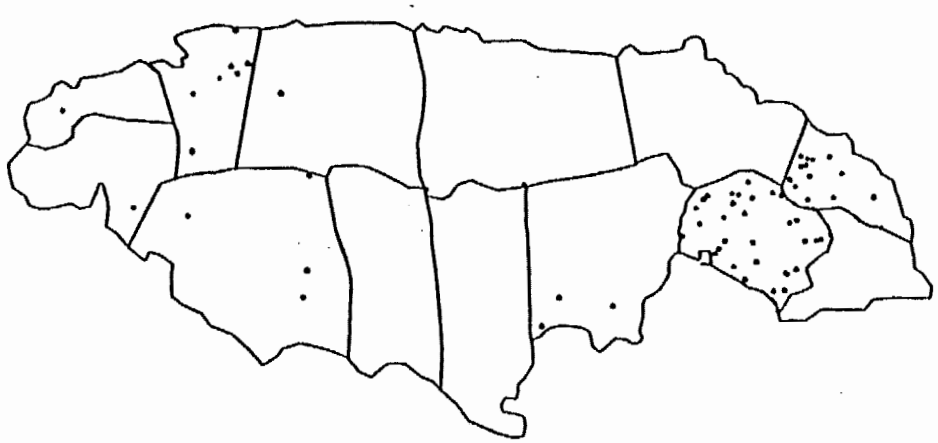
Jamaica, 1995

• total suspected measles cases	133
• % that met the case definition	84
• % with completed case investigation form	76
• % investigated within 48 hours after the report	29
• % of cases with acute specimen taken	77



RUBELLA CASES REPORTED IN 1995
JAMAICA

1 dot = 1 case



ANNEX III

Report on the CDC/PAHO/WHO meeting on Advances in Measles Elimination

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Centers for Disease Control
and Prevention (CDC)
Atlanta GA 30333

August 19, 1996

Dear Colleague:

Thank you for your participation in the meeting on measles elimination and eradication held in Atlanta on July 9-10. The enclosed final draft of the recommendations and conclusions of the meeting affirm the feasibility and urgency of global measles eradication. We believe that this document accurately summarizes the presentations and discussions that occurred during the meeting. If you have additional comments, please send them to us.

As we discussed at the meeting, these conclusions and recommendations will be published in the Weekly Epidemiological Record, the PAHO EPI Weekly Bulletin, and the Morbidity and Mortality Weekly Report (MMWR). We will also be preparing a more comprehensive document that will contain summaries of the presentations as well as the conclusions and recommendations. We thank the speakers for promptly sending us these summaries that will form the basis for this document.

Many people participated in the planning and execution of the meeting. We would particularly like to thank Don Hopkins for serving as moderator and Alan Hinman for serving as rapporteur and preparing the conclusions and recommendations. This is an exciting time for measles prevention. In the future, I believe that we will look back on this meeting as an important step in declaring measles eradication as technically feasible, in delineating the critical strategies, and in enhancing the process to obtain the political will that will be necessary for eradication.

Sincerely,

For Roger H. Bernier

Walter A. Orenstein, M.D.
Assistant Surgeon General
Director
National Immunization Program

Stephen C. Redd, M.D.
Chief, Measles Elimination and
Varicella/Mumps/Rubella Activity
Child Vaccine Preventable
Diseases Branch
Epidemiology and Surveillance
Division
National Immunization Program

Enclosure

CDC 50

CDC/PAHO/WHO MEETING ON ADVANCES IN MEASLES ELIMINATION
July 9-10, 1996

CONCLUSIONS AND RECOMMENDATIONS

Remarkable progress has been made in measles control/elimination in the past 3-5 years. In particular, it appears that measles transmission has been interrupted in major portions of the Americas (including the United States) and a goal of Regional Elimination by the year 2000 has been set by the Pan American Sanitary Conference. Progress toward elimination in the United Kingdom and the Nordic countries has also been dramatic. Mass campaign approaches similar to those in the Americas have been carried out or are being considered by several countries in Africa and Asia. In consequence, a meeting was held to discuss advances in measles elimination. Participants were asked to consider five questions:

1. Is global measles eradication a feasible long term goal of measles control activities?
2. Is measles eradication possible with current vaccines?
3. What are the vaccination strategies for measles eradication?
4. How should surveillance for measles be carried out?
   - A. Case definition
   - B. Laboratory confirmation
   - C. Virus surveillance
   - D. Active surveillance
   - E. Surveillance evaluation
   - F. International importations
5. What role does outbreak response have as a part of a measles eradication strategy?

Eradication was defined as the interruption of transmission globally. Vaccination would not need to be continued following eradication. Elimination refers to interruption of transmission in a sizable geographic area but, because of the continued threat of re-introduction of the virus, vaccination would need to be continued. Global eradication basically represents the sum of successful elimination efforts in all countries. Elimination has apparently been achieved already in some areas for limited periods of time.

Several formal presentations were made and are summarized in the body of this report. In addition, there was free discussion among participants. The general conclusions and recommendations of the participants follow, generally following the order of the questions posed above. In addition, participants considered the knowledge gaps and obstacles to success in each area discussed. There was broad agreement among participants on the following points.

1. Global measles eradication is technically feasible. National, sub-regional, and regional elimination of measles can and should be accomplished.

2. A goal of global measles eradication should be established, with a target date within the next 10-15 years (e.g., between 2005 and 2010). Measles eradication is a logical add-on and follow-up to the current polio eradication initiative but needs to build on the success of polio eradication. Consequently, it should not be rushed into immediately in all parts of the world, but await maturation of the polio eradication program and carried out as countries and regions become polio free. Because of the rapid accumulation of susceptibles to measles, the implementation phase of an eradication effort should be compressed into as brief a time as possible.

   Favoring an initiative to eradicate measles within the next 10-15 years are: 1) the expected success of polio eradication by 2000, 2) the success to date of measles elimination in the Americas and United Kingdom, 3) the urgency of measles eradication because of expected epidemiologic changes resulting from routine measles vaccination (i.e., the accumulation of a growing population of susceptible adults), 4) the predictable benefit: cost ratio to developed countries, and 5) the recognition of measles as a major public health problem in many developing countries, which should help engender political and financial support for measles eradication there. It was also noted that, with external assistance from CDC and USAID, 20 countries in West and Central Africa eradicated smallpox 25 years ago <u>before</u> any other endemic regions of the world.

3. Existing vaccines and strategies are sufficient to eradicate measles. Nonetheless, alternative methods of delivery, particularly jet injectors, and alternative preparations of the vaccine should continue to be explored. The most pressing research need is a rapid field diagnostic test. Other topics of research interest include continued studies to better understand measles virus.

4. Major obstacles to measles eradication are perceptual, political, and financial. In many countries, the true nature of measles is not understood and it is perceived as a minor illness of little consequence. This is particularly true in many developed countries. There is need to educate parents, medical practitioners, and public health professionals in such countries. This perception may make it difficult to develop the political will necessary to carry out a successful global eradication effort. On the other hand, measles is widely recognized to be a major killer in many developing countries, where support for its eradication can be expected to be very strong. Although it may seem costly in the short run, measles eradication will quickly pay for itself in vaccinations and hospitalizations forgone and deaths prevented. Documenting the health burden

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of measles in more countries, especially in the developed world, will be important in gaining support for global eradication.

5. Measles eradication requires something more than a routine one-dose vaccination strategy. In countries with highly developed immunization programs capable of reaching extremely high coverage on a routine basis, it appears that an ongoing two-dose "plus" strategy can eventually successfully achieve national elimination of measles. It is essential to reach all children with measles vaccine and the "second dose" should provide an opportunity to reach those who missed the first dose; such children should be vaccinated and receive a second dose subsequently. Evidence indicates that a second dose of measles vaccine gives very high rates of seroconversion (>90%) in those who did not respond to a first dose. However, no single two-dose approach is optimal for all countries. Great success has been attained in many countries, particularly in the Americas, with "catch-up" mass campaigns vaccinating all persons 1-14 years old regardless of prior vaccination status followed by routine vaccination of children at 12-15 months of age ("keep-up"), supplemented by periodic "follow-up" campaigns vaccinating all children 1-4 years old as susceptibles will accumulate among one-dose vaccine failures and unvaccinated children. Countries switching to an elimination strategy will need to implement some form of "catch-up" rather than just adding a second dose to the routine immunization schedule. Regardless of the strategy selected, monitoring the accumulation of susceptibles is essential to permit appropriate action, either in the form of "follow-up" campaigns or special vaccination activities in those areas at higher risk to accumulate susceptible children.

   In countries currently using rubella vaccine or considering initiating a rubella control program, consideration should be given to using combined measles-rubella (or measles-mumps-rubella) vaccines in order to take advantage of the catch-up campaigns.

6. Measles case surveillance is a critical component of an elimination/eradication strategy and needs to be implemented at an early stage of the program. The most important functions of surveillance are to assess the adequacy of measles program strategies, implementation, and effectiveness and to detect circulation of measles virus in a population, not to find every case of measles infection (except in the end stages of elimination). It was generally felt preferable to base notification on clinician suspicion rather than attempting to implement rigid case definitions for notification purposes. Such case definitions are important, however, in investigating suspected cases and classifying cases following investigation.

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7. Laboratory confirmation will play an increasingly important role as measles incidence declines. Efforts should be made to confirm all sporadic cases and at least one case from each chain of transmission. The availability of a rapid field diagnostic test will be of great help. In addition to serum or saliva specimens for laboratory confirmation, specimen collection for virus isolation should be done in conjunction with case investigation as the greatest yield occurs when specimens are obtained within 7 days of rash onset. Specimens can include urine as well as nasopharyngeal swabs or blood. As countries progress toward elimination, it becomes increasingly important to isolate measles virus from every chain of transmission. Establishment of a functioning global network of laboratories will be a critical element in achieving global eradication.

8. In addition to confirmation of cases, the laboratory plays a vital role in characterizing measles virus isolates to determine whether cases represent sustained indigenous transmission or importations. This will become increasingly important as countries interrupt transmission of indigenous strains. For example, it appears that all measles viruses isolated in the U.S. in the past 2 years share characteristics with virus strains from other countries, not with the strains that had been circulating in the U.S. in 1989-1992. Although 7 different groups of virus strains have been identified, evidence indicates that current vaccines are effective against all strains.

9. The laboratory plays a key role in another type of surveillance - surveillance of immunity. Although monitoring immunization coverage is important in indicating the likely levels of immunity in a community (and coverage should be monitored at the district level), the occurrence of vaccine failures means that serological measures may be useful in confirming the level of protection in an area.

10. Among health care providers who are appropriately sensitized, a passive system of surveillance for measles is adequate. There may be settings, however, where active surveillance assumes a more important role (e.g., in some urban settings where there are dense populations of unvaccinated children, in areas that have a low rate of notification or where a confirmed case has been identified, or in areas where clusters of suspected cases have occurred).

11. Surveillance indicators are a useful means of evaluating surveillance programs but must be limited in number to be optimally effective. No external standard for determining the completeness of measles surveillance exists comparable to the rate of acute flaccid paralysis (AFP) for polio. Experience in using indicators is limited and the indicators proposed may need to be modified based on accumulating experience.

12. As more countries achieve interruption of transmission, importations of measles will become more prominent. Many persons who develop measles may have traveled outside their home country during some part of their presumed exposure period or may have traveled to countries where measles virus is not thought to be circulating. Ascribing the source of imported cases may be difficult and it may be useful to consider the following classification scheme for confirmed measles cases: indigenous; source unknown; imported (source known); and imported (source unknown). Collaboration between countries can be facilitated by WHO offices in attempting to establish the source of cases. In general, importations into the U.S. have not resulted in re-establishment of transmission but have died out within a few generations of cases.

13. Prevention of outbreaks is much more effective than trying to contain them. Attempting to terminate measles transmission in response to outbreaks has a limited role in most countries, because such efforts are costly, disruptive, and, by the time such measures are instituted, they may be ineffective. However, outbreaks may be used as opportunities to reinforce surveillance, assess the health burden of continuing measles transmission, and determining the cause of the outbreak so that appropriate prevention measures can be taken. Careful investigation of outbreaks can generate the data needed to obtain the political will for elimination.

14. Asymptomatic and non-classical cases of measles may occur in vaccinated persons but do not play a significant role in transmission and will not impede elimination/eradication.

15. Although non-human primates can be infected with measles virus, it is very unlikely that non-human reservoirs could play a significant role in sustaining measles transmission.

16. Waning immunity does not appear to play a major role in vaccine failure.

Overall, participants were encouraged by the recent progress in interruption of measles transmission in the Americas and elsewhere and enthusiastic about the prospects of global measles eradication. It is certainly a worthy goal - nearly 1 million children still die each year as a result of measles infection and countless others have permanent sequelae of their infection. Planning should begin now for a resolution for the 1999 or 2000 World Health Assembly to eradicate measles by the year 2010. Other interim steps to build political will and popular support also need to be planned and implemented.

ANNEX IV

EPI Newsletter, Volume XVIII, Number 3, June 1996

EPI Newsletter

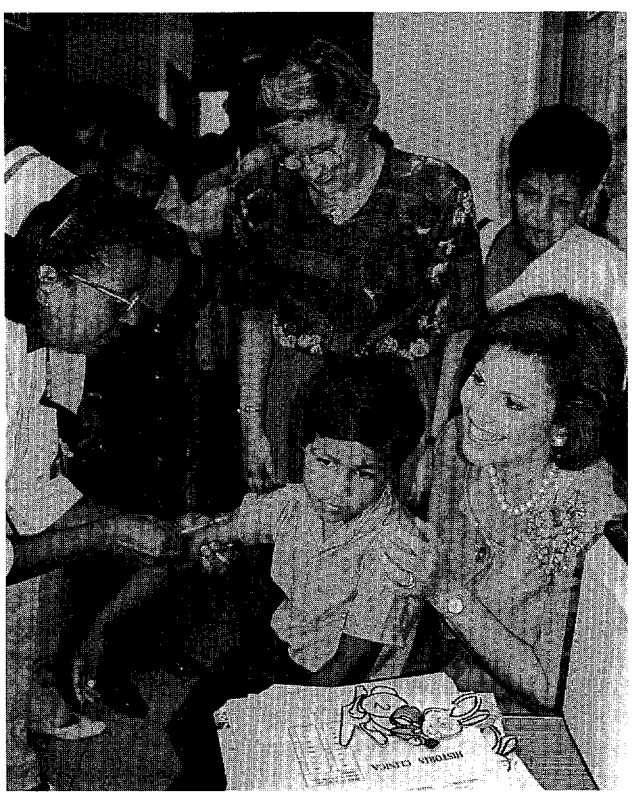
Expanded Program on Immunization in the Americas

Volume XVIII, Number 3 | IMMUNIZE AND PROTECT YOUR CHILDREN | June 1996

USA Supports Measles Elimination

The United States of America, through its Agency for International Development (USAID), has approved a US$ 8 million grant in support of the Pan American Health Organization's (PAHO) goal to eliminate measles in the Americas by the year 2000. Over a period of five years (1996-2001), the USAID grant will complement Regional efforts towards achieving measles elimination. The USA support was first pledged by the First Lady, Mrs. Hillary Rodham Clinton, during her visit to PAHO on the occasion of World Health Day 1995.

USAID played a key role in the successful completion of the poliomyelitis eradication initiative in 1994, contributing approximately 60% of the external costs associated with the hemispheric campaign against polio. With the announcement of this new grant agreement, the United States is reaffirming its commitment to immunization, which is recognized as an effective public health strategy to safeguard the well-being of children in the Americas.



The First Lady of Panama, Mrs. Dora Boyd de Perez Balladares and the Health Minister, Dr. Aida de Rivera, inaugurate the "follow-up" measles campaign carried out in Panama.

"Follow-up" Measles Campaigns

In 1995, record low levels of measles cases were reported from nearly every country of the Region. However, as long as measles virus circulates in the rest of the world, the risk of importation remains.

A major obstacle to measles elimination is the accumulation of susceptible preschool-aged children. As the proportion of susceptibles expands, the risk of a measles outbreak increases, should measles virus be re-introduced. To prevent this, periodic "follow-up" measles campaigns are being conducted throughout the Region, focusing on all children aged 1 through 4, regardless of previous vaccination or disease history.

PAHO recommends "follow-ups" whenever the number of susceptible preschool children has approached the size of an average birth cohort. The interval between these campaigns and the specific age group targeted will depend on the vaccination coverage obtained through routine services since the last campaign.

Cuba conducted its "follow-up" campaign in 1993; Belize, Brazil, Colombia and Jamaica in 1995; and Chile and the countries of Central America conducted campaigns during April 1996 (Table 1). To date, these campaigns have reached approximately 19 million children. "Follow-up" campaigns are planned for the remaining countries of the English-speaking Caribbean later in 1996.

In this issue:

USA Supports Measles Elimination 1
Measles in the United States, 1995 2
Measles Surveillance: El Salvador 4
Polio Eradication in Our Grasp 5
Canada "Catches-up" with Measles 6
Reported Cases of Selected Diseases 7
Streptococcus pneumoniae Vaccine Development 8

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Table 1
Measles vaccination coverage achieved through "catch-up" and "follow-up" campaigns in the Americas, 1987-1996.

Country	CATCH-UP CAMPAIGNS			FOLLOW-UP CAMPAIGNS				
	Year	Target age group	Coverage	Year	Target age group	Children vaccinated	Target population	Coverage
Cuba	1987	1-14 years	98%	1993	2-6 years	888,000	898,000	99%
Belize	1991	1-14 years	82%	1995	1-4 years	25,000	34,000	74%
Jamaica	1991	1-14 years	71%	1995	1-10 years	423,223	499,723	85%
Brazil	1992	1-14 years	96%	1995	1-3 years	6,461,899	8,357,172	77%
Chile	1992	1-14 years	99%	1996	1-14 years	4,060,759	4,022,026	100%
Peru	1992	1-14 years	75%	1995	1-4 years	2,386,027	2,465,277	97%
Colombia	1993	1-14 years	96%	1995	1-3 years	2,046,619	2,286,218	90%
El Salvador	1993	1-14 years	96%	1996	1-4 years	437,500	535,000	82%
Guatemala	1993	1-14 years	85%	1996	1-4 years	899,110	1,500,000	60%
Honduras	1993	1-14 years	96%	1996	1-4 years	585,585	691,506	85%
Nicaragua	1993	1-14 years	94%	1996	1-4 years	513,385	529,306	97%
Panama	1993	1-14 years	88%	1996	1-4 years	229,641	243,877	94%

Source: PAHO/WHO and country reports

Measles in the United States, 1995

As of March 20, 1996, local and state health departments had reported a provisional total of 301 confirmed measles cases to the Centers for Disease Control and Prevention (CDC) for 1995. This represents the lowest number of cases ever reported in 1 year since measles first became notifiable in 1912 and a 69% decrease from the 963 cases reported for 1994. This report summarizes the epidemiologic characteristics of measles cases reported in the United States in 1995, and documents important epidemiologic trends, including a shift in age distribution and the continued occurrence of international importations.

Age. Of the 285 measles patients for whom age was known, 109 (38%) were aged <5 years, including 39 (36%) aged <12 months and 34 (31%) aged 12-15 months. A total of 64 (22%) measles patients were aged 5-19 years, and 112 (39%) were aged ≥20 years. Of the 33 measles patients with internationally imported cases, eight (24%) were aged <5 years, 14 (42%) aged 5-19 years, and 11 (33%) aged ≥20 years.

Vaccination status. Vaccination status was reported for 219 (73%) measles patients. Among the 96 (44%) who were not vaccinated, 56 (58%) were eligible to be vaccinated (i.e., aged >12 months and born after 1956). Vaccination status varied by age group: 29 (55%) patients aged 1-4 years were unvaccinated, compared with 12 (26%) aged 5-19 years and 28 (32%) aged ≥20 years. Of 62 measles patients for whom data were available about dates of vaccination, 55 (89%) had received at least one dose of measles-containing vaccine (MCV) on or after their first birthday and ≥14 days before onset of symptoms; seven (11%) were considered to be unvaccinated or inadequately vaccinated; three (5%) received their first dose of measles-containing vaccine (MCV) <14 days before onset of symptoms; and four (6%) had received one dose of MCV before their first birthday. Five (8%) cases were reported among persons who had received two doses of MCV after their first birthday.

Case classification. Among the 301 reported cases, 268 (89%) were indigenous to the United States, including 259 cases (86%) acquired in the state reporting the case and nine (3%) resulting from the spread from another state. International importations accounted for 33 cases (11%), and an additional 11 cases were epidemiologically linked to imported cases of measles. Importations originated from or occurred among persons who had travelled in Germany (10), Canada (three), Italy (three), Pakistan (three), China (two), France (two), Malaysia (two), Austria (one), Belgium (one), Costa Rica (one), Egypt (one), Japan (one) and the Philippines (one). For two of the imported cases, the exact source was unknown because the patient had travelled in more than one country outside the United States during the exposure period.

Outbreaks. Nineteen outbreaks (i.e., clusters of three or more epidemiologically linked cases) were reported by 12 states in 1995 and accounted for 74% of all reported cases. Five of these outbreaks began in late 1994. The number of cases involved in outbreaks ranged from three

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to 73 (median: seven cases). The largest outbreak (73 cases) occurred in a community in Ventura County, California, and primarily involved adults. Two outbreaks (25 cases in New Mexico and 17 cases in Louisiana) occurred primarily among unvaccinated children in day-care settings, and a fourth outbreak (13 cases) occurred among students in a college in Washington. The outbreak that occurred latest in the year primarily involved adult members (nine cases in 1995, 18 in 1996) of a group in Minnesota that declines vaccination because of religious reasons.

CDC performed genomic sequencing of measles viruses isolated from five different outbreaks in 1995. None of the sequences were related to genotypes of viruses circulating during the measles resurgence in the United States during 1989-1991. The isolates from 1995 are genotypically similar to viruses recently isolated in Europe and Japan.

Reported by: State and local health departments. Measles Virus Section, Respiratory and Enteric Viruses Branch, Division of Viral and Rickettsial Diseases, National Center for Infectious Diseases; National Immunization Program, CDC.

Source: MMWR, Vol.45, No.15; April 19, 1996.

Editorial Note: Similar to the rest of the Western Hemisphere, in 1995 the United States has provisionally reported a record low number of measles cases since surveillance was instituted in 1912. The 301 confirmed cases represent a 98.9% reduction compared to those reported in 1990.

An increased percentage of measles cases were reported among persons ≥ 20 years of age. This change in the epidemiology of measles is due to major advances achieved recently in the United States in raising and maintaining high levels of measles immunity among preschool and school-aged children.

Nearly 15% of these cases were reported to have acquired measles infection in another country or were cases linked to an international importation. Of the 33 international importations, only 4 (12%) were reported to have acquired measles from another country within the Americas. In comparison, during 1990 over 200 measles cases were imported to the United States from Latin America. Most had originated in Mexico, and these represented over 80% of the total imported measles cases to the United States. Since then, the number and proportion of importations from Latin America and the Caribbean has decreased markedly.

Of the four documented international importations from the Americas during 1995, three were from Canada and one was from Costa Rica. Canada experienced a large measles outbreak during 1995, and given the high level of communication between the two countries, it is not surprising that some "spillover" occurred. The case reported as imported from Costa Rica, however, deserves further discussion. This case occurred in a 54 year-old American citizen who developed a febrile rash illness four days after returning to the United States following a three-week stay in Costa Rica. The patient was examined by a physician and met the clinical case definition. Blood samples drawn on the day of rash onset and three weeks later were positive for measles IgM antibodies by indirect EIA in two different laboratories. No confirmation by the "gold standard" IgM Capture test was performed.

The Pan American Health Organization questions the classification of this case as confirmed for the following reasons: first, the laboratory results were not validated by the IgM Capture test; indirect IgM tests may produce false positive results, especially in settings where measles incidence is low. For this reason, PAHO requires an IgM Capture assay for a case to be classified "laboratory confirmed." Second, despite adequate surveillance, there was no documentation of measles virus circulation in Costa Rica during 1995. An active search following the notification of this case failed to detect any measles transmission in the country. Finally, the patient's age makes the measles diagnosis less likely. The overwhelming majority of persons born before 1957 in the United States are immune to measles.

The criteria used by countries to classify measles cases as being indigenous or imported need to be well-defined and standardized. Some currently used criteria were developed at a time when measles virus was circulating freely in most countries in the Western Hemisphere. If a person were to develop measles after travelling to virtually any country in the world, it could be safely assumed that he or she had acquired the infection in that country.

However, in 1996 the epidemiologic situation is quite different. Measles is now a rare infection in Latin America and the Caribbean. Surveillance evaluations conducted recently in Mexico and in El Salvador did not detect any evidence of sustained measles transmission. Many countries in the Americas have experienced two or more measles-free years. Furthermore, those countries that are reporting confirmed measles cases have only reported sporadic cases which are isolated in terms of time and place. These cases have been labeled "spontaneous" since virtually all lack both a source of infection and documented transmission. A possible explanation for these confirmed cases is that they may be false positive laboratory results.

Measles virus circulation has been greatly reduced, if not eliminated, in most areas of the United States. The challenge now for the United States and other countries of the Region is to maintain the interruption of measles transmission, given the ease with which importations can occur.

In addition to maintaining high levels of population immunity in the Western Hemisphere, increased efforts are needed to improve measles control in other regions of the world. The only way to ensure long-term regional interruption of measles transmission will be through global eradication. The measles elimination experience in the Americas provides strong evidence that given the implementation of an appropriate vaccination strategy throughout the world, measles eradication can indeed be achieved.

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Global immunization coverage with three doses of OPV was estimated at 83%. The African Region, whose coverage rate is significantly below that of other regions, increased coverage above 50% for the first time in 1994, and achieved 58% coverage in 1995. National Immunization Days have helped increase these rates in many countries. In 1995, the number of countries conducting at least one NID rose to 62. Of these, 25 countries held their first NID in 1995. Approximately 300 million children, representing 47% of the world's children under the age of five received OPV during NIDs. During NIDs held in China, India and Pakistan in December 1995, 195 million children were immunized. It is anticipated that by the end of 1996, all polio endemic countries of Europe and Asia, and half the countries in Africa will have conducted at least one NID. The African Region plans to conduct NIDs in all countries by the end of 1997.

In total, 120 countries are now conducting AFP surveillance. Of these, only 35 countries achieved the standard for satisfactory surveillance, which is one case per 100,000 children. The WHO Polio Laboratory Network was expanded to include six Specialized Reference Laboratories, 12 Regional Reference Laboratories and 60 National Laboratories.

In the Region of the Americas, where polio eradication was certified in 1994, with the last case occurring in August of 1991, the challenge is to maintain a polio-free status while poliovirus still circulates in other parts of the world. The surveillance system currently in use in the Americas requires full compliance with the AFP surveillance indicators by all countries of the Region to ensure success. The table below shows how the countries of the Americas are maintaining their surveillance systems and the areas that require additional investments.

Source: WHO, Fact Sheet No. 114, May 1996.

AFP Surveillance Indicators

Country	80% weekly reporting units	80% of cases investigated in 48 hours	80% of cases with 1 adequate stool sample taken	AFP Rate ≥1:100,000 for children < 15 years
Chile				
Ecuador				
El Salvador				
Honduras				
Mexico				
Nicaragua				
Paraguay				
Venezuela				
Colombia				
Costa Rica				
Cuba				
Dominican Republic				
Panama				
Peru				
Bolivia				
Brazil				
Guatemala				
Haiti				
Argentina				
Uruguay				

Meet criteria

* Data as of 11 May, 1996 - Source: EPI/PAHO(PESS)

Canada "Catches-up" with Measles

British Columbia

In British Columbia, on January 25, 1996, the Health Minister officially announced the introduction of a routine two-dose measles and one-time "catch-up" vaccination program to begin in April 1996. Both programs started concurrently. The "catch-up" vaccination campaign was administered by public health nurses and took place in schools and other public locations. The campaign targeted all children between 18 months and those completing secondary school. Measles-rubella (MR) vaccine was used for the "catch-up" campaign.

Prince Edward Island

On February 7, 1996, the Prince Edward Island Ministry of Health announced the introduction of a two-dose measles schedule, starting in March, 1996, with the second measles-mumps-rubella (MMR) [dose] to be given at school entry for those 4-6 years of age. A second dose of monovalent measles vaccine will be offered to all students in grades 1 to 12 in 1996 as part of the "catch-up" program. This "catch-up" program started in March and will be completed this fall.

Ontario

In Ontario, a routine two-dose measles schedule with the second dose of MMR given at school entry and a "catch-up" campaign using monovalent measles vaccine for all school-aged children have been introduced. Although the "catch-up" campaigns were expected to start officially on February 1, 1996, some health units began immunizing a week earlier. As of February 20, over 400,000 children had been immunized. The program ran smoothly, and, as expected, no serious adverse events were documented. The acceptance rate was >95%.

The Yukon

In the first week of January, 1996, the Yukon Territory began implementing a routine two-dose measles schedule, with the second MMR to be given at 18 months. A "catch-up" campaign using monovalent measles vaccine and targeting school-aged children started in March.

Quebec

In some regions in Quebec, the "catch-up" program with monovalent measles vaccine targeted at school-aged children began on February 13, 1996. Province-wide implementation was expected by mid-March. The routine second dose of MMR at 18 months has already been incorporated in the regular immunization schedule. The "catch-up" program for pre-schoolers (those ≥ 18 months) will start at a later date, and will be done only on a progressive basis for completion by December 1996.

The current "catch-up" *programs and the anticipated campaign will immediately protect approximately 75% of Canadian school-aged children.*

Source: Measles Update, Vol. 4, #1, February/March 1996.

Reported Cases of Selected Diseases

Number of reported cases of measles, poliomyelitis, tetanus, diphtheria, and whooping cough, from 1 January 1996 to date of last report, and the same epidemiological period in 1995, by country.

Country/Territory	Date of last report	Measles				Polio		Tetanus				Diphtheria		Whooping Cough	
		Confirmed 1996			Confirmed			Non Neonatal		Neonatal					
		Laboratory	Clinically	Total	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996	1995
Anguilla	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Antigua & Barbuda	11 May	0	0	0	0	0	0	...	0	...	0	...	0	...	0
Argentina	11 May	0	7	7	73	0	0	7	13	0	2	0	2	29	555
Bahamas	11 May	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Barbados	11 May	0	0	0	0	0	0	...	0	...	0	...	0	...	0
Belize	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Bermuda	11 May	0	0	0	0	0	0	...	0	...	0	...	0	...	0
Bolivia	11 May	0	0	0	0	0	0	...	...	0	2	1	1	1	12
Brazil	11 May	0	32	32	20	0	0	13	121	5	13	0	27	79	491
British Virgin Islands	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Canada	11 May	210	...	210	202	0	0	...	1	...	...	...	1	...	2,175
Cayman Islands	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Chile	11 May	0	0	0	0	0	0	4	4	0	0	0	0	245	56
Colombia	11 May	0	6	6	216	0	0	...	...	10	9	...	...	...	...
Costa Rica	11 May	0	0	0	19	0	0	...	...	...	...	...	...	...	...
Cuba	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Dominica	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Dominican Republic	11 May	0	0	0	0	0	0	...	...	0	0	1	0	0	0
Ecuador	11 May	0	19	19	618	0	0	...	...	8	13	1	56	15	73
El Salvador	11 May	0	0	0	0	0	0	4	...	0	...	0	...	1	...
French Guiana	...	...	...	...	...	0	0	...	...	...	...	...	...	...	...
Grenada	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Guadeloupe	4 May	0	1	1	...	0	0	...	...	...	...	...	...	...	...
Guatemala	27 Apr	0	0	0	25	0	0	...	...	...	...	...	...	...	...
Guyana	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Haiti	...	...	...	...	...	0	0	...	...	...	...	...	...	...	...
Honduras	11 May	0	0	0	0	0	0	...	...	...	...	0	0	0	0
Jamaica	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Martinique	...	...	...	...	...	0	0	...	0	...	0	...	0	...	0
Mexico	11 May	0	0	0	15	0	0	49	32	22	15	0	0	0	0
Montserrat	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Netherlands Antilles	...	...	...	...	...	0	0	...	...	...	...	...	...	...	...
Nicaragua	11 May	0	0	0	6	0	0	4	1	0	2	0	0	3	0
Panama	11 May	0	0	0	4	0	0	0	0	0	0	0	0	0	3
Paraguay	11 May	0	4	4	9	0	0	...	...	...	...	...	...	...	...
Peru	11 May	0	0	0	103	0	0	23	68	24	89	4	4	116	873
Puerto Rico	11 May	1	...	1	3	0	0	...	...	...	...	...	...	...	...
Saint Lucia	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
St. Kitts/Nevis	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
St. Vincent	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Suriname	11 May	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trinidad & Tobago	11 May	0	0	0	1	0	0	...	0	0	0	0	0	0	0
Turks & Caicos	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
United States	11 May	108	...	108	152	0	0	...	4	...	...	...	0	...	625
Uruguay	11 May	0	0	0	...	0	0	0	...	0	...	0	...	6	...
Venezuela	11 May	0	6	6	43	0	0	...	...	5	6	0	0	135	102
TOTAL		**319**	**75**	**394**	**1,509**	**0**	**0**	**104**	**244**	**74**	**151**	**7**	**91**	**630**	**4,965**

... Data not available.

Streptococcus pneumoniae Vaccine Development

The first meeting to initiate the collaborative development of a conjugated vaccine against *Streptococcus pneumoniae* among five laboratories of the Americas was held in Cuba in February, 1996. Participating laboratories included the Finlay Institute (Cuba), Butantan Institute (Brazil), Bio-Manguinhos/FIOCRUZ (Brazil), Malbran Institute (Argentina) and the Institute of Hygiene (Uruguay). The initiative is being coordinated by the Regional System for Vaccines (SIREVA), which is part of PAHO's Special Program for Vaccines and Immunization (SVI).

Through this joint collaboration, the five laboratories seek to develop the necessary technologies for the production and purification of *S. pneumoniae* polysaccharides, particularly those of the most prevalent serotypes in the Region. These activities follow the culmination of the first stage, during which a *S. pneumoniae* serotype prevalence study was carried out in six countries (Argentina, Brazil, Chile, Colombia, Mexico and Uruguay), allowing the establishment of the most frequent serotypes that should be included in the vaccine. These are 1, 5, 6A, 6B, 14, 18C, 19A, 19F and 23F, which represent more than 70% of the serotypes responsible for pneumococcal invasive diseases among children less than 5 years of age. During this second phase, PAHO is coordinating the technical cooperation among the five laboratories.

At the Havana meeting, participants stressed the need to form partnerships among vaccine-producing countries to develop vaccines that require complex technologies. High costs are associated with the development of a conjugated vaccine and there are few laboratories in the Region in the position to make the investment required. Furthermore, the great number of antigens needed to formulate a vaccine of wide coverage in the Region requires that laboratories collaborate to potentiate and increase their capacities for research, technological development and vaccine production. The technology developed for the production of this vaccine is analogous to the technology required for the development of other bacterial vaccines, such as those against *H. influenzae* type b and *S. typhi.*

This recent effort is consistent with PAHO/SVI's objective of strengthening the Region's real and potential capacity for the development, quality control, and evaluation of effective immunization agents for use by Member Countries.

During the meeting, the participating laboratories agreed to:

- search for adequate growth conditions (synthetic media without complement of animal protein) considering its industrial applicability
- select an adequate polysaccharide-producing strain (as a minimum 0.05 to 0.1 gram per liter of media)
- prepare a seed lot of each serotype for regional distribution
- develop appropriate methodologies to measure the concentration of polysaccharides and polysaccharide C
- develop methods for purification of polysaccharides, keeping in mind their applicability on an industrial scale

The serotypes of *S. pneumoniae* that will be subjects of a collaborative study during the second phase of the plan of action are 1, 5, 6B, 14, 19F and 23F. Serotypes have been assigned to the five participating laboratories.

Within a year, these laboratories plan to have developed standardized protocols to obtain purified polysaccharides and the respective quality control methodologies. Progress will be evaluated during a meeting scheduled for January, 1997 at the Butantan Institute (Brazil).

The *EPI Newsletter* is published every two months, in Spanish and English by the Special Program for Vaccines and Immunization (SVI) of the Pan American Health Organization (PAHO), Regional Office for the Americas of the World Health Organization (WHO). Its purpose is to facilitate the exchange of ideas and information concerning immunization programs in the Region, in order to promote greater knowledge of the problems faced and their possible solutions.

References to commercial products and the publication of signed articles in this *Newsletter* do not constitute endorsement by PAHO/WHO, nor do they necessarily represent the policy of the Organization.

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ANNEX V
Indicators for polio surveillance in the Americas

AFP Surveillance Indicators*

Country	80% weekly reporting units	80% of cases investigated in 48 hours	80% of cases with 1 adequate stool sample taken	AFP Rate ≥ 1:100,000 for children <15 years
Colombia				
Ecuador				
Honduras				
Nicaragua				
Paraguay				
Venezuela				
Chile				
Costa Rica				
Cuba				
Dominican Republic				
Guatemala				
Mexico				
Panama				
Peru				
Bolivia				
Brazil				
El Salvador				
Haiti				
Argentina				
Uruguay				

Meet criteria

Source: SVI/PAHO (PESS)

* Data as of 1 August 1996, epidemiological week # 30

ANNEX VI

Weekly Measles Bulletin
(week ending 27 July, 1996)

PAN AMERICAN HEALTH ORGANIZATION

PAN AMERICAN SANITARY BUREAU REGIONAL OFFICE OF THE
WORLD HEALTH ORGANIZATION

Special Program for Vaccines and Immunization

Expanded Program on Immunization

Measles Surveillance in the Americas

Vol. 2 No. 30

Weekly Bulletin for the week ending 27 July 1996

Region	Country	Week of Report	Suspected Cases Notified for Current Week	Year to Date - 1996: Total Suspected Cases Notified	Suspected Cases Under Investigation	Discarded Cases	Confirmed Cases: Clinically*	Confirmed Cases: Laboratory♣	Confirmed Cases: Total	Total Confirmed Cases 1995
AND	BOL	28	...	25	7	14	4	0	4	76
	COL	27	...	598	353	231	13	1	14	284
	ECU	29	...	136	23	93	20	0	20	919
	PER	30	10	325	161	130	33	1	34	353
	VEN	28	...	498	242	182	73	1	74	172
BRA	BRA	26	...	621	341	255	25	0	25	561
CAP	BLZ	30	0	1	1	0	0	0	0	4
	COR	29	...	74	33	36	2	3	5	37
	ELS	28	...	215	18	196	0	1	1	0
	GUT	30	0	93	93	0	0	0	0	23
	HON	30	6	24	13	10	1	0	1	0
	NIC	30	5	192	6	185	0	1	1	5
	PAN	30	14	92	0	92	0	0	0	19
CAR	ANG	30	0	3	3	0	0	0	0	0
	ANT	30	0	2	2	0	0	0	0	0
	BAH	30	0	1	0	1	0	0	0	0
	BAR	30	1	60	35	25	0	0	0	0
	CAY	30	0	0	0	0	0	0	0	0
	DOM	29	...	0	0	0	0	0	0	0
	GRE	30	1	2	2	0	0	0	0	3
	GUY	30	4	21	18	3	0	0	0	0
	JAM	30	0	8	1	7	0	0	0	15
	MON	30	0	0	0	0	0	0	0	0
	NAN	...	...	...	...	...	...	...	...	...
	SCN	30	0	6	4	2	0	0	0	1
	STL	30	0	1	0	1	0	0	0	2
	STV	30	0	4	1	3	0	0	0	0
	SUR	30	1	11	5	6	0	0	0	0
	TRT	30	2	45	29	16	0	0	0	0
	TUR	29	...	0	0	0	0	0	0	4
	VIB	30	0	1	0	1	0	0	0	0
	VIU	29	...	0	0	0	0	0	0	0
LAC	CUB	29	...	56	45	11	0	0	0	1
	DOR	30	1	22	7	15	0	0	0	0
	FGU	...	...	...	...	...	...	...	...	...
	GUA	30	0	3	0	2	1	0	1	0
	HAI	...	...	...	...	...	...	...	...	...
	MAR	...	...	...	...	...	...	...	...	...
	PUR	29	...	7	0	0	0	7	7	11
MEX	MEX	30	33	1,147	242	891	14	0	14	244
NOA	BER	30	0	0	0	0	0	0	0	0
	CAN	30	0	291	0	0	0	291	291	2,357
	USA	29	...	299	0	0	0	299	299	301
SOC	ARG	23	...	131	18	76	37	0	37	655
	CHI	29	...	69	31	36	2	0	2	0
	PAR	29	...	14	3	8	3	0	3	73
	URU	09	...	0	0	0	0	0	0	5
Total			78	5,098	1,737	2,528	228	605	833	6,125

... No information provided
* Clinical suspicion of measles without laboratory investigation.
♣ Includes epidemiologically linked cases.