

EPI Newsletter

Expanded Program on Immunization in the Americas

Volume III, Number 3

IMMUNIZE AND PROTECT YOUR CHILD

June 1981

Multidisciplinary EPI Evaluation

The Pan American Health Organization (PAHO) has designed a methodology for carrying out multidisciplinary evaluations of the Expanded Program on Immunization in the Americas. This evaluation activity is an important part of the medium-term EPI objectives, as outlined in the Report of the Director (Document CD 27/16) to the XXVII Meeting of the PAHO Directing Council, which met from 22 September to 3 October 1980. This process will help member countries to assess their progress towards the goal of providing immunization services to all children by 1990.

These evaluations aim to identify the principal problems which are impeding program progress; to study possible solutions, expressed in the form of recommendations; and to design a plan of action to implement these recommendations. Another important aspect of the methodology is that the evaluation team is formed of national officials of the corresponding Ministry of Health, with multidisciplinary representation.

The first country in the Region of the Americas to carry out such an evaluation was Colombia, from 10 to 21 November 1980. What follows is a summary of the methodology and results of that evaluation.

Methodology

The evaluation was made in four stages:

- a) A study of current EPI operations at all levels of the health system in Colombia;
- b) Identification of the accomplishments and limitations of the EPI;
- c) Design of recommendations for surmounting the problems; and
- d) Creation of a timetable for implementing the recommendations.

The evaluation team

The Ministry of Health identified eight officials at the central level who worked in the areas of Planning, Health Care, Epidemiology and Primary Health Care. The group also enjoyed the collaboration of the EPI Program Manager in Ecuador, who participated as an observer, and four PAHO officials. The names of the officials who made up this group are shown in the following list:

Ministry of Health, Colombia

- Dr. Wilfrido Dávila, Chief of the Immunization Group.
- Nurse Magnolia Giraldo, Chief of the Evaluation and Diagnostic Section, Office of Planning.
- Nurse Lida Guerrero, Maternal and Child Health Division.
- Dr. Fernando Herrera, Physician, Immunization Group.
- Nurse Soledad Malagón, Immunization Group.
- Dr. Carlos Tobón, Advisor on Coordination of Primary Health Care, General Secretariat of the Ministry.
- Dr. Henry Torrente, Physician, Immunization Group.
- Dr. Jairo Zapata, Chief, Evaluation and Correction Section, Office of Epidemiology.

PAHO/WHO

- Dr. Humberto Baquero, EPI Program Manager in Ecuador, Observer.
- Dr. Stephen Jones, Epidemiologist, CDC, Atlanta, Short-term Consultant.
- Dr. Luis Alberto Valle, Planning Advisor, PAHO, Colombia.
- Mr. Roberto Unda, EPI Technical Officer, PAHO, Ecuador.
- Dr. Ciro de Quadros, EPI Regional Advisor, PAHO, Washington.

Study of current EPI operations

This phase took up the largest part of the evaluation work. EPI activities and related programs, from the central down to the community level, were systematically reviewed, based on information collected from the following sources:

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- a review of documents and available data;
- fact-finding visits to health establishments in the capital and in the field; and
- interviews with health personnel using a standard questionnaire.

During the two weeks of the evaluation, the team carried out the following activities:

- Review of immunization data available at the central level;
- Field visits to the administrative (Sectional Health Service) and operational (health establishment) levels. The team was divided into four mini-teams of three persons each. Each mini-team called on one Sectional Health Service (Atlántico, Caldas, Meta and Valle).
- Studies in the Ministry of Health of administrative activities of the EPI and related entities (including maternal and child health, epidemiology, information systems, programming, and the cold chain) by means of interviews with the persons in charge of these activities.

In the study of EPI operations, the following areas were emphasized as being of critical importance to immunization:

- the cold chain: equipment and procedures for the preservation of biologicals;
- the system for delivery of vaccines and other supplies.
- the system for reporting immunizations administered.
- training of EPI personnel;
- immunization strategies employed;
- the promotion of immunization and community participation;
- the epidemiological surveillance system; and
- coordination among health institutions.

Identification of EPI achievements and problems

The gains made in implementing the EPI, and the problems, constraints and bottlenecks which limit further extension of immunization services were identified by analyzing EPI operations.

Recommendations for the EPI

Based on its analysis of EPI problems and constraints, the evaluation team framed general recommendations for overcoming the problems identified.

Timetable for implementation of the recommendations

The EPI evaluation team drew up a detailed and concrete program for implementation of the recommendations, which was summarized in a timetable. For each recommendation, the timetable specified:

- the problem to be solved;
- the purpose(s);
- the goal(s);
- the activities for implementing each recommendation;
- the dates for completion of each activity; and
- the administrative bodies that would be conducting the activities.

The principal achievements and problems identified by the evaluation team, as well as their recommendations, are presented in the following lists.

EPI achievements in Colombia

Over the past two years the Ministry of Health of Colombia has made notable progress in setting up and developing the organizational infrastructure essential to establishing the Expanded Program on Immunization in the country.

Administration: An EPI managerial group has been formed at the central level, while a unit responsible for the program has been identified at the sectional levels and at some regional health levels.

Financial resources: The EPI has received sufficient financial support for its development over the past two years (1979-1980).

Cold chain: A functioning cold chain with all the necessary equipment has been implemented at the regional level; the cold chain at the local level is still incomplete.

Supplies and equipment: A system for the procurement and distribution of supplies and biologicals has been established to furnish all levels with adequate amounts according to their needs.

Norms: The EPI group has prepared an operational manual of norms and has distributed 3,000 copies at all levels. Some sectional units have adapted the manual and distributed it to their operating levels.

Training: A national EPI workshop has been developed in order to prepare course "multipliers" at the sectional levels, most of whom have already conducted training courses in their work areas.

Programming: The EPI program criteria are included in the planning subsystem of the Ministry of Health.

Supervision: An EPI supervisory group has been formed at the central level and on some sectional health levels.

Information system and epidemiological surveillance: There is an infrastructure at all levels for data collection and processing. At the central level and at some sectional levels there is a capacity for the analysis and dissemination of information on vaccination and morbidity. Centralized registers for vaccination and epidemiological surveillance are also kept at all levels.

EPI problems in Colombia

Over the past decade it has been observed that vaccination coverages in Colombia are very low. From January to October 1980 coverage of children under 1 year of age with measles vaccine and the third dose of DPT/polio vaccine was less than 20 percent. Coverage with the second dose of tetanus toxoid vaccine for pregnant women was less than 5 percent.

The EPI is directed towards children less than 1 year of age, however, most vaccinations are applied to older children.

Regions where neonatal tetanus is endemic have not yet

been clearly identified as is necessary in order to encourage the vaccination of pregnant women with tetanus toxoid in high-risk areas.

The dropout rate between first and third doses of DPT/polio is about 60 percent.

Population

- Population estimates vary greatly, especially for children under 1 year of age, making the programming and evaluation of all health programs difficult.

Programming

- The local level does not have suitable programming tools, and does not usually participate in the programming process.

- Health establishments assign priority to curative activities, with the result that the time assigned for vaccination is insufficient. In many establishments nursing personnel do not give vaccinations.

- There are no procedural control mechanisms.

Training

- At some levels training is insufficient, resulting in an ignorance of EPI norms with its consequent effect on the performance of activities.

Administration

- On the national and sectional levels there is no plan of operations defining short- and medium-term objectives, which should include a chronogram of activities and goals and a system for periodic evaluation of the program.

Coordination

- At the central level there is no coordination with related sections of the Ministry of Health, particularly in the areas of maternal and child health, primary care and health education. There is also a lack of coordination with national pediatric societies.

Cold chain

- There is some duplication in the administration of central warehouses. There are also some handling and maintenance problems, both on the central and peripheral levels, particularly with reference to standards for temperature control.

- Warehouses at all levels have administrative problems which interfere with the timely delivery of supplies.

- Frequent electric power failures make it difficult to preserve biologicals.

Epidemiological surveillance and reporting system

- Deficiencies in the flow and quality of information make it difficult to reach timely decisions; these factors primarily affect epidemiological surveillance and the evaluation of coverage.

- The regional and local levels do not participate in epidemiological surveillance due to lack of staff training.

Recommendations for the EPI in Colombia

Programming

- Encourage the vaccination of children under 1 year of age.

- Encourage the vaccination of pregnant women with tetanus toxoid in areas where tetanus is endemic.

- Conduct a survey on the causes of dropouts between the first and third doses of DPT and polio vaccines in order to take corrective steps.

- Determine accurate population figures.

- Implement and adapt programming tools for the local level and encourage local-level participation in this process.

- Ensure that nursing personnel in all health establishments participate in immunization activities within their work area.

- Make the best use of human resources by assigning vaccinators to high-priority areas where nursing personnel are insufficient.

- Avoid community rejection by meeting all vaccination demands, without considering possible wastage of the biological.

- Develop and execute a procedural control system.

Training

- Revise and facilitate the dissemination of operational standards and the replication of training workshops at the local level, including standards for epidemiological surveillance.

Administration

- At the central and sectional levels, develop a plan of operations defining short- and medium-term objectives and goals, including a chronogram for supervision and periodic evaluation of the program.

- Strengthen supervisory capacity at the central level by establishing supervisory positions for two physicians and requesting PAHO to assign a permanent EPI Technical Officer, along the lines of the programs in Ecuador and Peru.

- Finance sectional and regional coordinators for primary care with emphasis on the EPI.

Coordination

- Provide incentive for inter- and intra-institutional coordination by means of periodic meetings to standardize criteria in the manuals of the different technical divisions, and ensure that national pediatric societies accept Ministry of Health norms.

- Define the specific areas where primary health care can support the EPI.

Cold chain

- Establish an efficient system for handling and maintaining central and sectional vaccine warehouses.

- Consolidate the distribution of EPI biologicals under the responsibility of the Immunization Group.
- Ensure that vaccines used in the program comply with WHO quality and potency requirements.
- Establish mechanisms to expedite the distribution of supplies and equipment to the different levels of the national health system.

Epidemiological surveillance and reporting system

- Determine accurate figures on immunization coverages in the country using the technique of random sampling.
- Implement strategies designed to obtain the most complete data possible on a timely basis.

Promotion

- Use the communications media on a continuing basis to promote immunization at all levels, with special emphasis on children under 1 year of age and pregnant women.
- Hold periodic meetings of the national EPI evaluation group to establish the progress made in implementing these recommendations.
- Conduct a new EPI evaluation in Colombia in 1982.

The complete report on the EPI evaluation in Colombia can be obtained by writing to the following address:

Dr. Wilfrido Dávila
Jefe, Grupo de Inmunizaciones
Ministerio de Salud (Of. 604)
Calle 16, No. 7-39
Bogotá, Colombia

Source: Ministry of Health, Colombia.

First regional meeting of EPI national program managers: Quito, Ecuador, 18 to 22 May 1981

The first regional meeting of EPI national program managers was held from 18 to 22 May 1981 in Quito, Ecuador. This meeting was organized in keeping with PAHO's medium-term programming of technical cooperation activities for implementation of the EPI in the Region of the Americas. The meeting was made possible by a grant from the American Public Health Association (APHA).

One of the principal objectives of the EPI is to set up permanent immunization services by integrating them with other components of primary health care. In accordance with this endeavor, the purposes and objectives of the meeting were defined as follows:

Purposes

- To evaluate the progress being made in implementing the EPI in the different countries;

- To identify the principal problems hampering operations; and
- To propose alternative ways of implementing the program under the strategy of primary health care.

General objectives

- To examine proposals for articulation among the components of primary health care;
- To transmit and analyze the methodology for multidisciplinary evaluation of the EPI with examples from three countries in the Region;
- To identify common problems hindering the implementation of the program;
- To identify the best solutions to the stated problems;
- To draw up a list of EPI problems and the alternative solutions for each of them;
- To work out a timetable for operations in each country over the next two years;
- To disseminate information on the latest developments in the areas of EPI vaccines and cold-chain technology; and
- To examine the possibilities of and areas for technical cooperation between PAHO and its member countries.

Participants

The multidisciplinary nature of the group is apparent from the following list of participants in the meeting:

- EPI national program managers;
- National officers responsible for maternal and child health services;
- National officers responsible for planning and/or administration;
- Multidisciplinary staff of PAHO; and
- Representatives of bilateral and multilateral agencies interested in the program, such as the World Bank and the Agency for International Development.

All the Spanish-speaking countries in the Region, as well as Canada and the United States, were represented in the meeting.

Identification of problems

The problems hindering implementation of the programs were identified in connection with the following ten specific subjects:

- Immunization and primary care;
 - Programming;
 - Strategies for extending coverage;
 - Supervision and continuing education;
 - Cold chain
 - Community participation
 - Coordination
 - Personnel training;
 - Information system and epidemiological surveillance;
- and

- Administration of funds and resources.
- By the end of the meeting the participants had:
- drawn up, by order of priority, a list of the EPI problems in the Region;
 - identified alternative solutions for each of those problems;
 - worked out a timetable of operations for 1981-1983 in which they defined:
 - a) the priority problems (identified during the meeting);
 - b) the proposed solutions (identified during the meeting);
 - c) quantifiable objectives;
 - d) operations to be performed, and the dates for their completion;
 - e) the alternatives for financing; and
 - f) the needs for coordination and support between national and international institutions.

The final report on this meeting will be distributed to the countries in late August 1981.

In the two months prior to the meeting, all the countries represented sent PAHO information on their immunization programs, with particular reference to the following aspects:

- The supply of vaccines and equipment;
- Implementation of the cold chain;
- Strategies used;
- Vaccination norms;
- Coverages achieved in the priority groups;
- Current data on morbidity and mortality from the EPI diseases;
- Personnel training; and
- A projection of necessary resources for 1981-1983.

This information will be analyzed and the results published in forthcoming editions of the *EPI Newsletter*.

Panama: Summary of immunization data from 1979 Family Planning/Maternal Child Health Survey¹

In 1979 a Family Planning and Maternal-Child Health (FP/MCH) Survey was conducted in Panama by the Population Studies Office of the Ministry of Health, with technical assistance from the Family Planning Evaluation Division of the Centers for Disease Control¹.

Interviews were completed in a national sample of 2,348 women, and information was also collected on the immunization status of 2,399 children under 6 years of age. This type of survey has been conducted in several Latin American countries^{2,3}, but Panama is the first country where immunization data were included.

¹Monteith R. S., Anderson J. E., Mascarin F., Naar H., and Morris L. Contraceptive use and fertility in the Republic of Panama. Studies in Family Planning (submitted for publication).

²Morris L. The use of contraceptive prevalence surveys to evaluate family planning programs in Latin America. 1979 Proceedings of the Social Statistics Section of the American Statistical Association, 543-548, Washington, DC, 1980.

The questionnaire used in FP/MCH surveys in Latin America have required, on the average, 25 minutes of interview time; the addition of an immunization module added only 3 to 4 minutes.

Results

An example of MCH data collected in the survey is shown in Table 1. Over 80 percent of the women had prenatal care, childbirth in a medical facility, and/or well-baby care during their last pregnancy.

The survey data also show good coverage by the immunization program in Panama. The immunization schedule used is shown in Table 2. Most children 1-5 years of age had received complete primary immunization with BCC (55 percent), polio (63 percent), DPT (61 percent), and measles (67 percent) vaccines. The percentages were higher among urban than rural children and increased with higher monthly family income, but only up to the third quartile (Tables 3 and 4). In Table 5, the immunization status for polio, DPT, and measles vaccines among children 1-5 years of age in Panama is compared to survey data for the United States⁴. Levels of immunization are similar. The survey in Panama also reveals that almost all the children who had received primary immunization were vaccinated by age 2 (see Figure 1).

TABLE 1. Use of medical facilities for maternal and child health care during last pregnancy: Currently married women aged 15-44 having had at least one live birth (percent distribution)

Use of medical facilities*	MCH Care			
	Pre-natal	Child-birth	Post-partum**	Well-baby
Yes	80.2	84.2	66.6	88.8
No	19.4	14.8	33.0	10.6
Unknown	0.4	1.0	0.3	0.6
Total	100.0	100.0	100.0	100.0

*Includes Ministry of Health, Social Security, and private facilities.

**Only during first month after delivery.

TABLE 2. Panama: Immunization schedule*

Vaccine	Primary immunization			
	No. of doses	Age at first dose	Interval	First booster
BCC	1	Newborn	—	Age entered school
Polio	3	2 months	Every 2 mos.	1 yr. after 1st dose
DPT	3	2 months	Every 2 mos.	1 yr. after 1st dose
Measles	1	9 months	—	15 mos. of age**

*Information taken from the 1980 Panama Immunization Manual.

**Recommended when vaccine was given during the first year of life.

³Morris L., Lewis G., Powell D., Anderson J., et al. Contraceptive prevalence survey: a new source of family planning data. Population Reports, Series M, No. 5. Johns Hopkins University, Baltimore, Maryland, May-June 1981.

⁴United States Immunization Survey: 1978. U.S. Department of Health, Education, and Welfare, Public Health Service, Centers for Disease Control, Atlanta, Georgia.

FIGURE 1. Percent of children under 6 years of age receiving primary BCG, polio, DPT, and measles immunization. Panama, 1979 FP/MCH Survey

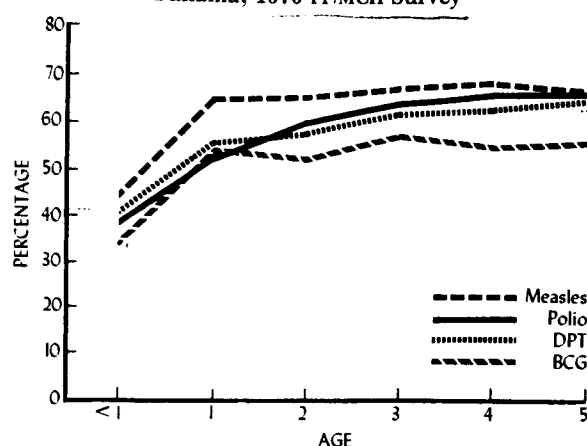


TABLE 3. Percent of children 1-5 years of age receiving complete BCG, polio, DPT, and measles immunization, by residence. Panama, 1979 FP/MCH survey

Immunization	Total	Residence	
		Urban	Rural
BCG	55.3	62.1	50.8
Polio	62.8	66.8	60.0
DPT	61.0	66.9	57.1
Measles	67.3	72.6	64.0

TABLE 4. Percent of children 1-5 years of age receiving complete BCG, polio, DPT, and measles immunization, by monthly family income. Panama, 1979 FP/MCH survey

Immunization	Monthly family income*			
	First	Second	Third	Fourth
BCG	53.6	56.7	64.5	63.0
Polio	57.9	65.5	70.7	65.2
DPT	57.0	60.5	72.0	65.1
Measles	63.8	70.4	76.3	69.8

* By quartiles

TABLE 5. Percentage of children 1-4/5 years of age with complete primary polio, DPT, and measles immunization in Panama* compared with the USA**

Immunization	Vaccinated	
	Panama	USA
Polio	62.8 (60.2-65.4)	61.4
DPT	61.0 (58.3-63.7)	68.0
Measles	67.3 (64.7-69.9)	62.8

* Panama FP MCH Survey, 1979: children 1-5 years of age.

** United States Immunization Survey, 1978: children 1-4 years of age.

Note: Figures in parentheses are 95 percent confidence limits including estimated design effect.

Comparison of survey and program data

The 1978 "Status of Immunization Programs in the American Region," released by the Pan American Health Organization⁵, compares the vaccination coverage in children less than 1 year of age between countries in the Americas. From this source the program immunization data among children less than 1 year of age in Panama are available, therefore the comparison will focus on that age group.

Program data measure the percentage of a cohort of children vaccinated over a 1-year period. Using the Panama survey data, the impact of the program can be measured in terms of a percentage of children protected by the vaccine at a particular time. For children under 1 year of age, the denominator includes all children born in the 12 months before the survey. For example, Table 6 shows that 56 percent of children less than 1 year of age received BCG immunization during 1978, and 35 percent of children less than 1 year of age were reported to have received the vaccine at the time of the survey in 1979. For vaccines recommended to be completed by 6 months of age, as are polio and DPT in Panama, only the children who were born in the first six months of the 12-month period before the survey should have received complete primary vaccination, based on official recommendations, so only 50 percent of the children in the denominator are "eligible."

TABLE 6. Panama: Comparison of program statistics and survey estimate of primary complete immunization among children less than 1 year of age

Immunization	Program statistics	1979 survey estimate
	% of children less than 1 year vaccinated during 1978*	% of eligible children less than 1 year with complete vaccination**
BCG	56	35
Polio	34	39
DPT	33	40
Measles	37	44

*EPI Newsletter, Vol. II, No. 1, February 1980, Pan American Health Organization.

**1979 Panama FP/MCH Survey: all children for BCG; 6-11 months of age for polio and DPT; 9-11 months of age for measles.

From program data, about one-third of children less than 1 year of age were reported to have received a primary series of polio and DPT immunizations during 1978, but 39 and 40 percent of eligible children from 6-11 months of age had complete polio and DPT vaccinations, respectively, at the time of the survey in 1979.

There is also a greater percentage of eligible children vaccinated against measles, according to the survey, compared with program data. This may be because the survey also measures vaccination in the private sector as well as the public (program) sector, and about 17 percent of children received their immunization in the private sector.

⁵Pan American Health Organization. Status of immunization programs in the American Region, *EPI Newsletter*, Vol. II, No. 1, February 1980.

**NUMBER OF REPORTED CASES OF MEASLES, POLIOMYELITIS, TETANUS, DIPHTHERIA AND
WHOOPING COUGH 1980 AND 1979, BY COUNTRY**

COUNTRY	DATE OF LAST REPORT	MEASLES		POLIOMYELITIS		TETANUS		DIPHTHERIA		WHOOPING COUGH	
		1980	1979	1980	1979	1980	1979	1980	1979	1980	1979
ARGENTINA	27 DEC. 80	16,123	9,800	26	20	219	234	86	127	27,223	18,535
BAHAMAS	03 JAN. 81	484	1,659	—	—	3	2	—	—	15	—
BARBADOS	03 JAN. 81	27	16	—	—	13	7	11	13	—	2
BOLIVIA	27 DEC. 80	3,581	4,361	48	377	177	114	31	37	2,377	1,746
BRAZIL	03 JAN. 81	95,154	66,294	1,342	2,612	3,125	2,939	4,515	4,496	43,908	33,170
CANADA	27 DEC. 80	13,347	22,621	—	3	2	...	63	84	2,812	2,171
CHILE	03 JAN. 81	3,939	34,573	—	—	28	...	246	337	2,937	453
COLOMBIA	28 DEC. 80	9,222	18,144	112	479	593	...	263	171	7,664	11,209
COSTA RICA	03 JAN. 80	1,001	6,883	—	—	9	23	—	—	964	311
CUBA	03 JAN. 81	3,924	7,512	—	1	26	30	—	—	131	147
DOMINICA	03 JAN. 81	—	178	—	—	2	2	—	—	1	1
DOMINICAN REP.	31 DEC. 80	9,760	8,944	148	11	94	188	187	267	558	946
ECUADOR	03 JAN. 81	2,722	4,206	11	5	109	92	16	24	836	1,991
EL SALVADOR	03 JAN. 81	2,244	10,359	55	3	98	114	2	—	1,003	812
GRENADA	03 JAN. 81	53	3	—	—	3	2	1	—	6	6
GUATEMALA	03 JAN. 81	2,681	3,351	66	24	61	67	7	4	1,550	1,452
GUYANA	20 DEC. 80	464	905	—	—	13 ^a	25	1	5
HAITI	02 JAN. 81	348	259	4 ^b	—	276	72	35	7	516	216
HONDURAS	03 JAN. 81	4,188	4,895	3	226	31	47	2	2	2,503	2,451
JAMAICA	27 DEC. 80	27	82	—	—	10	12	11	9	13	37
MEXICO	27 DEC. 80	29,409	32,667	616	827	585	609	7	9	5,412	4,844
NICARAGUA	31 DEC. 80	3,775	1,270	20	101	88	1	5	11	2,469	267
PANAMA	03 JAN. 81	2,000	4,350	—	—	30	39	—	—	648	726
PARAGUAY	03 JAN. 81	1,265	1,606	7	17	192	185	14	7	913	1,015
PERU	03 JAN. 81	8,721	4,800	175	58	276	183	194	155	4,747	8,608
SAINT LUCIA	03 JAN. 81	35	9	—	—	1	8	—	1	19	1
SURINAME	03 JAN. 81	254	...	—	1	— ^c	—	—	1	—	—
TRINIDAD & TOBAGO	03 JAN. 81	394	394	—	—	30 ^d	32	—	1	10 ^d	47
U.S.A.	03 JAN. 81	13,430	13,600	9 ^e	26 ^f	74	76	5	59	1,651	1,570
URUGUAY	31 DEC. 80	154	1,300	—	—	22	17	—	—	162	230
VENEZUELA	03 JAN. 81	8,695	20,791	2	12	12	3	2,834	1,751

^a30 September 1980

^b13 December 1980

^c01 November 1980

^d27 December 1980

^e7 paralytic cases

^f22 paralytic cases

— No cases

... Data not available

Since BCG vaccination is given at birth while the child is in the nursery, program data yield higher coverage than the survey data as some mothers may not know or may not remember that their child was vaccinated in the hospital.

The data obtained in the survey can also be used to provide denominators so that rates of disease in the unvaccinated and vaccinated populations can be computed and measures of vaccine effectiveness can be calculated in the event of a disease outbreak.

Source: Huezio C. M., Campos C., Monteith R. M., Naar H., and Morris L. Use of maternal and child health services and immunization coverage in Panama (submitted for publication).

Regional cold chain development: CIMDER

The regional focal point for the cold chain, located at CIMDER (Centro de Investigaciones Multidisciplinarias para el Desarrollo Rural) in the University of Valle in Cali, Colombia, is now fully operational.

An environmental testing chamber has been constructed, and has proved to meet WHO/PAHO performance criteria for use in testing cold chain equipment for the storage and transportation of vaccines. A full array of instruments complements the environmental chamber, permitting temperature control to within $+0.5^{\circ}\text{C}$, which is superior to the WHO/PAHO-recommended sensitivity of $+1^{\circ}\text{C}$. The chamber also has its own electrical generator which allows it to continue testing operations in the event of a power failure.

In addition to the environmental testing chamber, CIMDER has a wide range of refrigerators and freezers for cooling vaccines and freezing ice-packs; this capability makes it possible to carry out performance tests on various types of cold chain equipment. Other equipment available at the Center ranges from a 100-channel data logger to a system analyzer for measuring the performance of

refrigeration systems. The environmental testing chamber and its complementary array of equipment will permit CIMDER to become a global collaborating reference center for the testing of EPI cold chain equipment.

CIMDER not only conducts testing activities, but has also designed prototype containers of different sizes for vaccine storage and transportation. The containers have been constructed in various countries of the Region and are currently undergoing final testing to determine their performance characteristics and robustness. A final report on these containers will be available during the last quarter of 1981. (For further details, readers should refer to *EPI Newsletter*, Vol. II, No. 1, February 1980.)

Based on this successful start, CIMDER is now in a position to offer the EPI programs of the Region the following services:

- Laboratory testing of equipment for the transportation of vaccines (for current or future use) to determine its thermal and mechanical characteristics.
- Laboratory testing of refrigerators and freezers for the storage of vaccines (for current or future use).
- Technical advisory services in relation to equipment for the shipment and storage of vaccines.
- Delivery to countries in the Region of molds for the production of containers for vaccine transportation, as well as technical assistance in such production. CIMDER is prepared to make these molds, with their characteristics formally verified, if enough countries are interested.

In addition to providing advisory services on request, the following activities will be carried out during 1981 and 1982 as part of phase III of the cold chain project:

- Field testing of those containers which have performed best in laboratory tests.
- Determination of the needs for ice-making equipment in isolated areas, and assessment of the capacity of Latin American industry to produce such equipment and its interest in doing so.

The *EPI Newsletter* is a periodic publication prepared by the Expanded Program on Immunization (EPI) of the Pan American Health Organization, Regional Office for the Americas of 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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525 Twenty-third Street, N.W.
Washington, D.C. 20037
U.S.A.

ISSN 0251-4710