EPI Newsletter

Expanded Program on Immunization in the Americas

Volume I, Number 2 IMMUNIZE AND PROTECT YOUR CHILD July 1979

Country Operations

Costa Rica

The Costa Rican National Health Plan gives the highest priority to the extension of coverage of health services, with particular emphasis on rural and smaller urban areas. In 1973 a systematic immunization schedule was emphasized as an integral part of the Rural Health Program; this is summarized below:

Age at Vaccination	BCG	DPT	Measles	Polio
Newborn	X			
2 months		X		X
4 months		X		X
6 months		X		X
1 year			X	

Two doses of tetanus toxoid are given to the 15 year old, with a two month interval. Booster doses of DPT and DT are also given to pre-school and school children.

In rural and urban programs immunization is given in the health centers and health posts as well as through house-to-house immunization. There is careful follow-up of second and third doses. Health centers and posts have been supplied with refrigerators and vaccine carriers. All children must have completed their immunizations before starting school.

Death rates from tetanus are plotted in Graph 1; case rates of pertussis and diphtheria are shown in Graph 2. Deaths due to tetanus have gradually fallen, particularly since 1972. In 1977 there were 23 tetanus deaths reported, of which six were neonatal cases. Since 1972 there has been a rapid drop in diphtheria cases, and none were reported in 1977. Cases of pertussis remained relatively stable from 1973 to 1976, but fell the following year to a rate of 23 cases per 100,000 population.

Graph 3 plots the number of DPT and TT immunizations in Costa Rica from 1968 to 1977. About 240,000 inoculations of DPT are now being given yearly. The rapid rise in TT vaccinations from 1972 to 1976 is a result of an intensified vaccination effort to improve tetanus immunity, particularly in woman in the child-bearing age group.

A random survey of vaccination coverage was done in July 1978 as part of an EPI Regional Program Managers' Course. Two areas with a population of over 1,000,000 people were studied, and showed vaccination coverage of 90%, 80% and 75% in children less than one year of age, with 1, 2 and 3 doses of DPT and polio, respectively.

Since 1974 there have been no reported cases of poliomyelitis.

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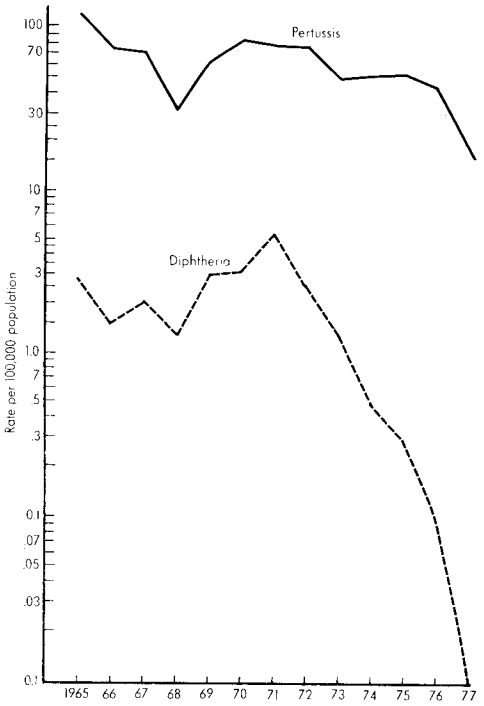
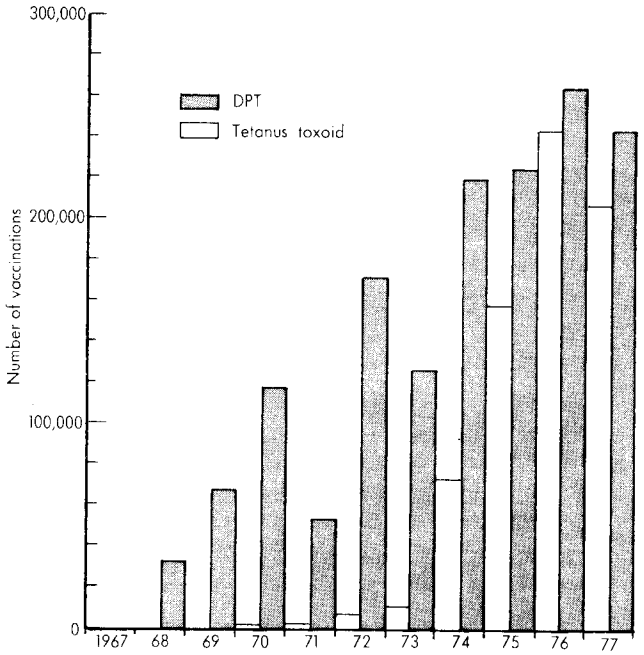


Measles cases and death rates are summarized in Graph 4. Case rates continue in the 100 per 100,000 population range, while death rates from measles have fallen (from 10/100,000 in 1970 to 0.6/100,000 in 1977). This most likely reflects better treatment of complications of measles due to the development of Rural Health Centers. Measles vaccine administration has ranged between 50,000 and 60,000 doses from 1973 to 1975, while over 100,000 doses were given in 1976.

GRAPH 3. NUMBER OF DPT AND TT VACCINATIONS IN COSTA RICA,
1968-1977



GRAPH 4. MEASLES:
MORBIDITY AND DEATHS PER 100,000 POPULATION IN COSTA RICA,
1965-1977

Reported by: Dr. Leonardo Maranghello Bonifati
Dr. Rodrigo Jiménez Monge
Dr. Emilia María León de Coto

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Editorial Note:

Surveillance data from Costa Rica offer a good example of the benefits that can be achieved with a well run immunization program. Poliomyelitis and diphtheria have been eliminated as public health problems while the number of tetanus deaths and pertussis cases are falling. Important characteristics of the Costa Rican immunization activities are: (1) their integration within carefully designed health services aimed at reaching rural as well as urban populations; (2) the high quality of supervision at all levels of the program; and (3) careful attention to the maintenance and storage of vaccines.

Training Activities

As part of second-phase training activities on the national level, two 5-day workshops on the Expanded Program on Immunization recently took place in Cochabamba, Bolivia and Bogota, Colombia. The Bolivian course, held from 18 to 23 June 1979, attracted 64 participants plus 17 observers; the workshop in Colombia, held from 2 to 7 July 1979, was attended by 34 national health officials. Participants in the two courses were made up of nurses, doctors, epidemiologists and technicians, all having responsibilities directly involved with the Expanded Program on Immunization. Four PAHO consultants aided in coordinating these workshops, together with three Ministry of Health representatives in Cochabamba and one in Bogota. The course scheduled for July in Nicaragua was postponed, but has now been resheduled for September of this year.

Using the outline developed for regional training courses, instructional material was broken down into five modules -- Diseases, Vaccines, Cold Chain, Planning and

Evaluation -- each of which was further subdivided into units. Participants studied the material and solved written problems individually, later joining in groups to discuss their answers and share opinions and experiences.

Observation and evaluation of the immunization program at urban health centers in Bogota was included as field work for the Colombian course. Participants considered this practical application of the knowledge acquired during the course an invaluable part of their training, and similar field experiences are planned for all future national courses.

Participants in the two courses were asked to answer a series of written questions, both before and after the course, in order to test their pre- and post-course knowledge in each area of instruction. These tests provided an objective measurement of progress made, while also enabling course organizers to single out areas which may require further revision. At the end of each course, participants were also asked to fill out a form evaluating the contents and methodology of the workshops; these, too, have provided useful suggestions for future course improvements.

The results obtained using these evaluation mechanisms indicate that participants in both courses showed a significant increase in knowledge, together with a greater awareness of the problems faced in relation to EPI programs. A comparison of scores on the pre- and post-course tests shows that participants averaged approximately twice as many correct answers on the test following the course. Specifically, the average number of questions answered correctly by the Bolivian participants increased from 35% before the course to 76% afterwards, while the Colombian participants showed a corresponding increase from 45% to 84%.

This evaluation has served to identify the areas in which EPI should be concentrating its energies in order to attain the most effective implementation of EPI programs. Another basic achievement of the courses was the selection of 12 "multipliers" in each country who will be able to reproduce the courses at the different local levels.

Based on the participants' observations and analyses of each workshop, the course material will again be revised to produce the definitive version which will be used in the workshops in Nicaragua, Brazil, Guatemala, Ecuador and possibly Mexico, to be held starting September of this year.

Epidemiology

Poliomyelitis in the Americas: 1976-78

In 1976, 1977 and 1978 there were, respectively, 3,784, 4,539 and 2,821 cases of poliomyelitis registered in the Americas. In 1976 seventeen countries reported cases; in 1977 nineteen countries; and in 1978 eighteen countries.

Table 1 shows the distribution of cases by year and by country or territory.

The following countries did not report any cases for the period 1976-78: Antigua, Barbados, Bermuda, Chile, Costa Rica, Cuba, Dominica, Grenada, Guadaloupe, Guyana, Jamaica, Martinique, Panama, Puerto Rico, St. Kitts-Nevis-Anguilla, St. Lucia, St. Vincent, Suriname (1) and Trinidad and Tobago. The combined population of these countries with no cases of poliomyelitis during the period mentioned is approximately 6% of the total population of the Region.

TABLE 1

Distribution of polio cases in countries and territories of the Americas (1976, 1977 and 1978)

Country or territory	1976 (2)	1977 (2)	1978 (3)
Argentina	--	--	3
Bahamas	--	--	1
Belize	--	1	--
Bolivia	43	143	15
Brazil	2502	2309	1497
Canada	--	2	6
Colombia	558	529	308
Dominican Rep.	27	38	148
Ecuador	13	21	15
El Salvador	73	9	10
French Guiana	1	1	--
Guatemala	27	46	37
Haiti	6	69	28
Honduras	24	175	74
Mexico	292	907	549
Nicaragua	1	36	1
Paraguay	20	20	37
Peru	131	183	56
USA	14	20	9
Uruguay	9	10	--
Venezuela	43	20	32
TOTAL	3784	4539	2826

The highest incidence rate in 1976 was recorded in Colombia, with 2.3 cases per 100,000 inhabitants. In 1977 the highest rate was in Honduras, with 5.7 cases per 100,000; and in 1978 in the Dominican Republic, with 3.1 cases per 100,000 inhabitants.

Map No. 1 shows the distribution of cases by country according to the weighted average rates of incidence for the period 1976-78.

Table 2 Shows the distribution of cases by age groups in four countries of the Region (4).

The above data indicate that the polio vaccination effort should be concentrated primarily on the under-three age group, which is the group at highest risk. Routine vaccination of children older than three would be a waste of vaccine and effort since the great majority of them will already have had the infection. EPI recommendations in the Americas indicate that maximum effort should be expended to complete the 3-dose series before the child reaches one year of age.

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(1) Data for 1977-78.

(2) Cases reported to PASB or published in national epidemiological reports.

(3) Preliminary data.

(4) Figures for Venezuela published in Epidemiological Report No. 5 of 1978, MSAS, Venezuela.
Figures for Brazil, Mexico and the Dominican Republic presented at International Seminar on Poliomyelitis, Mexico, 1978.

MAP 1. POLIOMYELITIS INCIDENCE PER 100,000 POPULATION IN THE AMERICAS: WEIGHTED AVERAGE, 1976-1978

TABLE 2

Distribution of cases of poliomyelitis by age group in Brazil, Mexico, Dominican Republic and Venezuela

Age Group	BRAZIL (1975-77)		MEXICO (1970-76)		DOM. REP. (1976)		VENEZUELA (1978)	
	No. of cases	%	No. of cases	%	No. of cases	%	No. of Cases	%
< 1 year	800	27.8	1,459	34.1	10	38.4	9	39.1
1-2 years	1.162	36.8	1,589	37.2	13	50.0	9	39.1
2-3 years	491	15.5	603	14.1			2	8.7
SUB-TOTAL < 3 years	2,533	80.1	3,651	85.4	23	88.4	20	86.9
> 3 years	616	19.9	625	14.6	3	11.6	3	13.1
TOTAL	3,149	100.0	4,276	100.0	26	100.0	23	100.0

The percent distribution of cases according to vaccination histories was studied in epidemiological research carried out in Brazil in 1977 and Mexico in 1977 and 1978. These figures are shown in Table 3 (1).

TABLE 3

Distribution of polio cases according to vaccination histories in Brazil (1977) and Mexico (1977-78)

Vaccination history	Brazil (1977)		Mexico (1977-78)	
	No. of cases	%	No. of cases	%
No doses	1095	72.0	466	37.0
1 dose	174	11.5	252	20.0
2 doses	61	4.0	177	14.0
3 or more doses	45	3.0	202	16.0
Unknown	144	9.5	164	13.0
TOTAL	1519	100.0	1261	100.0

Vaccination failure has been high in both countries, particularly in Mexico (30%). In the absence of serological information on vaccine failure, the significance of these findings could be related to cold chain failure or to the use of low-potency vaccine. If anything, these data underscore the importance of having the vaccine from the field monitored periodically, and of ensuring the proper maintenance of the cold chain at all levels, from manufacturer to vaccinee.

EPI Revolving Fund

During the second quarter of operation of the EPI Revolving Fund, 7.7 million doses of vaccine, worth over $500,000, were shipped to 11 participating countries and territories. Ninety-eight percent of the vaccines were delivered on time, despite the usual difficulties and delays encountered in international air transport. An additional three million doses of oral polio vaccine were ordered by Argentina for delivery in September, when an intensified vaccination effort will begin.

Procedures for reimbursement of the Fund by participating countries and territories, following their receipt of vaccines, have been developed and refined. Invoices totalling some $425,000 have been sent out, with over two-thirds of this amount already reimbursed. Most countries have promptly reimbursed the Fund upon receipt of their invoices, and some have even paid in advance; a few, however, have delayed their payments and are currently in arrears. The Outline of Operating Procedures for the Fund specifies that member countries must reimburse the Revolving Fund within 60 days from the date of billing in order to remain eligible for further procurement support under the Fund.

(1) Figures presented at International Seminar on Poliomyelitis, Mexico, 1978.

The original capitalization of $1 million was only sufficient to cover first and second quarter orders. Third quarter orders were placed using money reimbursed or paid in advance to the Fund, but this amount was barely enough to cover all orders. Prompt payment of invoices is now required in order to build up a reserve for fourth quarter orders to be placed in October, and to provide for special requests from participating countries and territories. Although the PAHO Executive Committee has recommended that $800,000 be added to the capitalization of the Fund (see Newsbriefs), this amount will not be available in time to meet these needs.

* * *

One area of Fund operation where problems have been encountered is in the shipping of vaccines to countries and territories in the Caribbean. While less-populated countries benefit greatly from the reduced costs of vaccines purchased through the Fund, their smaller orders are more likly to be misplaced by air carriers during shipping. One solution which has been suggested to this problem is for these countries to make only one annual order, provided that sufficient refrigerator space is available to store a year's supply of vaccine. This procedure would save on freight costs as well as decrease the possibility of lost shipments. Another solution being considered is to ship the vaccine to several central points in the Caribbean from where they can easily be distributed to neighboring countries.

* * *

Forms PAHO 173, for ordering 1980 vaccine requirements through the Fund, have been distributed to all countries and territories in the Region. Even before the end of third quarter 1979, thoughts must be directed towards the procurement of vaccines in 1980 in order to allow enough time for bids to be sent out to suppliers. Forms from several countries have been received as this issue goes to press. A compilation of 1980 orders will be printed in the next issue of the Newsletter.

One of the goals of the EPI Revolving Fund is to enable countries to plan their vaccine requirements more carefully. The PAHO 173 requires countries to make an annual projection of needs, while also providing a mechanism for altering orders for any quarter, should unexpected circumstances make this necessary.

Cold Chain

The latest progress report on development of PAHO's prototype of a 30-liter capacity refrigerator for health center use indicates that the construction phase has been completed. The prototype is now undergoing tests by the designer to determine if it meets the necessary standards, and preliminary results show that it exceeds performance specifications.

A unique aspect of this top-opening refrigerator will be special compartments for freezing ice packs. These compartments, built alongside the cooling coils, will enable health centers in the Region to freeze ice packs for their portable vaccine carriers.

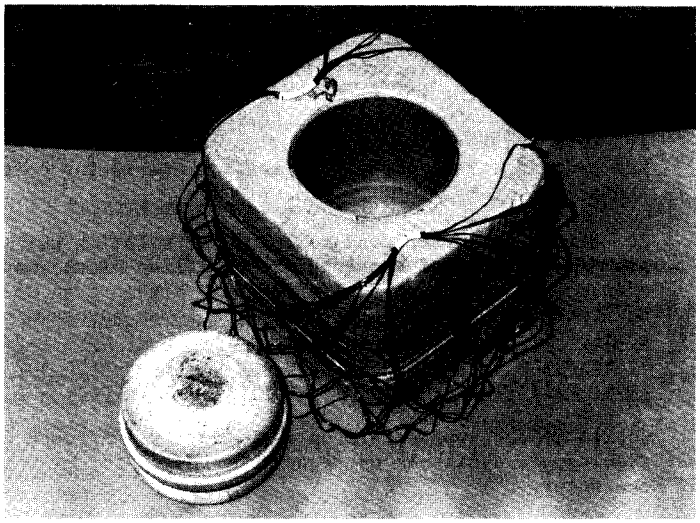
After completion of tests by the designer, the refrigerator will be sent to Harpenden Rise Laboratories for final testing by an impartial laboratory, under WHO supervision. Following these tests, manufacturers in various countries in the Region will be contacted to determine their interest in large scale production, expected to begin in early 1980.

* * *

EPI in Ecuador is currently using a portable vaccine carrier made entirely from materials which are locally available. Insulation for the 3.5-liter capacity vaccine carrier is provided by recycling the polyurethane walls of the insulated boxes in which vaccines are received from the manufacturer. These polyurethane slabs are stacked and fastened together, and a hole 18 cm in diameter and 18 cm deep is cut into the polyurethane cube, just large enough to fit a plastic bucket. The cover, made from locally available balsa wood, is 9 cm thick and fits tightly on top of the bucket with a lip overhanging the polyurethane to provide additional insulation. The box is covered with tightly fitting leather for increased durability, and is carried by means of a string-sack. External dimensions of the cold box are approximately 30 cm by 30 cm by 23 cm high.

Vaccines are placed in specially built racks, which protect them from any water that collects at the bottom of the bucket, and are cooled by ice-filled plastic bags placed on top of the vaccines. Field tests show that the cold retention performance is as good as the best commercially produced portable vaccine carrier.

This Ecuadorian vaccine carrier, pictured below, is a good example of how cold chain problems can be overcome through the imaginative use of locally available materials and means. Unit cost for local production is on the order of US $2.00.



There has recently been some confusion in ordering electric refrigerators and freezers due to insufficient information on the type of current available at the installation site. It is essential to know the voltage and cycles per second (hertz) of the electric power available. A refrigerator built for use with 50 hertz current cannot be used with 60 hertz outlets or vice versa; similarly, a refrigerator or freezer designed for 110 volts AC cannot be used with 220 volts or vice versa.

* * *

Testing of cold chain appliances, under WHO auspices, continues at the Consumers Association Harpenden Rise Laboratories in the United Kingdom and the "Association Pour la Promotion de la Medicine Preventive" in France. Progress reports were issued in June by WHO/EPI, giving the findings of both labs to date.

Results of the refrigerator testing project at the French laboratory indicate problems with the amount of current used by the portable refrigerators and with the performance of absorption models at tilt angles of four degrees or more. It was found that if portable refrigerators being run off car batteries were left standing over 12 hours, there was insufficient charge left in the battery to restart the engine of the vehicle. Concerning the tilt angle of the absorption refrigerators, findings were that "When operating in a static position both refrigerators should ... be leveled carefully. However, experience suggests that this type of refrigerator continues to operate in a moving vehicle."

The final report on icepack testing by the Consumers Association Harpenden Rise Laboratories is summarized in the WHO document EPI-E5-1, "Summary Report on Testing of Icepacks," dated June 1979. The following three types of icepacks were tested to evaluate their performance in relation to cost:

- chemically activated packs (in which the process of freezing is chemical and needs no cooling)
- eutectic prefilled packs (eutectic = a solution which has a lower freezing temperature than any one of its components)
- locally filled plastic water bottles

It was concluded that:

"1. Neither of the chemically activated packs were able to reach temperatures below +8°C when tested at +43°C and were therefore unsuitable for providing emergency cooling for vaccine carriers or cold boxes in the field. Once activated these packs can be frozen in a freezer like the other icepacks, but neither ice pack is strong enough for routine use in the cold chain.

2. Within the calculated tolerance of calories per gram (±10%) none of the eutectic prefilled packs show a cold life performance significantly higher than water frozen in a plastic bottle. The lower purchase cost of locally filled bottles and the cost advantage of shipping them empty will in any case outweigh any small performance advantage of prefilled bottles."

Copies of the two reports on refrigerator and icepack test results are available on request to the editor of the EPI Newsletter.

Vaccines

Control of Vaccines for the EPI Program

The success of any immunization program depends greatly on the quality of the vaccines at the time of use. It matters little how well a program is organized or how thoroughly immunization procedures are carried out, if the immunization agents are ineffectual or underpotent. Consequently, every effort must be made to ensure that the vaccines used are of the highest quality with regard to safety and potency.

In order to uphold these standards, PAHO/WHO screen manufacturers offering vaccines for EPI use and, where possible, review protocols of the specific lots submitted for sale. These activities are important, however they only cover part of the problem. The only way of ensuring that acceptable products are being used at all levels of the program is by adequate control testing of samples selected from the field, immediately prior to or at the time of use. PAHO's program in biologicals has thus continually emphasized the importance of controls both during and after production.

To facilitate understanding of controls and increase capability in this field, PAHO sponsored two international courses in late 1978, both held in Mexico. The first course, entitled "The Second Regional Course on the Production and Control of Bacterial Vaccines," attracted 17 participants from 12 countries; the second course, "Tissue Culture Titration of Live Viral Vaccines," was attended by 20 participants from 11 countries. It is hoped that attendance at these technically advanced courses will not only give countries of the Region a better understanding of the importance of such control tests, but will also enable them to institute testing of EPI and other vaccines which are being used in their country programs. To date, the results have been encouraging and further courses are in the planning stage. It is likely that the next one will be held in Argentina in early 1980.

Effects of Thawing and Freezing on Oral Poliomyelitis Vaccine

One question often raised by EPI Program Managers relates to the potency of oral poliomyelitis vaccine which has been thawed for some time and is later refrozen. The fact is that the vaccine is not as sensitive to thawing as was previously believed. It can undergo a number of "freezing-thawing" cycles without necessarily losing its initial potency as measured by its "infectivity titre".

The change from solid to liquid and back to solid, even if repeated, does not necessarily damage the vaccine. The damage, if any, results from exposing the vaccine to heat over a certain period of time. Experience with live poliomyelitis vaccine from different manufacturers has shown that a temperature higher than 8°C which is maintained for more than 24 hours can endanger the stability of the vaccine.

For these reasons, parameters have been suggested as to the maximum limits of tolerance which a lot of vaccine that has previously been thawed can withstand if this lot is intended to be refrozen for long-term storage. Theoretically, vaccine that has been thawed three or four times can still be refrozen for long-term storage provided that the temperature has at no time exceeded 8°C and the aggregate of periods during which the vaccine was thawed is no greater than 24 hours. If the vaccine has been thawed for more than 24 hours it becomes suspect, and the best advice would be to have it tested for its infectivity titre. If the titre is acceptable, the Program Manager should make an effort to have this vaccine used as soon as possible. Retesting of the vaccine would also be required for any lot that has thawed and for which no information is available concerning its temperature and/or duration of exposure, as is often the case when large consignments are airfreighted from one continent to another.

NUMBER OF CASES REPORTED OF MEASLES, POLIOMYELITIS, TETANUS, DIPHTHERIA AND WHOOPING COUGH
FROM 1 JANUARY THROUGH THE LAST PERIOD REPORTED IN 1979
AND FOR THE COMPARABLE PERIOD IN 1978, BY COUNTRY

COUNTRY	DATE OF LAST REPORT	MEASLES		POLIOMYELITIS		TETANUS		DIPHTHERIA		WHOOPING COUGH	
		1979	1978	1979	1978	1979	1978	1979	1978	1979	1978
ARGENTINA	24.III	1.058	2.110	—	—	54	67	21	74	4.310	3.787
BAHAMAS	14.VII	714	198	--	1	1	--	--	--	--	--
BARBADOS	02.VI	3	8	--	--	4	5	7	17	1	5
BOLIVIA	21.IV	573	338	279	4	37	32	8	14	253	530
BRAZIL	19.V	10.492	7.322	537	452	637	827	1.208	1.564	6.879	8.267
CANADA	19.V	13.066	2.778	2	--	...	...	37	58	920	666
CHILE	09.VI	7.975	1.238	--	--	...	...	171	206	163	582
COLOMBIA	25.III	3.968	4.177	157	92	...	...	66	50	2.457	3.345
COSTA RICA	21.IV	98	123	--	--	8	17	—	--	37	19
CUBA	26.V	5.078	9.567	—	--	8	17	--	1	88	929
DOMINICA	28.IV	141	--	--	--	--	2	—	--	--	...
DOMINICAN REPUBLIC	31.III	1.411	860	4	8	26	22	50	61	27	147
ECUADOR	26.V	2.045	198	5	4	29	60	7	9	866	1.229
EL SALVADOR	30.VI	8.158	609	—	1	63	59	—	1	470	1.024
GRENADA	09.VI	1	196	—	—	1	1	—	—	—	—
GUATEMALA	26.V	2.067	682	14	9	22	270	1	5	512	251
GUYANA	24.III	—	--	--	--	—	...	1	—	...	...
HAITI	30.VI	223	126	--	--	26	36	3	4	119	92
HONDURAS	02.VI	2.158	2.569	109	9	...	...	1	--	983	420
JAMAICA		...	...	...	...	...	...	...	...	...	...
MEXICO	19.V	13.272	1.631	134	162	...	...	...	...	1.726	1.580
NICARAGUA	03.III	16	19	—	1	—	3	--	—	77	100
PANAMA	28.IV	2.552	318	—	—	8	4	—	--	90	25
PARAGUAY	09.VI	113	260	8	28	72	69	1	1	317	237
PERU	02.VI	1.108	1.041	31	35	65	54	35	33	6.032	1.375
SURINAME	07.IV	...	...	—	—	...	...	1	2	...	...
TRINIDAD & TOBAGO	05.V	216	481	—	—	12	8	--	--	15	4
U.S.A.	14.VII	11.086	21.255	22**	3	31	39	60	48	672	944
URUGUAY	31.III	30	185	--	--	6	6	—	--	92	432
VENEZUELA	16.VI	11.729	7.134	13	5	...	...	1	11	666	2.252

* Provisional data for 1979

** 19 paralytic cases; 3 non-paralytic cases

-- = no cases

... = data not available

Newsbriefs

EPI NATIONAL PROGRAM MANAGERS: Update for Honduras and the Dominican Republic

The Ministry of Public Health of the Dominican Republic has announced that Dr. Fabio Cabrera is the new EPI National Program Manager for that country. The previous manager, Dr. Apolinar Díaz Alvarez, is now performing other duties within the Ministry of Public Health in the Dominican Republic.

The new EPI National Program Manager in Honduras is Dr. Roberto Cruz Gavidia, who takes over the direct responsibility for EPI activities from Dr. Alberto Guzmán.

Note: Please refer to the table entitled "EPI National Program Managers" on page 6 of EPI Newsletter Number 1 to make these corrections.

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NEW MEMBER OF EPI REVOLVING FUND: Costa Rica

The Government of Costa Rica has advised PAHO of its decision to participate in the EPI Revolving Fund for the purchase of vaccines as of July 1979. This brings to a total of 28 the number of countries and territories in the Region of the Americas who will be taking advantage of the Fund's procurement mechanism in order to meet their 1980 EPI vaccine requirements.

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PAHO EXECUTIVE COMMITTEE: $800,000 for EPI Revolving Fund

In light of the urgent need for additional money to continue successful operation of the EPI Revolving Fund for the purchase of vaccines, the 82nd Executive Committee of the PAHO Directing Council, meeting in Washington, D.C. from 25 June to 3 July, passed a resolution proposing that $800,000 from the Working Capital Fund be added to the capitalization of the EPI Revolving Fund. Resolution V of the 82nd Executive Committee states that:

> "Considering the provisions of Resolution XXVII of the XXV Meeting of the Directing Council concerning the Expanded Program on Immunization and the establishment of the Revolving Fund for the Expanded Program on Immunization;
>
> Considering the presentation by the Director on the capitalization requirement for the operations of the Revolving Fund for the Expanded Program on Immunization; ...
>
> RESOLVES:
>
> 1. To recommend to the Directing Council that the Director be authorized to transfer $800,000 from the Holding Account to the Revolving Fund for the Expanded Program on Immunization. ..."

Final approval of the resolution must be given by the XXVI Directing Council which will meet in Washington, D.C. from 24 September to 5 October 1979.

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COLD CHAIN EQUIPMENT FOR THE CARIBBEAN

In recognition of the importance of proper cold chain appliances to the success of an immunization program, part of the USAID grant of $1,160,000 which was received by the Caribbean Epidemiology Center (CAREC), has been allocated for cold chain equipment to assist the countries and territories in the Caribbean with the storage and transport of vaccines. Twenty-two refrigerators and four freezers, each with a 10 cubic foot capacity, and 94 portable vaccine carriers will be distributed to Anguilla, Antigua, Bahamas, Belize, Dominica, Grenada, Guyana, Jamaica, Montserrat, St. Kitts, St. Lucia, St. Vincent, Suriname and Turks and Caicos Islands.

These cold chain appliances have been divided among the countries and territories based on an analysis of their needs made by the National EPI Program Managers, assisted by the PAHO EPI Technical Officer posted at CAREC and CAREC staff. Delivery of the equipment is expected during the first quarter of 1980.

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 create a flow of ideas and information concerning immunization programs in the Region to facilitate a sharing of problems and 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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