EPI Newsletter

Expanded Program on Immunization in the Americas

Volume II, Number 4 IMMUNIZE AND PROTECT YOUR CHILD August 1980

EPI Revolving Fund

New Members

Since the EPI Revolving Fund was established in 1979, its membership has gradually expanded to include almost all of the countries and territories in the Region. During the first year of operations, 19 countries and territories elected to procure their EPI vaccines through the Revolving Fund; the addition of nine new members for 1980 brought this number to 28. The latest participants to join the Fund are Brazil, the British Virgin Islands, Chile, Guatemala and Venezuela, making a total of 33 countries and territories which will participate in the Revolving Fund in 1981.

The addition of these new members underscores anew the importance of making timely reimbursements to the Fund, as well as the necessity of obtaining its full capitalization. An additional US$1.7 million is still being sought in order to reach the US$4 million originally projected as necessary for the smooth, uninterrupted operation of the EPI Revolving Fund.

Summary of 1980 Operations to Date

Vaccine Procurement

Preliminary data for 1980 show that the EPI Revolving Fund has procured 43.9 million doses of vaccine. This is 3.7 million more doses than were acquired in 1979, or an increase of 9.25% in vaccine orders.

The following quantities of EPI vaccines were purchased through the Revolving Fund for 1980: 11.1 million doses of DPT vaccine; 17.4 million doses of polio vaccine; 4.7 million doses of measles vaccine; 7.5 million doses of BCG vaccine; and 3.2 million doses of tetanus toxoid vaccine.

One of the problems that the Revolving Fund has experienced lately has been the cancellation of some countries' quarterly requirements one to two months after the order has been placed with the supplier. These abrupt changes are not in compliance with the operational guidelines for the Fund and tend to create problems with operations. Therefore, it is urged that all participants carefully plan their vaccine requirements and that any changes in orders be submitted at least two months before the quarter in which they plan to receive the vaccine.

Financial Summary

The cost of 1980 Revolving Fund operations is estimated to be US$3 million. This represents an increase of 11.1% as compared to 1979, when the cost of Revolving Fund operations was US$2.7 million.

New contracts have been issued for the purchase of the EPI vaccines during the period June 1980 - July 1981. The price of measles vaccine, which tends to be the most costly of the EPI vaccines, registered an average decrease of 18.2% per dose. The most marked price decrease occurred in the case of measles vaccine in 10-dose vials, which cost 29.6% less than in 1979. The largest increase in price per dose was recorded for BCG vaccine which went up by an average of 22% per dose. The average cost for all the EPI vaccines increased by only 3.73% over last year. If the decrease in the price of measles vaccine is not included, the average cost of all the other EPI vaccines increased by 11.03% as compared to last year.

Deliveries

Deliveries by suppliers have been excellent, with few delays encountered. Thus far this year, no shipments have been lost and only three orders have been delayed en route to their destination.

Contents

Reimbursements

Reimbursements to the Fund have not been satisfactory for the 1980 operations. Some countries still had outstanding 1979 invoices as of 31 August 1980. In one instance, 20 of the 30 participants in the EPI Revolving Fund held invoices that were outstanding for more than 60 days. One country had accumulated outstanding invoices totalling more than US$178,400, while another had US$130,000 in outstanding invoices.

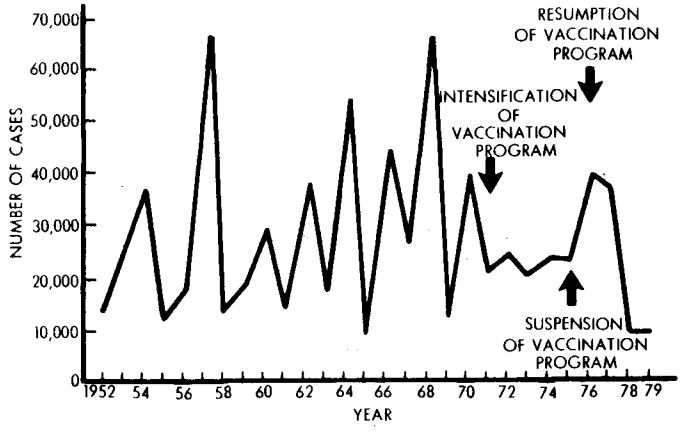
As a result of delinquent reimbursements, there were not enough funds for fourth quarter operations, which caused delays in placing orders with suppliers until the funds became available. In order to avoid similar problems in the future, participating countries are strongly urged to comply with the guidelines set forth by the Revolving Fund. Specifically, all participating countries are requested to observe the 60-day limit within which reimbursement should be made to the Fund once an invoice has been received.

Epidemiology

Measles in Argentina: 1952-1979

The epidemiological history of measles in Argentina between 1952 and 1979 is depicted in Graph 1. The trends of the disease during this period clearly reveal three peak epidemic years: 1957, when 66,419 cases were reported; 1964, with 53,018 cases; and 1968, with 66,253 cases. The incidence rates per 100,000 inhabitants for these years were: 337.36 (1957), 238.80 (1964), and 293.0 (1968). The number of cases reported for each year between 1952 and 1979, together with the corresponding incidence rates, can be seen in Table 1.

Graph 1
Reported Measles Cases, Republic of Argentina: 1952-1979



Vaccination against measles in Argentina was begun in 1965, however, due to low coverage and insufficient quantities of vaccine, the results obtained were not satisfactory. Starting in 1972, with the implementation of Public Health Code No. 19968 and the provision of sufficient quantities of vaccine, Argentina achieved a significant reduction in the number of measles cases reported, as can be seen in Graph 1.

Table 1

Measles Morbidity in Argentina: 1952-1979

Year	No. of Cases	Incidence Rate (per 100,000 inhabitants)
1952	12,731	71.23
1953	26,983	148.12
1954	37,206	200.47
1955	11,796	62.39
1956	17,074	88.50
1957	66,419	337.36
1958	13,855	68.95
1959	18,122	88.50
1960	29,978	143.78
1961	13,102	61.79
1962	37,493	174.06
1963	16,428	75.12
1964	53,018	238.80
1965	9,875	43.80
1966	44,904	196.11
1967	25,715	114.88
1968	66,253	293.0
1969	12,593	54.9
1970	39,222	168.5
1971	20,722	87.6
1972	24,510	101.9
1973	21,423	87.8
1974	23,803	95.7
1975	23,108	90.8
1976	39,291	151.7
1977	36,538	138.5
1978	9,551	35.2
1979	9,986	36.5

It will be observed in this graph that the epidemic peaks characteristic of the years prior to 1972 disappear during the period 1972-1975, when Argentina was implementing a widespread vaccination program. However, in 1975 Argentina suspended vaccination against measles and the number of cases notified began to increase rapidly. The marked increase in the number of measles cases in 1977 and 1978 provides clear evidence of what happens when vaccination activities are interrupted.

During the second semester of 1976, vaccination activities were resumed in time to blunt the effects of the measles epidemic which was then in course. By 1978, a significant reduction in measles morbidity and mortality had been registered, as is shown in Tables 1 and 2. Between 1976 and 1979, the number of notified measles cases decreased by 76%. The incidence rate for measles dropped in 1978 to the lowest ever obtained, a 66.8% reduction as compared to 1976.

Table 2

Measles Mortality in Argentina: 1970-1978

Year	No. of Deaths	Incidence Rate (per 100,000 inhabitants)
1970	1,485	6.38
1976	310	1.19
1977	242	0.93
1978	103	0.38

In 1980, Argentina is implementing the following strategies for providing vaccination against measles:

- routine vaccination programs with periodic intensification of activities.
- massive vaccination in case of outbreaks.
- vacccination of susceptible school-age children, including a proposed resolution that would require a measles vaccination certificate from children entering primary school or kindergarten.

Source: State Secretariat of Public Health, Republic of Argentina.

Editorial Note

The data on measles in Argentina illustrate once again the benefits that can be achieved with a good immunization program, while also serving as a reminder of the importance of program continuity. However, it should be noted that the key to controlling measles--as well as all the other EPI diseases--is to plan vaccination services in all areas of a country so that immunization is offered to the target populations on a routine basis. In this way, vaccination coverage is increased with the minimum amount of effort. Argentina deserves congratulations for its efforts to achieve effective control of measles.

Diphtheria in Venezuela: 1956-1975

A quick review of the epidemiological problem of diphtheria in Venezuela during the four 5-year periods running from 1956 to 1975, reveals a clear downward trend in the morbidity and mortality from the disease, as shown by the steady decline in the rates per 100,000 inhabitants. This is illustrated in Table 1.

Table 1

Five-year averages of numbers of cases, deaths and rates (per 100,000 inhabitants). Venezuela: 1956-1975

	Five-year averages		Five-year average rates (per 100,000 inhabitants)	
Periods	Cases	Deaths	Morbidity	Mortality
1956-1960	678.8	65.4	9.9	1.0
1961-1965	440.8	40.4	5.4	0.5
1966-1970	235.8	34.0	2.4	0.4
1971-1975	125.6	17.6	1.1	0.2

Table 2 classifies the federal subdivisions by the magnitude of their respective morbidity rates in the five-year periods 1966-1970 and 1971-1975. It can be seen that in 17 subdivisions (75.0% of the total) in 1966-1970 and in 21 of them (91.4%) in 1971-1975 the rates were below three per 100,000.

Table 2

Classification of Federal Subdivisions based on Morbidity Rates (per 100,000 inhabitants). Venezuela: 1966-1975

1966 - 1970		1971 - 1975	
Federal Subdivision	Range of Rates	Federal Subdivision	Range of Rates
Cojedes, Nueva Esparta, Sucre, Yaracuy	0.0 - 0.9	Federal District(a) Anzoátegui, Aragua, Barinas, Bolívar, Cojedes, Falcón, Guárico, Miranda(b), Monagas, Nueva Esparta, Portuguesa, Sucre, Trujillo, Yaracuy, Delta-Amacuro	0.0 - 0.9
Federal District(a) Apure, Aragua, Guárico, Monagas, Trujillo, Amazonas, Delta-Amacuro	1.0 - 1.9	Apure, Carabobo, Mérida, Zulia	1.0 - 1.9
Anzoátegui, Carabobo, Falcón, Mérida, Portuguesa	2.0 - 2.9	Táchira	2.0 - 2.9
Barinas, Miranda(b), Táchira	3.0 - 3.9	—	3.0 - 3.9
Lara, Zulia	4.0 - 4.9	Lara	4.0 - 4.9
Bolívar	5.0 - 5.9	Amazonas	5.0 - 5.9

(a) Metropolitan Health Zone
(b) Not including Sucre District

Diphtheria used to be an endemic and epidemic disease, particularly in the west-central and western parts of the country, but the systematic and sustained use of diphtheria vaccination has succeeded in lowering the incidence. The widespread use of antibiotics may also have substantially reduced the number of healthy carriers, who are usually reservoirs of the diphtheria bacillus.

Source: Boletín Epidemiológico Semanal, No. 6, 1979. Ministry of Health and Social Welfare in Venezuela.

Terms of Reference of the EPI Global Advisory Group

As described in EPI Newsletter Vol. II, No. 1, the Global Advisory Group (GAG) of the Expanded Program on Immunization met in New Delhi from 12-16 November 1979 to evaluate the status of EPI programs on a regional and global basis, and to develop recommendations regarding EPI strategies, program implementation, and research and development.

The Global Advisory Group consists of outstanding consultants who are appointed to advise WHO on its Expanded Program on Immunization. The Advisory Group is assisted in its work by additional consultants,

sub-committees and study panels for specific purposes as required. The major functions of the Group are:

- to advise the WHO secretariat with respect to Program priorities over the short, medium and long term;

- to promote the exchange of information concerning Program strategies and tactics among participants functioning at country, regional and global levels;

- to promote the understanding of, and support for, Program goals among technical and political leaders.

The Advisory Group consists of 12 members appointed by the Director-General of WHO. At least one member from each Region is selected from a panel nominated by the Regional Offices. The others are selected "at large" to provide geographical and technical balance.

The 12 members of the Group for 1980 are:

- Dr. José Manuel Borgoño-Domínguez (Chile)
- Prof. P. N. Burgasov (USSR)
- Dr. Amparo Banzon (Philippines)
- Dr. Harry M. Meyer, Jr. (USA)
- Dr. Imam Zagloul El Sayed Imam (Egypt)
- Dr. Kalisa-Ruti (Zaire)
- Prof. J. Kostrzewski (Poland)
- Prof. H. Lundbeck (Sweden)
- Prof. M. Rey (France)
- Dr. Ranjit Sen (India)
- Dr. Nadda Sriyabhaya (Thailand)
- Dr. N. N. Mashalaba (Botswana)

The next meeting of the EPI Global Advisory Group will be held in Geneva, from 20-24 October, 1980.

Vaccines

Forty Thousand Doses of Vaccine Saved

A consignment of 40,000 doses of combined measles and rubella vaccine, ordered by PAHO from the Yugoslav Institute of Immunology and valued at US$36,800, was airfreighted from Zagreb around 24-25 February 1980; it was transshipped in Madrid on Iberia Airlines and arrived in Montevideo, Uruguay, ten days later on 6 March. Following that date, the vaccine was kept in various places until 26 March, when it was finally cleared by customs and delivered to the Department of Epidemiology. The temperature inside the boxes was then recorded at 26°C. Since the airlines could not provide records on the storage conditions in Madrid (25 February - 6 March) and in Montevideo (6-26 March), use of the vaccine was deferred pending the results of potency testing.

The Reference Laboratory designated by PAHO, which reassayed the suspect vaccine at the request of the Uruguayan authorities, reported a mean infectivity titre for measles of 3.16 logs $TCID_{50}$, and for rubella of 4.20 logs $TCID_{50}$ per single human dose. Since these concentrations are higher than the minimum concentration requirement recommended by WHO (10^3 $TCID_{50}$), the vaccine was released and the authorities were advised to use it for immunization.

The vaccine, which used a stabilizer consisting of 5% sorbitol and 2.5% gelatin, proved to have a very satisfactory stability. For example, when the results reported by the Reference Laboratory were compared with those provided by the manufacturer, the titre of rubella was 0.5 log higher and that of measles 0.64 log lower. These differences were not considered significant as they may well have been due to variations often observed when biologicals are tested by different laboratories.

This experience has shown that some lots of freeze-dried measles/rubella vaccine do have exceptionally high stability, allowing them to remain potent under inadequate storage conditions for longer periods of time than normally expected for such preparations. This has been made possible by combining the use of better stabilizers with an improvement in the technique of freeze-drying. However, since lots may vary in stability, the only sure way to ascertain if the vaccine is still potent is to have it tested for its infectivity titre.

WHO International List of Availability of Vaccines

The second revision of the "WHO International List of Availability of Vaccines" has been published in English and one copy is being sent to each country in the Region. This list does not claim to be complete, but will certainly provide useful information to those concerned with the procurement of vaccines. The data provided by the manufacturers have been updated and the latest products on the market are included.

Measles vaccine, stable under tropical conditions for several weeks, and with a shelf life of two years, is available from Merck, Sharp & Dohme (U.S.A.) and Smith Kline - Rit Institute (Belgium).

Inactivated polio vaccine is produced by several laboratories, such as Smith Kline - Rit Institute (Belgium), Connaught Laboratories (Canada), Merieux Institute and Pasteur Institute (France). The latter laboratory prepares an adsorbed product. Inactivated polio vaccine is also available in a combined formula with other antigens, such as "T" from Connaught Laboratories (Canada) and from both Pasteur Institute and Merieux Institute (France); "DT" from Connaught Laboratories (Canada) and Merieux Institute (France); and "DTP" from Connaught Laboratories (Canada), the Merieux and Pasteur Institutes (France), and Rijks Institute (Netherlands).

Of the human immunoglobulins, the Swiss Serum and Vaccine Institute produces anti-measles and antipertussis immunoglobulins; an anti-pertussis immunoglobulin (human) is available from Cutter Laboratories (U.S.A.), which also manufactures anti-rabies, anti-D, and anti-hepatitis B human immunoglobulins.

A limited number of copies of this list are still available. Government agencies interested in acquiring additional copies should address their request to their respective PAHO Country Representative.

Restesting of Vaccines: Update to EPI Manual of Operations

The following table updates the figures on the minimum number of doses of vaccine which should be in stock in order to justify the cost of retesting the vaccine for potency. Accordingly, the first two columns of the table entitled "The Retesting of Vaccines," which appears twice in the EPI Manual of Operations (Book I, Annex 4, page 6; and Book III, Section 2, Figure 2.3, page 14) should be revised as shown below:

THE RETESTING OF VACCINES

Vaccine	No. of doses involved justifying test	No. of doses needed for test*
Measles (freeze dried) (applies also to Mumps, Rubella and Yellow Fever)	1,000	50
Poliomyelitis (oral)	1,000	50
Poliomyelitis (killed)	10,000	50
BCG (freeze dried)	10,000	100
DPT**	50,000	100
Diphtheria-Tetanus Toxoid	25,000	100
Tetanus Toxoid	25,000	100

*Taken from at least five different locations in the store.

**Figure for DPT based on the assumption that only the pertussis component would be tested.

Training Activities

EPI Workshop Session on Programming Immunization Services

The emphasis now being placed on primary health care and extension of health services coverage underlines anew the need to develop simple and reliable approaches to the planning of health services at the local or district levels. The translation of broad national health plans into workable programs at the field level has always proved elusive, particularly when such programs must provide meaningful guidance for the activities of field health workers. The recent EPI workshop sponsored by PAHO/WHO for the English-speaking Caribbean provided an opportunity to utilize such a practical approach in the development of national immunization programs.

The workshop, which took place in Port-of-Spain, Trinidad and Tobago, from 9 to 13 June 1980, brought together the immunization program managers from 17 English-speaking Caribbean countries and territories. The purpose of the workshop was to review the immunization delivery system, and discuss ways to expand immunization coverage through better planning, management and evaluation procedures.

A special session held during the last day of the workshop was devoted to the development of specific program plans for improving immunization services at the national level. Each national team participating in the workshop was requested to prepare a draft work plan setting their objectives for the next two years, identifying the activities to be performed, and including a timetable to be followed.

The work plans began by defining the immunization problem, considering such factors as the morbidity and mortality of the EPI diseases, program management, financing, socio-economic and legal considerations, the technology utilized, and the human resources available for the program. Based on this definition of the problem, the objectives of the program were set forth. It was emphasized that the objectives should be realistic and measurable ones, focusing on the specific group of people to be served or level of immunization coverage to be achieved. The activities needed to achieve the objectives were then listed, paying special attention to the sequence and timing of activities, the relationship between the problem, objectives and activities, mechanisms for evaluating the program, and the support required from other agencies for the success of the program. Finally, a rough estimate was given of the resources required, the likely constraints, and the individuals responsible for the achievement of each activity.

Editorial Note

The inclusion in the Caribbean EPI workshop of a session on planning health services provided a framework for the participants to use in refining their national immunization programs within the context of primary health care. The work plans produced served as a basis for discussions in outlining those areas of an immunization program which must be coordinated between EPI and Primary Health Care. The work plans will also aid the national participants in programming future EPI activities. Plans are underway to include a similar programming session in future EPI training courses.

PAHO Executive Committee Meeting, 1980

The 84th meeting of the Executive Committee of the PAHO Directing Council, held in Washington, D.C., from 23 to 27 June 1980, approved the following resolution covering the various components of the Expanded Program on Immunization:

"To recommend to the XXVII Meeting of the Directing Council that it approve a resolution along the following lines:

THE DIRECTING COUNCIL,

Having noted that immunization coverage in the Region remains low, particularly for children under one year of age and pregnant women, and of the limitations

of the information systems necessary for the surveillance of the diseases included in this Program;

Recognizing that good quality vaccine is of fundamental importance for the success of the Program;

Having taken note of the progress accomplished in the development of regional strategies for the implementation of this Program, particularly the approach utilized for the strengthening of managerial capabilities through the EPI training courses and the efforts to integrate these activities within the context of primary health care;

Taking note of the rapid establishment of the Regional Cold Chain Development Center recommended by Resolution XXI of the XXVI Meeting of the Directing Council;

Having considered the still limited capitalization of the EPI Revolving Fund and aware that the feasibility studies for the establishment of this Fund approved by the XXV Meeting of the Directing Council, and subsequently by the XX Pan American Sanitary Conference, showed that a level of US$4,000,000 would be necessary for its smooth operations; and

Having in mind that the achievement of the goals of the EPI by 1990 will be a milestone vis-à-vis the attainment of health for all by the year 2000,

RESOLVES:

1. To approve the training strategies being implemented and to urge Member Governments to formulate specific plans to multiply the EPI national training workshops at the primary health care level.

2. To recommend to Member Governments that vaccination activities be geared towards the high-risk group of children under one year of age and pregnant women.

3. To emphasize to Governments that within their epidemiological surveillance system it is of high priority to reinforce the surveillance of the diseases included in this Program through guidelines that can be applicable to all levels of the health system, in order to measure the real impact of the EPI in disease reduction.

4. To recommend that countries which are involved in the production of DPT and BCG vaccines, and which have installations equipped to perform tests and titrations on attenuated live virus vaccines, make every effort to comply with the requirements laid down by WHO for control of these products and provide support for strengthening national quality control services.

5. To commend the Director for his efforts in promoting the rapid development of the EPI in the Americas.

6. To recommend that the Director make efforts to include the EPI training materials in all PAHO-sponsored training of primary health care workers.

7. To request the Director to support the consolidation and operations of the Regional Cold Chain Development Center.

8. To ask the Director to study and present to the XXVII Meeting of the Directing Council, in conjunction with this present progress report, the alternatives for full capitalization of the EPI Revolving Fund to the needed level of US$4,000,000, including restoration of the level of the Revolving Fund by timely reimbursements."

Final approval of the resolution must be given by the XXVII Directing Council which will meet in Washington, D.C. from 22 September to 3 October 1980.

EPI National Program Managers

The following table is an update on the national officials responsible for EPI in each country of the Region, as well as the countries participating in the EPI Revolving Fund for the purchase of vaccines. Readers are requested to advise the editor of any changes to this list so that the Newsletter may continue to provide the latest information available.

Country	Participant in EPI Revolving Fund	EPI National Program Manager
Argentina	+	Dr. Rubén Smud
Bahamas	+	Dr. C. Davis
Barbados	+	Dr. A. V. Wells
Bolivia	+	Dr. Mario Lagrava B.
Brazil	+	Dr. Fernando Gomes
Canada	-	Dr. J. W. Davies
Chile	+	Dr. Héctor Rodríguez
Colombia	+	Dr. Wilfredo Dávila
Costa Rica	+	Dr. Emilia León de Coto
Cuba	-	Dr. Josefa Fernández T.
Dominica	+	Ms. Olivia Williams
Dominican Rep.	+	Dr. Fabio Cabrera
Ecuador	+	Dr. Humberto Baquero
El Salvador	+	Dr. Eduardo Navarro R.
Grenada	+	Ms. Cynthia Telesford
Guatemala	+	Dr. Otto Zeissig
Guyana	+	Ms. E. D. Cholmondeley
Haiti	+	Dr. L. Jasmin
Honduras	+	Dr. Roberto Cruz Gavidia
Jamaica	-	Dr. Alma Dyer
Mexico	-	Dr. Jorge Fernández de Castro
Nicaragua	+	Dr. Jaime Manzanares
Panama	+	Dr. Carlos Brandáriz
Paraguay	+	Dr. Fidel Moreno G.
Peru	+	Dr. Carlos Queirolo M.
Suriname	+	Dr. A. de Rooy
Trinidad & Tobago	+	Dr. Roderick Dougdeen
Uruguay	+	Dr. Leonel Pérez Moreira
USA	-	Dr. Alan Hinman
Venezuela	+	Dr. Rafael Travieso

Reported Cases of EPI Diseases in the Americas

NUMBER OF REPORTED CASES OF MEASLES, POLIOMYELITIS, TETANUS, DIPHTHERIA AND WHOOPING COUGH
FROM 1 JANUARY THROUGH THE LAST PERIOD REPORTED IN 1980
AND FOR THE COMPARABLE PERIOD IN 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 √	09 Feb.	491	666	3	-	18	29	17	9	3221	2219
BAHAMAS √	16 Aug.	433	1106	-	-	3	1	-	-	11	-
BARBADOS	12 Jul.	25[a]	5	-[b]	-	7[b]	4	3[a]	10	-[b]	1
BOLIVIA	11 Aug.[c]	...	1855	...	371	...	73	...	25	...	782
BRAZIL	05 Apr.	9771	8547	501	470	489	501	685	862	7337	5566
CANADA	12 Jul.	9677	20370	-	2	...	...	37	44	1145	1098
CHILE	26 Jul.	2495	13676	1	-	...	...	160	196	587	206
COLOMBIA √	20 Apr.	2520	6980	36	218	172	...	115	74	2396	3591
COSTA RICA	28 Jun.	647	979	-	-	5	15	-	-	481	88
CUBA	07 Jun.	2404	5383	-	-	7	8	-	-	43	100
DOMINICA √	21 Jun.	-	177	-	-	2	1	-	-	1	-
DOMINICAN REP. √	02 Feb.	832	650	-	...	11	8	29	27	23	117
ECUADOR	31 May	882	2174	4	5	44	31	4	7	470	944
EL SALVADOR √	02 Aug.	1266	8878	3	1	37	74	-[d]	-	321	549
GRENADA √	16 Aug.	51	1	-	-	-	-	1	-	-	-
GUATEMALA	28 Jun.	1540	2355	38	20	38	28	5	1	771	693
GUYANA √	21 Jun.	386[a]	3	...	...	9[e]	2	1[a]	3	...	...
HAITI √	28 Jun.	74	223	4	-	71	26	6	3	201	94
HONDURAS	26 Jul.	2791	3017	3	203	14[f]	21	1	2	1331	1404
JAMAICA	31 May	15	76	-	-	3	9	4	1	8	18
MEXICO	31 May	17978	17737	348	262	257	266	4	4	2207	2266
NICARAGUA	25 Aug.[c]	...	50	...	-	...	-	...	-	...	167
PANAMA	31 May	1029	2842	-	-	16	9	-	-	327	132
PARAGUAY	12 Jul.	240	244	6	10	92	89	3	1	554	379
PERU	19 Jul.	3657	1746	68	36	113	82	97	44	1924	6376
SURINAME	22 Mar.	-	-	-	-	-	-	-	1	-	-
TRINIDAD & TOBAGO	19 Jul.	202[a]	332	-[g]	-	16[g]	17	-[g]	-	7[g]	19
U.S.A.	16 Aug.	12684	11789	6[h]	23[i]	41	40	3	59	912	872
URUGUAY	31 May	61	161	-	-	4	7	-	-	103	123
VENEZUELA	26 Jul.	5528	14006	-	25	...	...	8	1	1090	873

a) Source: CAREC Surveillance Report, July 1980.
b) Data through 21 June.
c) Data not available for 1980; Data for 1979 through last epidemiological period in August.
d) Data through 31 May.
e) Data through 5 April.
f) Data through 30 June.
g) Data through 12 July.
h) Four paralytic cases.
i) Twenty paralytic cases.

- No cases
... Data not available

Selected Readings

The following articles on EPI diseases and vaccines have been selected for their possible interest to newsletter readers. Copies of these articles may be obtained, at no cost, upon written request to the editor. Please quote the reference number in parentheses when making your request.

Measles

(II-4-1) Wesley A, Coovadia HM, Watson AR, "Immunization against measles in children at risk for severe disease," Trans Roy Soc Trop Med and Hyg, 73(6):710-715, 1979.

(II-4-2) Grassi J, Salinas V, "Sarampión en Paraguay: Experiencia en el Hospital de Enfermedades Infecciosas y Tropicales de Asunción," Bol Of Sanit Panam, 85(3), 1978.

(II-4-3) Buynak EB, Weibel RE, et al, "Long-term persistence of antibody following Enders' original and more attenuated live measles virus vaccine," Proceedings of Society for Experimental Biology and Medicine, 153:441-443, 1976.

Poliomyelitis

(II-4-4) Davis L, Bodian D, et al, "Chronic progressive poliomyelitis secondary to vaccination of an immunodeficient child," New Eng J Med, 297(5):241-245, 1977.

(II-4-5) Salk D, "Eradication of poliomyelitis in the United States. III. Poliovaccines--Practical considerations," Rev Infec Dis, 2(2):258-273, 1980.

(II-4-6) Fox, JP, "Eradication of poliomyelitis in the United states: A commentary on the Salk Reviews," Rev Infec Dis, 2(2):277-281, 1980.

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