EPI Newsletter

Expanded Program on Immunization in the Americas

Volume IX, Number 1 — IMMUNIZE AND PROTECT YOUR CHILD — February 1987

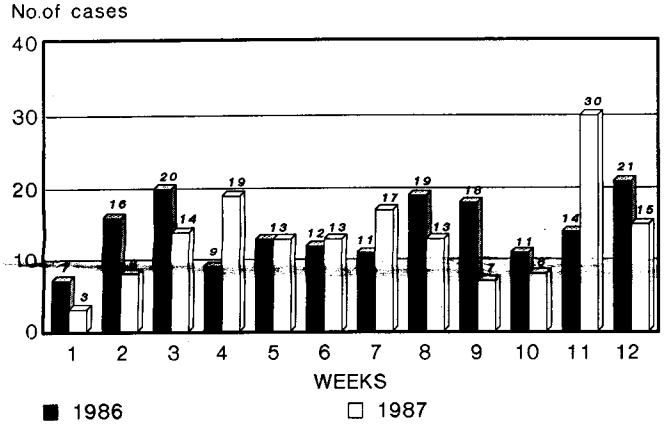
Polio in the Americas: First 12 weeks, 1986 and 1987

Countries of the Americas have reported 171 cases of poliomyelitis for the first 12 weeks of 1987, as compared to 160 cases for the same period in 1986. The weekly distribution of these cases is shown in Figure 1.

Overall, there has been no significant change in the cumulative number of cases reported during the two periods. The marked increases shown in weeks 4 and 11 are due to the large number of cases reported by Brazil for those weeks (12 and 13, respectively). These figures do not represent an outbreak of polio cases, but rather delayed reporting of previously unreported cases.

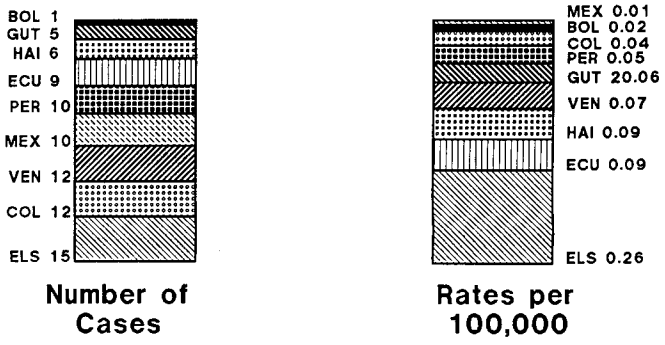
Figure 2 shows the number of reported 1987 cases, together with the respective rates per 100,000 population, by country, in increasing orders of magnitude. It is interesting to note that the position of a country changes according to whether absolute or relative values are being

FIGURE 1. Weekly distribution of polio cases reported for weeks 1-12. Region of the Americas, 1986 and 1987.



Source: PAHO

FIGURE 2. Number of reported polio cases and rates per 100,000 population, by country[1]. Region of the Americas, weeks 1-12, 1987.



[1] Brazil (80 cases, 1.22 per 100,000) is not included in these figures.
[2] 1986 population data

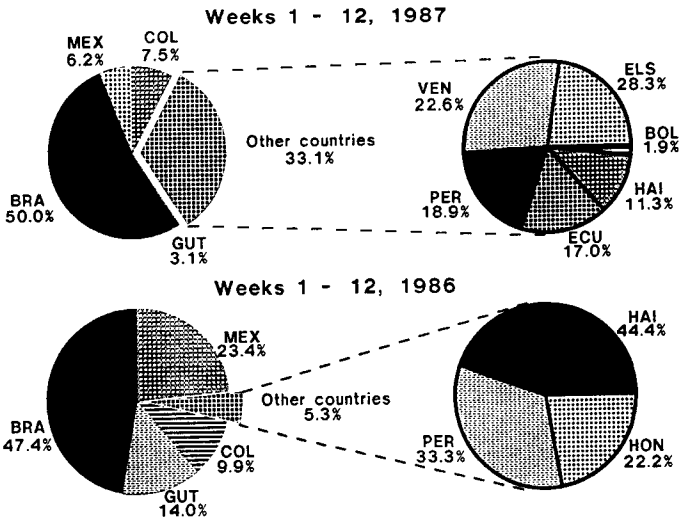
Source: PAHO

In this issue:

considered. For example, Mexico is fourth in importance in absolute numbers, but last in terms of rates. Brazil, which is the major contributor of cases, is excluded from the two bar charts to make it easier to compare the relative positions of the other countries.

Figure 3 shows the proportion of polio cases reported by each country for the first 12 weeks of 1986 and 1987. Brazil, Mexico, Guatemala, and Colombia, which jointly accounted for 95% of cases in 1986, account for only 70% in 1987. Since Brazil's proportion of total cases is actually slightly higher (50% in 1987 vs. 47% in 1986), the reduction for Mexico, Guatemala and Colombia is even greater than those figures indicate. Also noteworthy is the increase in the number of countries reporting cases (10 in 1987 vs. 7 in 1986).

FIGURE 3. Proportion of reported polio cases, by country. Region of the Americas, weeks 1-12, 1986 and 1987.



Source: PAHO

Imported Paralytic Poliomyelitis - United States, 1986

In May 1986, a 29-year-old California woman contracted paralytic poliomyelitis while traveling in Asia. She had worked and traveled in Nepal from January through May 2, and she visited Burma between May 3 and May 9. On May 10, she traveled to Thailand, where she had onset of fever (a temperature of 102°F), malaise, and a feeling of weakness lasting one day. On May 16, she again had symptoms: fever (a temperature of 104.2°F), headache, and low back pain. On May 17, she experienced weakness in the lower extremities (right more than left), constipation, and urinary retention. On May 19, she was unable to walk and was hospitalized in Bangkok. A flaccid paralysis of the lower extremities without sensory or bulbar involvement was noted. Cerebrospinal fluid contained 90 leukocytes, of which 93% were lymphocytes.

The patient returned to the United States on June 6, confined to a wheelchair. On examination, she was noted to have flaccidity and no deep-tendon reflexes in the right lower extremity. Her sensory modalities were intact; constipation and urinary retention had resolved. Poliovirus type 1 was isolated from stool collected on June 22 and subsequently characterized as "wild-like" by genomic sequencing (1). Electromyography and nerve-conduction studies performed on June 26 were consistent with axonal neuropathy of poliomyelitis. The results of serologic tests for immunoglobulin IgG, IgA, and IgM were within normal ranges. At 60 days after the onset of weakness, she had residual paralysis of the right leg below the knee.

The patient had a vaccination history of three doses of inactivated poliovirus vaccine (IPV) in the late 1950s and one "sugar cube" (not known whether it contained a monovalent [MOPV] or a trivalent oral poliovirus vaccine [OPV]) at a mass clinic in the early 1960s. The patient had traveled previously in Asia and elsewhere, but had not received any doses of poliovirus vaccine before any departures.

Editorial Note: The last cases of paralytic poliomyelitis acquired in the United States and caused by wild poliovirus occurred in 1979. From 1980 through 1985, four reported cases of paralytic poliomyelitis caused by wild virus occurred among U.S. citizens—all persons returning from developing countries. These imported cases represent 7% of the 55 cases of paralytic poliomyelitis reported during the 6-year period 1980-1985. The other 51 cases were vaccine associated. During the preceding 6-year period (1974-1979), nine (12%) of 78 reported cases of paralytic poliomyelitis were imported. Of the 13 persons who had imported cases reported between 1974 and 1985, six (46%) were over 18 years of age. The vaccination status of the 13 patients was as follows:

a) seven had no history of poliovirus vaccination;
b) four had received one or two doses of poliovirus vaccine (one had had two doses of OPV; two, one dose of OPV; and one, one dose of IPV); and
c) two had completed at least a primary series (one with three doses of OPV and the other with five doses of IPV, three doses of MOPV, and one dose of OPV).

In addition, some inappropriately immunized U.S. residents and others may become infected asymptomatically while in an area with endemic poliomyelitis and

may excrete wild poliovirus temporarily after entering the United States (2).

Worldwide, 24,275 cases of paralytic poliomyelitis were reported to the World Health Organization (WHO) in 1984 (3). WHO's Southeast Asia region accounted for 15,167 cases (63% of the world total); followed by 4,513 cases (19%) in the Western Pacific region; 1,959 cases (8%) in the Eastern Mediterranean region; 1,833 cases (8%) in the African region; 571 cases (2%) in the Americas; and 238 cases (1%) in Europe. The global surveillance data doubtless reflect substantial underreporting, but provide useful information on trends.

The widespread use of OPV through the WHO Expanded Program on Immunization (EPI) is probably responsible for the observed downward trend in the incidence of poliomyelitis throughout the world—and thus for the probable reduction in recent years of the risk that individual travelers would be exposed to wild virus in some countries. Conversely, the trend among U.S. citizens toward more frequent international travel may lead to a greater overall risk of exposure to wild poliovirus. In 1983, an estimated 5 million U.S. citizens visited developing countries.

Travelers to countries with endemic or epidemic poliomyelitis should be fully vaccinated (3, 4, 5). The only countries currently considered free of endemic wild poliovirus circulation are the United States, Canada, Japan, Australia, New Zealand, and most of Eastern and Western Europe. Before visiting other countries, every traveler should have received, at a minimum, a complete primary series of vaccinations (Table 1). In addition, the Immunization Practices Advisory Committee (ACIP) recommends that persons who have previously completed a primary series receive an additional dose of poliovirus vaccine, generally as OPV, before travel (4).

Persons who have not had a primary series and who have less than 4 weeks before beginning international travel should receive one dose of OPV regardless of age. Such travelers who are under 18 years of age should complete the primary series, at the recommended intervals, whether they remain in the foreign country or return to the United States. Persons 18 years and older should complete the primary series only if they remain in the foreign country or plan to travel again to a country with endemic poliomyelitis.

If at least 4 weeks remain before departure, inadequately vaccinated persons 18 years of age and older should receive, at intervals of no less than 4 weeks, additional doses of IPV up to the four recommended to complete a primary series. IPV is preferred to OPV for adults—especially those with no history of poliovirus vaccination, because the risk of vaccine-associated paralysis following OPV is slightly higher for adults than for children.

If time permits, infants and children under 2 years of age traveling to a country with endemic disease should receive at least three doses of OPV, since virtually all persons vaccinated with three doses seroconvert to all three poliovirus serotypes (6). Intervals between doses may be reduced to 4 weeks to maximize immunization status before departure. If the child is under 6 weeks of age, a dose of OPV should be given before travel, but should not be counted as part of the three-dose primary series (3). Thereafter, if the infant remains in a country with endemic disease, the primary schedule recommended by the EPI, three doses given at 4-week intervals, should be followed (7).

Poliomyelitis among travelers is preventable. Therefore, it is important that health-care providers, tour operators, and travel agents alert travelers to the potential risk of paralytic poliomyelitis in developing countries and that increased efforts be made to comply with published poliomyelitis vaccination recommendations (4, 5, 8, 9).

TABLE 1. Alternative poliomyelitis vaccination schedules recommended by the Immunization Practices Advisory Committee (ACIP) for a primary series*

Doses	Oral Poliovirus Vaccine (OPV)	Inactivated Poliovirus Vaccine (IPV)
Primary 1	≥6 weeks of age	≥6 weeks of age
Primary 2	6-8 weeks later	4-8 weeks later
Primary 3	6 weeks-12 months later	4-8 weeks later
Primary 4		6-12 months later

* OPV is the vaccine of choice for all persons < 18 years of age, if there are no contraindications to vaccination with a live-virus vaccine. IPV is the vaccine of choice for unvaccinated persons ≥ 18 years of age.

References

1. Rico-Hesse R, Pallansch MA, Nottay BK, Kew OM. Natural distribution of wild type 1 poliovirus genotypes. In: Brinton MA, Rueckert R, eds. Positive strand RNS viruses. UCLA Symposia on Molecular and Cellular Biology, new series, vol. 54. New York: Alan R. Liss, 1986.
2. Paul JR. Epidemiology of poliomyelitis. In: Debre R, et al. Poliomyelitis. Geneva: WHO Monograph Series. 1955;26:9-29.
3. WHO. Poliomyelitis in 1984. Part 1. *Weekly Epidemiological Record* 1986;61:229-33.
4. ACIP. Poliomyelitis prevention. *MMWR* 1982;31:22-6, 31-4
5. ACIP. Adult immunization. *MMWR* 1984;33:1S-68S.
6. McBean AM, Thoms ML, Johnson RH, et al. A comparison of the serologic responses to oral and injectable trivalent oral poliovirus vaccines. *Rev Inf Dis* 1984;6(supp.2):S552-5.
7. WHO. Expanded program on immunization. *Weekly Epidemiological Record* 1985;60:13-6.
8. Committee on Immunization, American College of Physicians. Guide for adult immunization. Philadelphia, Pennsylvania: American College of Physicians, 1985.
9. CDC. Health information for international travel, 1986. Atlanta, Georgia: US Department of Health and Human Services, Public Health Service, 1986. HHS publication no. (CDC) 86-8280.*

* Available from the U.S. Government Printing Office, Washington, D.C., 20402.

Source: *Morbidity and Mortality Weekly Report* (MMWR) 35(43): 671-674, 1986.

Belize Improves Immunization Coverage

Belize has recorded the highest immunization coverage ever achieved throughout the country. This conclusion was reached in a recent survey conducted with the purpose of assessing coverage with DPT, TOPV and measles vaccines among children under five years of age, and the attitudes and perceptions of the population regarding immunization.

Although coverage with BCG vaccine had been 81% in 1984 and 82% in 1985 in children under one year, coverage with the other vaccines for this age group had ranged from 43% to 61% during the same period. A national EPI campaign was launched by the Ministry of Health with the short term goal of immunizing at least 90% of children under five with DPT, TOPV and measles vaccines, and the long term goal of maintaining these levels through the routine program, by ensuring that at least 90% of newborns are fully immunized within their first year of life. The campaign received strong support and collaboration from the Pan American Health Organization (PAHO), the United Nations Children's Fund (UNICEF), and Rotary International.

The EPI coverage evaluation survey was carried out in October, 1986. The survey used the cluster sampling method developed for EPI and used by PAHO/WHO. Four hundred and twenty children were randomly selected in 30 clusters of children between 9 and 12 months of age, and 30 clusters of children from 1 to 5 years. Each child was evaluated for immunization status, and the parents were surveyed on their attitudes and perceptions regarding the program.

The survey showed that the national campaign had helped raise immunization levels to the highest ever achieved within the country. National coverage levels ranged from 82% to 86% in different age groups and for different vaccines (see Table 1). The results were compatible with coverage estimates made from the results of the national campaign (see Figure 1).

All of the parents interviewed approved of immunization and were found to be receptive and generally satisfied with the service. Reasons for not fully immunizing children included sickness of the child, constraints in parental time, inadequate information or transportation, and side effects from an earlier dose. Suggestions by parents for increasing immunization coverage included improving access with mobile clinics and increasing utilization with better information campaigns.

Belize health officials hope to maintain the gains achieved in the recent campaign by ensuring that every child born in the future will be fully immunized within its first year of life through the normal health care system. This should help to reach the goal of 90% coverage within the next few years for all children under one year of age with the four major vaccines. The researchers made the following recommendations aimed at maintaining the coverage levels achieved in the campaign:

- Each health center should establish monthly targets of newborns to be immunized. The targets should be monitored so that corrective actions may be taken when they are not met.
- Each center should have an outreach system for following up on children who are not maintaining the recommended schedules.
- Mobile clinics should be used with greater frequency to facilitate coverage in areas where transportation is a problem.
- Greater community participation should be elicited in collaboration with the local health unit.
- More than one vaccine should be given simultaneously to eligible children, and children suffering from a runny nose, mild fever or malnourishment should not be excluded.
- Health education to the family by all members of the health team should be emphasized to increase understanding and utilization of immunizations as well as other health services.

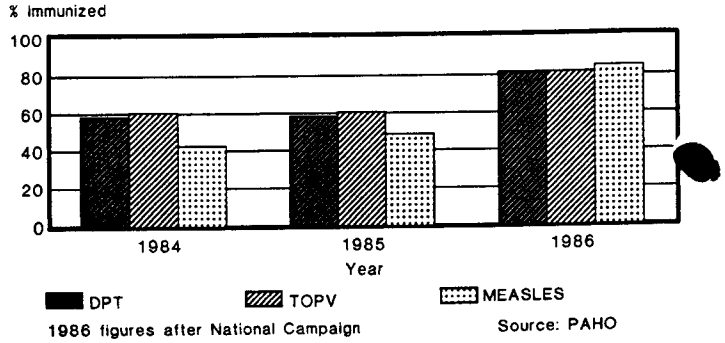
TABLE 1. Immunization coverage in Belize October, 1986

Percent of Children Fully Immunized

Age Group	VACCINE		
	TOPV	DPT	MEASLES
9 months-1 year	82	82	85
1 year-5 years	85	85	86
Birth-5 years	84	83	85

Source: PAHO

FIGURE 1. Percentage of immunized children under 1 year of age. Belize, 1984-1986.



1986 figures after National Campaign

Source: PAHO

Mexico to Stage Second Polio Immunization Campaign

For the second year in a row, Mexico is staging two national mass immunization days against polio, on 24 January and 28 March, using vaccine provided by The Rotary Foundation of Rotary International. More than 10.5 million children under five years of age were immunized during the first day.

In 1986, more than 11 million children received polio vaccine at some 80,000 posts manned by government health workers and volunteers. Health authorities estimate the number of reported cases of polio dropped 56 percent, from 148 cases reported in 1985 to 65 cases in 1986.

Through its PolioPlus Program, the Rotary Foundation is providing U.S. $3,193,000 for polio vaccine, cold chain equipment and immunization promotion through 1990.

The decision to repeat the National Vaccination Days reflects the continuing commitment of the Mexican government to strengthen its Expanded Program on Immunization and renew its efforts towards eradicating polio from the country, thus furthering the Hemispheric goal of eradicating the indigenous transmission of wild poliovirus by 1990. Working with Mexican Rotarians, representatives of the Pan American Health Organization (PAHO), and the United Nations Children's Fund (UNICEF), government officials are helping to plan, promote and implement the national immunization effort.

Mexican Government workers and volunteers joined forces and immunized 90 percent of the children under 5 years of age on the first national polio immunization day of 1987.

Source: Rotary International, Evanston, Illinois

Revolving Fund Sets Vaccine Prices, 1987

Each year PAHO's EPI Revolving Fund consolidates the estimated vaccine requirements from all participating countries and requests bids from manufacturers who meet the WHO standards for vaccine quality. The Fund has been able to obtain excellent low prices throughout eight years of operation because it has been able to estimate its requirements with accuracy.

The 1987 prices for vaccines purchased through the Revolving Fund are provided below for information.

Vaccine	Number of doses per vial	Price per dose F.O.B. US$
BCG	10 doses	.076
	20 doses	.042
DPT	10 doses	.026
	20 doses	.024
DT (adult)	10 doses	.016
	20 doses	.014
DT (pediatric)	10 doses	.017
	20 doses	.0145

Vaccine	Number of doses per vial	Price per dose F.O.B. US$
Measles	1 dose	.42
	10 doses	.10
Measles (Edmonston)	1 dose	.35
Polio (Torlak)	10 doses	.030
(Sclavo)	10 doses	.037
Polio (Torlak)	20 doses	.020
(Sclavo)	20 doses	.034
TT	10 doses	.020
	20 doses	.011

National Plans for EPI and Polio Addressed by ICC

On January 8, 1987, PAHO convened the third meeting of the Inter-Agency Committee (ICC) for the Expanded Program on Immunization (EPI) and the polio eradication initiative in the Americas at PAHO headquarters in Washington. Representatives of all member agencies attended the meeting, including UNICEF, IDB, USAID, and Rotary International, as well as PAHO. Also present was the chairman of the PAHO-EPI Technical Advisory Group (TAG). The head of the Task Force for Child Survival, which represents the World Bank, UNICEF, UNDP, WHO, and the Rockefeller Foundation, chaired the meeting.

Discussions focused on the status of funding by the member agencies for the regional plan of action for the acceleration of EPI and polio eradication. The members reviewed the polio situation in the Region and the status of development of the 5-year national plans of action. They also discussed a format for detailing the financial elements of the national plans of action.

The major conclusions and recommendations reached included:

1. All agencies involved in the EPI and polio eradication at the country level should improve coordination in order to avoid duplication of efforts and resources and reinforce their efforts in strengthening the national EPI.

2. To achieve the above, the ICC should be reproduced at the country level with representatives of the participating agencies. These groups should schedule regular meetings at the country level to review the status of the national plan of action.

3. PAHO and UNICEF should take the lead in assuring that the ministries of health initiate the process of further development and review of the national plans of action, including financial analysis. They should also establish a timetable for joint government/ICC review of the plan.

4. All negotiations with the host government in programs that support EPI and polio eradication should be conducted with representatives of the ICC participating agencies.

5. EPI support funds will be disbursed by the ICC member agencies only after agreeing with the host government on the national plan of action. Previous agreements already being implemented between the member agencies and the host government will not be affected. However, every effort should be made to integrate these into the national plan of action.

6. After the national plan of action is reviewed and approved, it will be the basic instrument of coordination between the host government, the ICC, and the other agencies (including private voluntary organizations) which support EPI and polio eradication.

7. A timetable for the review process of each national plan of action will be developed after consultation with each host government and representatives of ICC agencies. This should be transmitted to all concerned with the development, review, and approval of that plan.

Joint WHO/UNICEF Statement on Immunization and AIDS

The Risk of Transmitting HIV Infection through Immunization

Infection with human immunodeficiency virus (HIV) can occur when injections are given using unsterile needles or syringes. Under the Expanded Program on Immunization (EPI) and the stimulus of achieving the goal of Universal Childhood Immunization by 1990, national programs are now increasing the number of injections given to children for the purpose of immunization. What are the risks of HIV infection from injections given for immunization in countries where the EPI target diseases are serious health problems?

The risk of an injection transmitting HIV infection is zero if a sterile needle and a sterile syringe are used. The vast majority of persons who provide immunization are trained health workers who know how to sterilize needles and syringes. Correct sterilization practices are now receiving special emphasis in every country with an EPI. Injections for immunization are among the safest injections a child receives.

The potential for spread of HIV infection in childhood immunization sessions is low even where sterilization practices are below standard. First, the efficiency of HIV transmission through injection is quite low. Second, immunization entails only a small number of injections. Third, immunization involves small needles which do not become grossly contaminated with blood.

Immunization programs in developing countries are now preventing almost a million deaths a year from measles, neonatal tetanus and whooping cough. Tragically, these diseases still cause some 3.5 million deaths each year in unimmunized children.

Halting immunization efforts because of the fear of AIDS would increase deaths among children, while doing little to stop HIV transmission. The major risk for HIV infection of children is infection of the mother, with spread to the child before, during or shortly after birth. A second risk is receiving blood transfusions which are not

Reported Cases of EPI Diseases

Number of reported cases of measles, poliomyelitis, tetanus, diphtheria and whooping cough, from 1 January 1986 to date of last report, and for same epidemiological period in 1985, by country

Subregion and Country	Date of last report	Measles		Polio-myelitis§		Tetanus				Diphtheria		Whooping Cough	
						Non-neonatal		Neonatal					
		1986	1985	1986	1985	1986	1985	1986	1985	1986	1985	1986	1985
NORTHERN AMERICA													
Canada	01 Nov.	14,585	2,189	—	1	4**	6**	...	...	4	6	1,827	1,590
United States	29 Nov.	5,914	2,704	2	7	59**	67**	...	...	—	2	3,943	3,275
CARIBBEAN													
Antigua & Barbuda	04 Oct.	1	1	—	—	...	—	...	1	—	—	—	—
Bahamas	27 Dec.	85	26	—	—	—	6	—	—	—	—	—	—
Barbados	29 Nov.	2	2	—	—	3	—	—	—	—	—	1	13
Cuba	06 Sep.	2,810	2,359	—	—	13**	5	...	—	...	...	293	100
Dominica	01 Nov.	43	60	—	—	—	—	—	—	—	—	—	—
Dominican Republic	27 Dec.	501	4,417	1	2	37	79	8	12	51	100	219	172
Grenada	01 Nov.	16	7	—	—	—	—	—	—	1	—	7	—
Haiti	14 Jun.	93	...	33	82	48	...	78	...	3	...	300	...
Jamaica	01 Nov.	29	64	—	—	1**	2	...	—	2	—	1	1
St. Christopher/Nevis	04 Oct.	24	24	—	—	—	—	—	—	—	—	—	—
Saint Lucia	01 Nov.	7	9	—	—	—	2	—	—	—	—	—	—
St. Vincent and the Grenadines	01 Nov.	5	...	—	—	—	...	—	...	—	...	—	...
Trinidad & Tobago	29 Nov.	2,637	3,431	—	—	12	12	—	—	—	—	14	7
CONTINENTAL MID AMERICA													
Belize	01 Nov.	49	6	—	—	—	2	—	...	—	...	7	35
Costa Rica	01 Nov.	2,065	1	—	—	2**	5	...	...	—	...	104	110
El Salvador	31 May	128	...	9	10	12	...	13	...	—	...	168	...
Guatemala	19 Apr.	651	...	39	19	15	...	1	...	...	...	189	...
Honduras	01 Nov.	454	5,883	6	5	44	16	12	5	—	—	180	221
Mexico	27 Dec.	8,250	19,492	70	148	...	...	...	...	28	4	1,207	2,231
Nicaragua	04 Oct.	2,093	554	—	—	...	...	...	...	—	—	372	102
Panama	27 Dec.	4,103	4,295	—	—	3	—**	9	—	—	—	38	106
TROPICAL SOUTH AMERICA													
Bolivia	27 Dec.	320	211	7	—	18	54	20	3	13	31	329	964
Brazil	01 Nov.	84,211	62,749	749	461	1,638	1,697	388	521	1,541	1,825	18,695	18,162
Colombia	27 Dec.	5,180	...	75	33	130	...	119	...	23	...	2,055	...
Ecuador	26 Jul.	459	...	20	—	52	...	46	...	10	...	548	...
Guyana	09 Aug.	13	76	—	—	2**	6	...	—	—	—	—	1
Paraguay	20 Sep.	282	...	—	3	68**	...	...	...	16	...	98	...
Peru	01 Nov.	2,093	4,401	42	65	67	100	94	30	24	44	811	3,885
Suriname	09 Aug.	35	...	—	—	1	...	...	...	—	...	—	...
Venezuela	27 Dec.	14,164	24,677	2	8	146	120	26	46	4	16	3,428	4,147
TEMPERATE SOUTH AMERICA													
Argentina	27 Dec.	6,325	9,240	—	2	63**	76**	...	...	14	10	1,883	4,654
Chile	29 Nov.	11,133	13,023	—	—	16	22	2	—	245	195	34	622
Uruguay	*	...	...	—	—	...	...	...	...	...	...	...	...

* No 1986 reports received.

** Tetanus data not reported separately for neonatal and non-neonatal cases. Total tetanus data is reported in non-neonatal column.

§ Data for polio is for entire year.

— No cases

... Data not available

screened for HIV contamination. HIV may also be transmitted to children by injection. Children thought to have been infected by this route, however, have received injections for treatment, and usually a large number. In the environment in which this was documented, many such injections were given outside of the health system with little or no attention to sterilization.

Immunization programs should continue to be vigorously pursued in all countries. All programs should ensure that each injection is given with a single sterile needle and a single sterile syringe.

The selection of injection equipment

WHO and UNICEF recommended re-usable syringes and needles for use in developing countries.[1] They should be steam-sterilized between uses. Disposable needles and syringes should only be used if it can be ensured that they will actually be destroyed after a single use. Jet injectors may also provide an alternative. However, until further studies clarify the risks of disease transmission, their use should be restricted to special circumstances where the use of needles and syringes is not feasible because of the large numbers of persons to be immunized within a short period of time.

Immunizing HIV-infected individuals

In October, the EPI Global Advisory Group considered the problem of immunizing children with AIDS.[2] They concluded:

"In countries where human immunodeficiency virus (HIV) infection is considered a problem, individuals should be immunized with the EPI antigens according to standard schedules. This also applies to individuals with asymptomatic HIV infection. Unimmunized individuals with clinical (symptomatic) AIDS in countries where the EPI target diseases remain serious risks should not receive BCG, but should receive the other vaccines (Table 1).

In general, live vaccines are not given to immunocompromized individuals, but in developing countries, the risk of measles and poliomyelitis in unimmunized infants is high and the risk from these vaccines, even in the presence of symptomatic HIV infection, appears to be low."

TABLE 1. Recommendations on the use of EPI antigens in HIV-infected individuals in countries where the EPI target diseases remain an important cause of morbidity.

	Vaccine	Asymptomatic	Clinical AIDS
Infants	BCG	yes	no
	DPT	yes	yes
	OPV	yes	yes
	IPV	yes	yes
	Measles	yes	yes
Women	Tetanus toxoid	yes	yes

Source: *Weekly Epidemiological Record*, 62(9):53-54, 27 February 1987.

[1] WHO/UNICEF Joint Guidelines: Selection of injection equipment for the Expanded Program on Immunization. EPI Technical Series No. 2, Document WHO/UNICEF/EPI.TS/86.2, October 1986.

[2] See No. 3, 1987, pp. 5-9.

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

Editor: Ciro de Quadros
Assistant Editors: Roxane Moncayo Eikhof
Jacqueline Barth
Peter Carrasco
Contributor to this issue: Henry Smith

ISSN 0251-4710

Expanded Program on Immunization
Maternal and Child Health Program
Pan American Health Organization
525 Twenty-third Street, N.W.
Washington, D.C. 20037
U.S.A.