EPI Newsletter

Expanded Program on Immunization in the Americas

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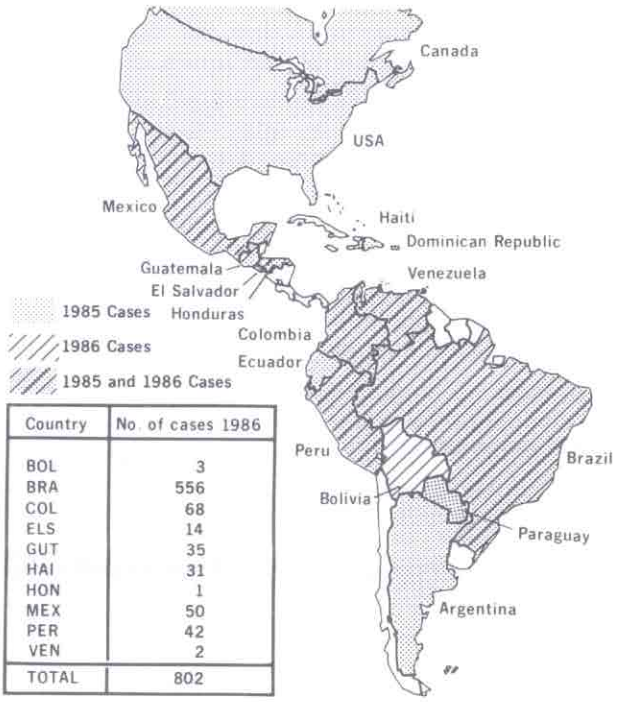
Polio in the Americas: First 40 weeks

During the first 40 weeks of 1986 (ending 4 October) a total of 802 cases of poliomyelitis have been reported from 10 countries in the Region of the Americas (Figure 1). For the same period in 1985, 517 cases were reported from 11 countries. Six countries which had cases in 1985 have reportedly been polio-free during the current year: Argentina, Canada, the Dominican Republic, Ecuador, Paraguay, and the United States. One country—Bolivia—reported no cases in 1985 but has had three cases in 1986.

Since week 32 (ending 9 August) three new countries have reported cases: Bolivia (3 cases), Honduras (1), and El Salvador (14).

Laboratory results on the specimens taken from the cases in Bolivia and Venezuela indicate they are due to type 3 poliovirus. In Brazil, type 3 has also proved to be responsible for 71 percent of the cases for which laboratory data are available.[1] These data strongly suggest an increase in the circulation of type 3 poliovirus in the Region.

FIGURE 1. Countries reporting poliomyelitis cases in the Region of the Americas. Weeks 1-40, 1986.



Country	No. of cases 1986
BOL	3
BRA	556
COL	68
ELS	14
GUT	35
HAI	31
HON	1
MEX	50
PER	42
VEN	2
TOTAL	802

[1] *See* EPI Newsletter *VIII-4 (August 1986), page 3.*

In this issue:

Conclusions of Third EPI Technical Advisory Group Meeting

The EPI Technical Advisory Group (TAG) met for the third time since its creation in 1985 to review the polio situation in the Americas and make recommendations on how to achieve the 1990 goal of hemispheric polio eradication. The group first assembled in Rio de Janeiro, where they attended the inauguration of the polio laboratory diagnostic course at the FIOCRUZ laboratories, then went on to Brasilia for their meeting on 10-12 September.

Following are the conclusions and recommendations of that meeting.

The TAG notes with pleasure the striking progress that has been made since the last meeting. This is particularly evident in Brazil and Mexico. The Group also wishes to express its appreciation for the rapid and generous support of bilateral and international agencies (e.g. USAID, UNICEF) and voluntary agencies such as Rotary International. This support has been a key factor in the progress achieved to date. In the face of all the external support being provided, it is essential for countries to begin now to plan for the continuation of efforts once the period of external funding has come to an end. Notwithstanding the progress to date, several problems remain which threaten the success of the program. Some of these are addressed below, by category.

National management

The intersectoral nature of the program, its national (and international) scope, and the multiplicity of external funding sources make it essential that an individual or small group be designated at the national level and given the responsibility for coordinating the program. This individual or group should also have the authority to affect policy.

Operational issues

Vaccination coverage should more regularly be analyzed at the municipal level (or smaller) and special efforts should be planned to increase coverage in areas where coverage is lower than 80%. This might include special vaccination cycles. Because of the problems in using available population data to estimate coverage, other techniques, such as the rapid coverage surveys being used in Mexico, should be considered to obtain accurate data.

The occurrence of cases in areas where there have been repeated vaccination cycles (such as in Northeastern Brazil) raises questions about the adequacy of the cold chain. A special study of its adequacy would appear to be warranted. In all countries, however, continued attention to the appropriate conservation of vaccines from the manufacturer to the vaccine recipient is essential because of OPV's extreme sensitivity to heat.

Although the inclusion of other antigens in programs which have previously been exclusively directed at polio introduces operational complexities, the TAG continues to feel that efforts should be made to include other EPI antigens in the campaigns.

Surveillance

Considerable progress has been made in developing surveillance manuals and a beginning has made in the development of national surveillance systems. Nonetheless, surveillance issues continue to pose the most critical problems. The TAG notes that in some countries the number of suspected cases notified is equal to, or greater than, the number of probable or confirmed cases. The SUSPECTED case categorization should be very temporary. Within 48 hours of initial notification, every SUSPECTED case should either be categorized as a PROBABLE case or dropped as due to some other cause. Similarly, PROBABLE cases should be finally classified within 10 weeks of notification as either CONFIRMED polio or NOT POLIO.

All investigations should be carried out by specially trained epidemiologists from the state (in large countries such as Brazil) or national level. Every effort should be made to obtain both acute AND convalescent sera as well as stool specimens in order to increase the likelihood of confirming the case. Efforts should also be made to determine WHY the case occurred—vaccine failure, unvaccinated child (and if unvaccinated, why?), etc.—as a guide for remedial efforts.

Surveillance systems will undoubtedly vary from country to country and even within countries. Nonetheless, some common principles should be followed. At least one reporting source should be identified in each municipality (or comparable small geo-political unit) and should report to the state (or national) level each week, whether polio cases have been seen or not. Participation of the reporting source should be monitored as one form of evaluation of the surveillance system. Other

indicators of the adequacy of the surveillance system should be developed and used, including the interval between case onset and notification, interval between notification and investigation, proportion of cases with complete information, length of time to complete the investigation, proportion of reporting sources reporting each week, etc.

All countries reporting few or no cases should augment their detection system by identifying all hospitals and rehabilitation centers where cases are apt to be seen and by asking them to report each week all cases of febrile paralytic disease, Guillain-Barré syndrome and transverse myelitis. This will undoubtedly require repeated visits by program surveillance officers to establish the system. All such cases should be investigated by specially trained epidemiologists and laboratory specimens should be obtained and tested promptly. Other efforts to confirm the absence of polio might include lameness surveys in areas which have gone several years without reported cases.

Laboratory support

Improvements in laboratory support and development of a comprehensive laboratory network are urgently needed. The TAG notes the considerable progress that has already been made in the evaluation of national laboratories, the development of laboratory manuals, and the training of laboratory personnel. As a next step, the TAG feels it appropriate for PAHO to designate a limited number of laboratories (5-6) to receive immediate support which would allow them to function as international resources. Based on the evaluations carried out, the TAG suggests that the laboratories of Argentina, Brazil (FIOCRUZ), Colombia, Guatemala, Mexico, and Trinidad (CAREC) might be appropriate selections for the first stage of development.

For purposes of polio eradication, the primary diagnostic information needed from the laboratory is whether the causative agent is poliovirus or not. It is not necessary to pursue further a possible non-polio etiology. In a few areas, however, where capacity already exists, it will be of interest to carry out the more complex and expensive tests necessary to identify the non-poliovirus etiologic agent on at least a sample of cases. The decision to carry out this additional effort should be made in the full awareness of the costs and labor involved.

In some countries, the close coordination necessary between the laboratory and the epidemiologists/program managers has not yet been developed. The laboratory plays a critical role in surveillance, which itself is key to the success of the program. Every effort should be made to ensure that laboratory, epidemiologic, and operational personnel work closely and effectively together, perhaps to the extent of including representatives of each activity in case or outbreak investigations.

Research

Both basic and operational research will be required in the eradication program. The most pressing needs seem to be in the area of operational research targeted to solve existing problems—e.g. cold chain system, vaccine non-acceptance, most effective surveillance tools in a particular area. Additionally, consideration should be given to an evaluation of coverage by individual year of age to determine whether 3- and 4-year-old children are participating in vaccination days to the same extent as infants and younger children, and whether inclusion of 3- and 4-year-olds in the target population affects estimates of coverage in the population most at risk. More basic tools are also needed, such as a rapid test to differentiate wild from vaccine virus. The TAG believes PAHO should coordinate development of a formal research agenda and then seek to ensure the research is carried out.

Brazil

The Type 3 outbreak in the Northeast is puzzling and apparently could be due either to selective failure of the Type 3 component of OPV or to overall failure of OPV (e.g. because of cold chain problems) in an environment where Type 3 poliovirus happened to be circulating. The steps that have been taken to address the current problem are appropriate and the studies now underway should be completed as soon as possible. Further approaches which might be taken to help identify the causes of the problem include a careful evaluation of the cold chain, assessment of coverage at the local level by means of surveys to determine if low coverage may exist in affected areas, and further analysis of available data to see if there is any apparent difference in clinical efficacy of the Type 1 and Type 3 components. If there is any indication of problems with the cold chain, the use of temperature indicators to accompany vaccine should be considered.

Next TAG meeting

The next TAG meeting was tentatively set for late April 1987, in Guatemala. Primary agenda items should include presentations on the current status of activities in the Central American countries, updates from Brazil and Mexico, discussion of Type 3 poliovirus and vaccine, and consideration of a research agenda.

Source: Final Report of the Third Meeting of the EPI Technical Advisory Group (TAG) on Polio Eradication in the Americas, Brasilia, 10-12 September 1986.

Review of 1985 Polio Cases in the United States of America

In September 1985, clinical, laboratory and epidemiological data on 150 suspected cases of poliomyelitis reported to the Centers of Disease Control (CDC) from 1975 to 1984, were reviewed individually. CDC's Division of Immunization, Center for Prevention Services, and Division of Virology, Center for Infectious Diseases, had tentatively determined that 121 cases met the case definition for paralytic poliomyelitis.[1] Overall, 118 cases were accepted by the reviewers as cases and classified according to an epidemiological classification system established in 1975 that provides epidemic, endemic, imported, and immune-deficient categories.

Compared to the average of 15,822 cases per year during 1951-1955, the period directly preceding the widespread availability and use of polio vaccines, cases averaged 15 per year during 1975-1979 and declined to 9 per year during 1980-1984. Of the total 118 cases for 1975-1984, 10 (8%) were epidemic cases, i.e., were epidemiologically linked with another case(s), all from a 1979 epidemic caused by a wild type 1 poliovirus; 12 (10%) were imported cases among United States citizens with onset of illness before or after return to the United States; and 11 (9%) were cases occurring among persons with primary immunodeficiencies. One of these latter cases, which occurred in 1981 in a non-traveller, was the last case of endemic, wild-virus poliomyelitis in the United States. The remaining 85 (72%) cases were endemic, i.e., were not epidemiologically linked to another case(s); 71 (60%) were epidemiologically associated with vaccine usage. Of the 71 vaccine-associated cases, 30 (42%) occurred among vaccine recipients, and 41 (58%), among contacts of vaccine recipients. Fourteen (40%) of the endemic cases were not epidemiologically associated with vaccine; however, 5 had virus isolates characterized definitively as vaccine-related.

MMWR Editorial note: Continuing transmission of paralytic poliomyelitis caused by wild virus has been eliminated in the United States using the currently recommended immunization policy of the Immunization Practices Advisory Committee (ACIP), which relies primarily on oral polio vaccine (OPV) use for the primary immunization series. From 1980 to 1984, only 3 of 45 cases (2 imported and 1 immune-deficient) were documented as wild by strain characterization of poliovirus isolates. A third imported case was presumed epidemiologically to be caused by a wild poliovirus. Otherwise, the rare cases of reported paralytic poliomyelitis in the United States have been vaccine-associated.

The risk of vaccine-associated paralytic poliomyelitis, based on 85 cases occurring in immunologically normal recipients and contacts and the distribution of an estimated 274.1 million doses of OPV during 1973-1984, is 1 case per 3.22 million doses of OPV distributed.

When all 104 vaccine-associated cases (85 among immunologically normal recipients and contacts; 13 among immune-deficient recipients and contacts; and 6 other cases from whom a vaccine-like virus was isolated) from this same period are included, the overall vaccine-associated risk is 1 case per 2.64 million doses of OPV distributed.

At the October 1985 meeting of the ACIP, issues concerning polio vaccines and current polio immunization policy in the United States were reviewed. Discussion included live polio vaccine and both the currently available inactivated polio vaccine (IPV) and a more potent IPV not currently available in the United States. The issues discussed included seroconversion, intestinal immunity, duration of immunity, replication of poliovirus in the intestine, safety, immunization coverage, seroprevalence, the current epidemiology of poliomyelitis in the United States, and the estimated likelihood of wild poliovirus introduction. In the light of the data reviewed, the ACIP concluded that no change in the basic approach to poliomyelitis in the United States (primary reliance on OPV with selected use of IPV) is warranted currently but that the subject should be reviewed on a continuing basis.

[1] Since 1969, the CDC definition of a case of paralytic poliomyelitis has been a patient with paralysis clinically and epidemiologically compatible with poliomyelitis which, at 60 days after onset of symptoms, has a residual neurological deficit, died, or for whom no information is available on neurological residua.

Source: *Weekly Epidemiological Record* 61(34):262, 22 August 1986 (article based on *Morbidity and Mortality Weekly Report* 35:11, 1986).

The Epidemiology of Non-Vaccination

Missed Opportunities

While in some areas low immunization coverage is due to the non-availability of services, a significant proportion of non-vaccination results from the failure of the health system to use every opportunity for immunization. To find out why these opportunities are missed, it is useful to look at the epidemiology of non-vaccination. Such an investigation should focus on the following questions:

- *Who* is not vaccinated?
- *Where* could vaccination have been given?
- *When* could vaccination have been given?
- *Why* were vaccinations not given?

Who is not vaccinated?

Data from a maternal and child health clinic in a Bhutan hospital showed that, of the 113 children registered and eligible for measles vaccine:

- 30% had no contact after reaching the minimum age for measles vaccination.
- 29% had contact after 9 months but were not immunized.
- 8% were vaccinated prior to the 9-month recommended age of immunization.
- 13% were immunized at their first contact after 9 months.
- 17% were immunized at the second or subsequent contact after 9 months.[1]

Had every child attending the clinic been screened and immunized at his or her first contact after reaching 9 months of age, coverage would have been greater than 60% rather than the 30% reported.

Where and when could vaccination have been given?

The three most common locations where missed opportunities can be identified are immunization clinics, health centers and hospitals. It is frequently found in exit interviews at immunization clinics that 10-20% of needed immunizations are not administered. Five main reasons for these missed opportunities have been identified: children are either not screened, screened incorrectly, screened but not referred, referred but not immunized, or incompletely immunized.

Non-screening occurs most frequently in busy clinics where patient flow is more chaotic than orderly. *Errors in screening*, interval between doses, and/or missed identification for measles vaccine are common, especially where screening is delegated to a non-experienced volunteer. *Screening without referral* is the most serious of the immunization session problems. Immunization cards are screened, vaccination dates are entered on the vaccination card, the vaccination card is returned to the mother, and the mother and child leave the clinic without immunization. A system needs to be established which prevents this from occurring.

Equally troubling is the failure to use the opportunities for immunizaton at well-child clinics, sick-child clinics, and hospital outpatient/emergency rooms. This is especially critical for measles, where immunization on the day of exposure is needed to prevent the all too common spread of measles in clinic settings. Daily vaccination, at least for measles, at all clinics seeing 10 or more eligible children should be routinely established.

Why were vaccinations not given?

For health facilities keeping register books, supervisory review to determine immunization practices and coverage is very useful. A review of a register in Indonesia, for example, showed that only half of the 32 children attending clinic and age-eligible for measles, had been immunized. Some of the reasons advanced by an experienced vaccinator for this situation included:

- "History of measles—didn't need the vaccine."
- "Only had two children—didn't want to open a 10-dose vial of vaccine."
- "Child had a cold/fever."
- "First contact...didn't want child to suffer with three injections."

Such misunderstandings emphasize the need for routine supervision to identify problems, discussions to understand the problems, and remedial training to correct the problems.

The poor coverage of pregnant women with tetanus toxoid (TT) provides multiple examples of missed opportunities for immunization. Data on TT coverage in 19 Indonesian provinces showed that for pregnant women with two or more prenatal care visits, only 21% were adequately protected.[2] Had vaccination been given routinely at every prenatal clinic, coverage would have been over 68%. Failure to immunize mothers bringing

[1]Weekly Epidemiological Record 61(17):128-129 (1968).

[2]Bulletin of the World Health Organization 64(2):259-262 (1986).

their children for infant immunization represents another missed opportunity.

Opportunities taken

Another example from Indonesia shows what can happen when health staff take advantage of all opportunities for immunization. At a multipurpose village health clinic in East Java, held in the community leader's house, village-based volunteers hold weekly clinics to provide health and nutrition education, growth monitoring, nutrition counseling, and family planning. Monthly, or in some cases quarterly, health center staff provide immunization. Prior to the immunization session the village volunteers identify children in need of immunization and give them a written referral slip. Health staff provide BCG, DPT, TOPV, measles and TT immunizations, achieving coverages of almost 100%. Although there may be a few children outside the system who have not been immunized, there are no missed opportunities for those who are included in the system.

In the same village the outpatient register at a local subcenter was reviewed for measles cases. Despite measles in the area, only one resident case had occurred in the high-risk population eligible for vaccination—those between 9 months and 1 year of age.

What were the factors that led to this success?

- a committed community leader (a woman mayor)
- community volunteers
- community interest and participation
- a system to identify and refer susceptibles
- a tight process of screening
- a competent and motivated vaccinator
- a plan to ensure coverage of the entire area
- a monitoring system to identify progress and problems.

As these examples show, an investigation into the epidemiology of non-vaccination may reveal many opportunities to increase coverage at minimal cost. Health staff involved in immunization activities at all levels should know how to identify and make effective use of these opportunities to increase coverage with the EPI vaccines.

Editorial note: The need to take advantage of every contact to provide immunization is one of the WHO "recommendations for action" to achieve program acceleration recently endorsed by the World Health Assembly. WHO emphasizes that all curative and preventive health services should offer immunization, even to children suffering from malnutrition or mild illness.

An effective system of communication between health providers and the communities they serve will be necessary to identify and take advantage of missed immunization opportunities in ways that are acceptable to the population served. These relatively simple and inexpensive approaches to increasing coverage take on even greater importance in light of the 1990 goal to eradicate indigenous transmission of wild poliovirus in the Americas.

Source: Based on unpublished paper presented at the International Symposium on Vaccine Development and Utilization (Washington, DC, 9-10 June 1986) by Stanley O. Foster, M.D., M.P.H., International Health Program Office, Centers for Disease Control (Atlanta, Georgia).

EPI Recommends Against Routine Use of Antipyretics in Immunization Programs

The World Health Organization's Expanded Program on Immunization (WHO/EPI) has concluded that antipyretics, anti-inflammatory and analgesic medications should not be recommended for routine prophylactic use in childhood immunization programs. In the exceptional case of a child who has had a severe febrile reaction to an earlier dose of DPT vaccine, paracetamol or acetoaminophen may be considered for prophylactic use.

WHO/EPI recently reviewed the available information regarding side reactions following DPT immunization and their possible relationship to high dropout rates between first and third doses of the vaccine. It has been postulated that the use of drugs such as salicylates or paracetamol would lower DPT dropout rates by reducing the incidence of side reactions.

These conclusions were based on the following considerations:

- *The relationship between dropout rates and vaccine side effects remains unproven.* Most programs show dropout rates of 20-40% between the first and third dose of DPT. The fact that dropout rates in several mass polio campaigns were in the same range suggests that other factors may play a more important role. Studies of reasons for non-completion of immunization series

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	Report for week ending	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	9 Aug.	13,952	1,894	—	—	3**	2**	...	...	2	5	1,163	860
United States	06 Sep.	5,345	2,417	—	3	47**	43**	...	...	—	1	2,084	1,998
CARIBBEAN													
Antigua & Barbuda	19 Apr.	—	1	—	—	—	—	—	1	—	—	1	—
Bahamas	14 Jun.	21	16	—	—	—	4	—	—	—	—	—	1
Barbados	19 Apr.	—	1	—	—	1	—	—	—	—	—	—	—
Cuba	*	...	...	...	...	...	...	...	...	...	...	...	...
Dominica	14 Jun.	29	40	—	—	—	—	—	—	—	—	—	—
Dominican Republic	*	...	...	...	...	...	...	...	...	...	...	...	...
Grenada	14 Jun.	5	6	—	—	—	—	—	—	—	—	7	—
Haiti	*	...	...	31	74	...	...	...	...	...	...	...	...
Jamaica	25 Jan.	6	...	—	...	—	...	—	...	—	...	—	...
St. Christopher/Nevis	17 May	10	22	—	—	—	—	—	—	—	—	—	—
Saint Lucia	22 Feb.	1	3	—	—	—	—	—	—	—	—	—	—
St. Vincent and the Grenadines	*	...	...	...	...	...	...	...	...	...	...	...	...
Trinidad & Tobago	19 Apr.	1,497	...	—	—	1	...	—	...	—	...	4	...
CONTINENTAL MID AMERICA													
Belize	14 Jun.	15	4	—	—	—	2	—	—	—	—	7	28
Costa Rica	*	...	...	—	—	...	...	...	...	...	...	...	...
El Salvador	3 May	93	1,076	14	3	9	17	9	9	—	3	134	80
Guatemala	19 Apr.	651	...	35	7	15	...	1	...	...	...	189	...
Honduras	14 Jun.	347	4,045	2	5	6	4	4	3	—	—	79	108
Mexico	*	...	...	50	109	...	...	...	...	...	...	...	...
Nicaragua	19 Apr.	668	...	—	...	...	...	...	...	—	...	115	...
Panama	28 Jun.	2,210	...	—	...	2	...	1	...	—	...	20	...
TROPICAL SOUTH AMERICA													
Bolivia	22 Mar.	25	73	3	—	...	5	5	—	5	9	113	331
Brazil	26 Jul.	36,285	33,490	556	248	1,060	1,116	277	363	1,121	1,412	12,707	11,844
Colombia	*	...	...	68	14	...	...	...	...	...	...	...	...
Ecuador	17 May	333	...	—	...	...	...	29	...	10	...	449	...
Guyana	22 Feb.	2	13	...	...	1	1	...	...	—	—	—	—
Paraguay	19 Apr.	132	...	—	3	13	...	14	...	9	...	57	...
Peru	22 Feb.	7	...	42	44	—	...	3	...	1	...	14	...
Suriname	*	...	...	...	...	...	...	...	...	...	...	...	...
Venezuela	19 Apr.	4,242	10,840	2	7	—	—	—	—	—	3	859	508
TEMPERATE SOUTH AMERICA													
Argentina	14 Jun.	1,607	3,722	...	—	36**	43**	...	...	8	4	842	2,805
Chile	17 May	3,387	1,471	...	—	10	12	—	—	68	47	11	539
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 through week 40 (ending 4 October).

— No Cases

... Data not available

show that lack of knowledge or difficult access to services are mentioned much more frequently than fear of side effects.

• *The efficacy of prophylactic administration of this kind of medication remains to be proven.* Only one study was found in which acetoaminophen given just before DPT immunization significantly reduced the frequency of fever six hours after immunization. In this study the incidence of local reactions was not significantly altered.

• *The risks associated with the administration of these drugs are small, but should not be disregarded.* The use of salicylates in infants should be actively discouraged because of the danger of hyperpyrexia, that is, the reverse of the intended effect. There is also the much rarer, but more serious, association with Reye's syndrome when salicylates are given to children with certain infections. Furthermore, as with any medication, there is the small but distinct risk of accidental overdose. Paracetamol is known to be responsible for liver damage when taken in excessive dosages.

• Irrespective of any clinical rationale for considering the use of antipyretics and similar medications in immunization programs, *their introduction as a routine procedure would have significant cost, logistical and training implications.*

Thus, in the absence of evidence that the use of antipyretics improves completion of the DPT series, WHO/EPI does not recommend their routine use. Further studies are required to determine (1) the effects of local and systemic reactions after DPT immunization on compliance in immunization programs, especially on dropout rates, and (2) the effects of prophylactic use of antipyretic and similar medications on the incidence of side effects.

Source: WHO memo EPI/I8/372/CDC EPI/I8/446/VI dated 31 July 1985.

World Health Day 1987 Will Focus on Immunization

Next year's World Health Day will take place on 7 April 1987 and will emphasize the prevention of childhood diseases through immunization. The slogan "Immunization: A Chance for Every Child" will be used to publicize the event.

It is hoped that World Health Day celebrations will help to emphasize that the success of the EPI depends upon mobilizing the active participation of individuals and their communities. National celebrations could be used as a vehicle for promoting the EPI by encouraging the involvement of leading political, medical and entertainment figures in special immunization events.

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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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