EPI Newsletter

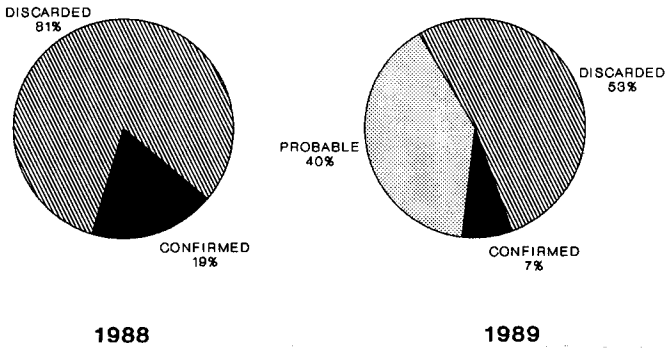
Expanded Program on Immunization in the Americas

Volume XI, Number 4 **IMMUNIZE AND PROTECT YOUR CHILDREN** August 1989

Poliomyelitis in the Americas, Weeks 1 - 32, 1989

A total of 983 probable cases of polio have been reported in the Region up to the week ending August 12, 1989; 1,269 were reported for the same period in 1988. Figure 1 shows the proportion of these cases that were confirmed and discarded during the same period in both years, and Figure 2 compares the distribution of confirmed cases by dates of onset of paralysis from week 1, 1986 to week 32, 1989.

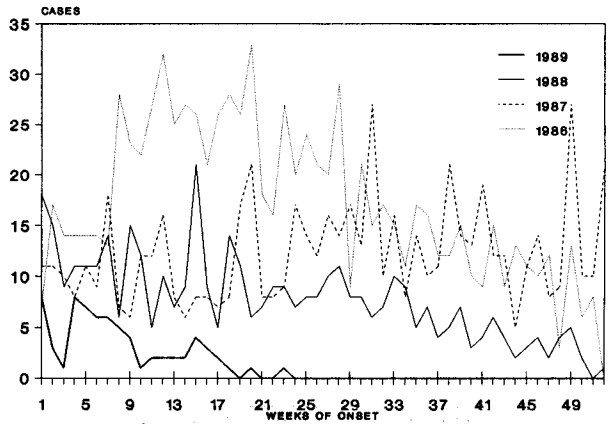
Figure 1. Proportion Polio Cases Confirmed and Discarded from all Cases Reported, Region of the Americas, 1988 and 1989



Source: Weekly case data reported by countries

The descent in the curve for 1989 is partly explained by the fact that there are ten weeks (as of onset) to follow-up cases and assign final classification. This would mean that the majority of cases with onset after week 21 would not have received final classification by week 32. The Polio Eradication Field Guide states that one of the targets for surveillance is that 90% of cases reported should be followed-up and classified within ten weeks of onset.

Figure 2. Confirmed Polio Cases by Week of Onset of Paralysis, Region of the Americas, Week 1, 1986 to week 32, 1989



Source: Weekly case data reported by countries

In this issue:

Seventh Meeting of the Technical Advisory Group on EPI and Polio Eradication

1. Introduction

The Seventh Meeting of the Technical Advisory Group on EPI and Polio Eradication (TAG) was held 11-14 July 1989 in Cartagena, Colombia. Approximately 120 persons from 21 countries attended the meeting, including representatives of the Ministries of Health of the governments of the countries of the Region, the agencies funding the effort (USAID, PAHO, Rotary International, UNICEF), WHO, the Japanese government, and the Task Force for Child Survival. Dr. Donald A. Henderson, president of the TAG, presided over the meeting; Dr. Alan Hinman served as Rapporteur; and Dr. Ciro de Quadros served as Secretary. All members of the TAG were present at the meeting.

Following a summary of the situation of the EPI and polio eradication efforts in the Region and a summary of global progress in the EPI, the meeting turned to a review of progress and problems in each of the countries in the Andean sub-region. Specific presentations were then made regarding the programs in Brazil, Mexico, Central America, Haiti, and the Southern Cone. After this there was discussion of the laboratory situation in the Region, the accomplishments of various "mop-up" programs, the specificity and sensitivity of the case definitions in use, considerations of importations of polio from other Regions, and studies on appropriate formulations of oral poliovirus vaccine (OPV).

Discussion then turned to measles, focusing on progress toward measles elimination in Cuba and the resolution by countries of the English-speaking Caribbean to eliminate indigenous transmission of measles by 1995. There was then consideration of opportunities missed and opportunities gained to provide immunizations, the current situation with neonatal tetanus, the use of the polio eradication program to provide cost estimates for EPI, and on remaining relevant issues for achieving eradication of polio, including polio surveillance in the environment.

The representatives of Ministries of Health of the Andean Region signed a declaration in which they set up a group with the purpose of strengthening the EPI and the Polio Eradication Plan and jointly address solutions to common problems. They agreed to hold a meeting in Ecuador during the month of November 1989 to establish short term joint strategies.

As has been the case at previous meetings, the quantity of information available, the quality of presentations, and the obvious accomplishments of individual programs clearly demonstrated the remarkable progress that has been made in the Americas in implementing the EPI and in getting closer and closer to the target of universal childhood immunization and polio eradication.

2. Conclusions and Recommendations

2.1. Considerable further progress has been made since the last TAG meeting (held in Buenos Aires, Argentina, in November 1988) toward achieving the goal of Regional eradication of poliomyelitis. Record high vaccine coverage levels are being achieved and sustained with OPV, surveillance systems have been strengthened substantially in virtually all countries, and morbidity has decreased to very low levels. The efforts to eradicate polio have enhanced the development of the entire EPI and coverage levels with all EPI antigens have reached the highest levels ever - more than 60% for the entire Region. Fewer than 1% of all counties in the Region have reported confirmed cases of polio during the first 26 epidemiological weeks of 1989. Social and political commitment to the eradication goal remains at very high levels and external financial support from cooperative agencies such as PAHO, USAID, UNICEF, Inter-American Development Bank (IADB), Rotary International, and the Canadian Public Health Association remains strong. The recent hemispheric announcement of a reward of U.S. $100 to the person reporting a case of paralysis caused by wild virus and to the health worker investigating the case is a tangible manifestation of the progress that has been made.

The countries of the Region and all participating agencies and individuals can be justifiably proud of these achievements. Nonetheless, the fact that less than 18 months remain before the target date for eradication makes it imperative that all countries act quickly to remove the remaining impediments. The problem now is to maintain the impressive gains that have been made and still make the additional efforts required to reach the target.

The obstacles ahead are of great magnitude, especially in countries where civil disturbances are present and in others that have only recently intensified their surveillance efforts. Although all countries must intensify their efforts, TAG is particularly concerned about progress in Haiti, Honduras, Mexico, Peru, and Venezuela.

2.2. The progress achieved to date gives testimony to the validity of the basic program strategies - achievement and maintenance of high immunization levels (through the reinforcement of regular vaccination services and the use, in selected countries, of National Vaccination Days involving mass mobilization and community participation), active surveillance, and aggressive response (including "mop-up" operations) to the occurrence of cases - and to the continuing political will of member countries.

2.3. The quality and quantity of information presented by national programs is a tangible demonstration of the progress made in a very short time. Use of standardized

tables and figures by all countries would facilitate further analysis of data at the Regional level.

2.4. Major emphasis has been placed on strengthening surveillance systems both for disease and program monitoring. This is reflected in the striking improvements in speed of investigation of suspected cases and implementation of control measures. It now appears that in some areas the quality of surveillance is disproportionate to the quality of immunization services. It must not be forgotten that high immunization levels in all districts/counties are essential for the achievement of polio eradication. The necessity for maintaining very high levels of immunization coverage is underscored by the likelihood of importation of wild virus as shown by recent experience in Canada and the United States.

2.5. Review of surveillance experience in the Region indicates that countries should expect a "background" rate of approximately one case of flaccid paralysis for every 100,000 inhabitants less than 15 years of age. This index can be useful in assessing the adequacy of surveillance.

2.6. As paralysis due to wild poliovirus becomes less common it becomes ever more important to have in place reliable and rapid laboratory support systems for diagnosis. Despite concerted efforts and major progress over the past several years, such support is not yet optimal in all parts of the Region. It is critical to take immediately whatever steps are necessary to ensure the rapid submission of properly obtained and viable specimens to the laboratory, their prompt and accurate analysis, and the notification of results (including characterization of virus isolates as wild or vaccine-like) back to the field as quickly as possible but no later than eight weeks after receipt of the specimen at the first laboratory handling the specimen. Special measures are required to develop standardized methods for receiving and handling specimens, for reporting results, and for week-by-week monitoring of progress. The TAG appreciates the initial steps taken and urges that they be pursued expeditiously with continued team work among epidemiologists, clinicians, and laboratory scientists.

Review of the laboratory situation in the Region has led to the development of a number of recommendations which should be helpful and which are endorsed by TAG (see page 5). One of the most important of these recommendations is that serologic testing should be abandoned as a means of diagnosing polio. This step is recommended because current experience indicates that serology has rarely been useful in clarifying questionable diagnoses. In addition, it is difficult to interpret results in the face of widespread vaccination between collection of the first and second specimens and there has been a low rate of seroconversion even in persons with permanent sequelae and virus isolation. Furthermore, it is often difficult to obtain adequate specimens. Abandonment of serology will allow more emphasis to be placed in the field on proper collection and shipment of opportune and adequate stool specimens and in the laboratory will allow more rapid attention to isolation attempts.

2.7. When paralytic poliomyelitis is common, detection of cases of paralysis is an adequate means for detecting circulation of wild poliovirus. As it becomes less common, it becomes important to develop direct surveillance for the presence of wild virus in the environment. Recent developments in technology (e.g., polymerase chain reaction technology) coupled with more traditional techniques of environmental sewage and stool sampling, give great promise of allowing direct monitoring of the presence of wild poliovirus, even in the presence of large concentrations of circulating vaccine viruses. Evaluation of this approach should proceed at a rapid pace in a limited number of demonstration areas to allow assessment of its overall role in the program.

2.8. National Vaccination Days in which all EPI vaccines are not administered represent "missed opportunities" for vaccination. They should become "opportunities taken" to provide the full range of vaccines, just as should all other contacts with the health care system.

2.9. In the past four months each country has identified the counties which have had cases of polio in the preceding three years. More than 750 counties have been so identified for "mop-up" operations involving two rounds of house-to-house vaccination. With major international and local support from Rotary International and with extensive community mobilization, 283 of these counties have already completed the "mop-up". These efforts should be continued and expanded as a major tool in reaching the eradication target.

2.10 Review of confirmed cases of polio in Brazil has suggested that some refinements in case definition could improve the specificity of the definition without inordinate loss of sensitivity. This could prove useful in focusing investigations in the future. This effort should be expanded to other countries to determine if any changes in the case definition are warranted.

2.11 Several countries have identified areas of high risk for the occurrence of neonatal tetanus and have implemented vaccination programs for women of child-bearing age in these risk areas. Every country should determine whether there are such high-risk areas and immediately add tetanus toxoid for women of child-bearing age as a component of National Vaccination Days in these areas as well as ensuring that tetanus toxoid is administered to these women during any contact with the health services.

2.12 The adoption by the English speaking Caribbean countries of a target of elimination of indigenous transmission of measles by 1995 represents an important and ambitious "next step" in improving health through immunization. It must be recognized that the target is an intermediate one (on the road to eradication) and that it will be essential to maintain universal immunization and aggressive surveillance even after its attainment because of the inevitability of importation of measles virus with likely subsequent explosive spread among remaining suscepti-

bles. Even this "intermediate" target presently seems feasible only in locations such as the Caribbean islands where immunization levels are currently high and where insularity lessens the threat of importation. Experience gained during this initiative will be vital to the development of future plans for measles elimination in continental countries within the Region.

With regard to the measles elimination initiative in the English-speaking Caribbean, several general recommendations can be made as guidance in development of more specific plans:

a) The strategy proposed of initial mass vaccination or revaccination of all persons 12 months to 15 years old (regardless of previous immunization history) followed by routine vaccination is appropriate.

b) Use of MMR vaccine rather than single antigen measles vaccine will bring additional health benefits to these countries.

c) Experience in the United States and other countries indicates that measles transmission can be sustained even in areas with high immunization coverage among the remaining unvaccinated individuals and the small proportion of primary vaccine failures. Consequently, following the initial mass campaigns, a routine two dose schedule is recommended, with the first dose given at 12-15 months and the second at the time of entry to kindergarten or school.

d) To provide immediate protection to those at highest risk of rubella in pregnancy, mass vaccination of women aged 15-34 with single antigen rubella vaccine is recommended. The impact on transmission of rubella virus would be enhanced if men aged 15-34 also were vaccinated and the TAG recommends this.

e) Just as is the case with National Vaccination Days for polio eradication, the mass MMR vaccination strategy presents an opportunity which should be "taken" to assure full protection of target populations against all EPI diseases. Mass vaccination of adults may present a special opportunity to administer tetanus toxoid in areas where neonatal (or adult) tetanus remains a problem.

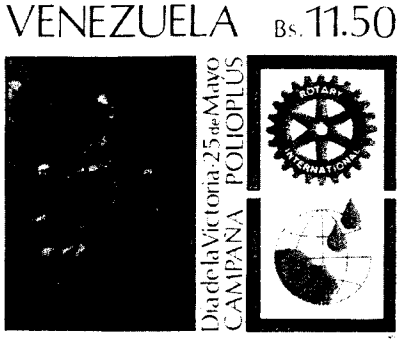
f) "Certification" of elimination is not recommended because it might convey a false sense of security and there is a continuing risk of introduction and transmission of measles.

2.13 Increasing experience with measles vaccination programs in the Region (and in other parts of the world) demonstrates that partial coverage of a population with measles vaccine not only protects the individuals vaccinated but also alters the epidemiology of the disease such that epidemic cycles become spread out (e.g., from every two years to every five years). Until transmission is permanently interrupted, most countries can expect periodic outbreaks of measles. As overall measles incidence will have been substantially decreased, there is the risk that these outbreaks may attract undue attention. It is important to anticipate that these outbreaks will occur and to investigate them to assure that individual protection against measles (vaccine efficacy) remains high. It also must be remembered that, although individual outbreaks may be dramatic, the immunization program does provide significant cumulative reduction in the impact of measles, particularly in the number of deaths.

2.14 Given the rapid pace of events and the imminence of the target date, TAG proposes to meet again early in the coming year. Particular emphasis will be placed at that meeting on progress in providing laboratory support, monitoring of coverage by county, performance of the negative reporting system, completion and evaluation of "mop-up" operations, results from the environmental monitoring pilot program, further information on the pattern of circulation of wild poliovirus in the Region, further information on possible refinements of the case definition, Regional/country plans of action for the coming months, and further progress in control of measles and neonatal tetanus.

Postage Stamp Issued in Venezuela

The Mail and Telegraph Institute of Venezuela, IPOSTEL, recognizing the importance of the programs that Rotary International is developing to help humanity and the benefits that said programs afford to Venezuela, in terms of the eradication of poliomyelitis and other diseases, has commemorated this effort by issuing stamps that depict the PolioPlus Campaign and the Victory Day.



Status of the Laboratory Network

Representatives of the laboratories in the Polio Eradication Program met before the TAG meeting in Cartagena, Colombia (see page 2). They reviewed the recommendations made during their meeting held before the Sixth TAG in November 1988 in Buenos Aires, Argentina and heard reports presented by each one of the laboratories represented. The data presented are summarized in Tables 1, 2, and 3. It is noteworthy the P1 and P3 strains are still being isolated in the Region.

Discussions on the maintenance of quality control aimed at measuring the precision of the technical work being carried out, centered on the degree of sensitivity required to perform virus isolation and identification. They agreed that quality control should continue to be performed under the direction of PAHO and stressed the problems posed by laboratory contamination of the samples, both at the cell culture and the sample handling levels.

The usefulness of serology as a polio diagnostic tool was questioned in light of the fact that the populations of the Region are increasingly being subjected to the influence of massive vaccination campaigns that use the OPV. These not only have the impact of inundating the populations with the vaccine virus, but also affect the immunologic status of the children. In light of this, they agreed to push serology to a secondary level in terms of its usefulness as a diagnostic tool and to not consider it a priority test within the Eradication Program.

The group also discussed the benefits that will possibly be afforded by polymerase chain reaction. Currently, tests are being carried out in CDC to evaluate the feasibility of introducing this process in the laboratories of the program.

Given the success that the laboratories of Argentina and Mexico have had with the fecal concentration procedures, a recommendation was made that any of these techniques should be used with all samples taken from clinically confirmed cases that have been found to be negative with routine procedures, as long as they were taken within the first 15 days following onset of paralysis.

Since the expectation is that wild virus isolations will diminish, it will be necessary to search for them in other places like the stools of contacts of cases and the sewage. The European, Latin American and U.S. experiences were reviewed and the group established that wild poliovirus isolation from sewage has a predictive value in terms of future outbreaks.

Finally, the group stressed the importance of obtaining stool samples during the first days following onset of paralysis and identifying them in terms of origin, date of onset, date sample taken, date of last OPV and preliminary clinical diagnosis. Also, the urgent need to have all laboratories supplied with standardized reagents was agreed upon.

Recommendations

1. PAHO should stimulate and support the development and implementation of methods to detect wild poliovirus from environmental samples.

2. Serologic diagnosis of poliomyelitis should be eliminated since interpretation of results is being hampered by the immunologic changes that are taking place in the children of the Region as a result of the widespread OPV vaccinations being carried out, the operational difficulties it presents, and the time that is invested in this procedure.

3. The laboratories should be supplied with the reagents and materials needed to carry out polio diagnosis. They should also have the human resources necessary to carry out this task.

4. The Program should define clinical and epidemiologic criteria that will aid in establishing priorities for processing the samples received by the regional laboratories and the CDC.

5. The laboratory should report results of stool sample analyses within four weeks for negative cultures and six weeks for positive cultures.

6. All polio strains isolated from probable cases or their contacts, should immediately be characterized by ADN probes.

7. Reisolation should be attempted with all wild strains isolated from confirmed cases.

8. Virus isolation by means of concentration techniques (i.e., ultracentrifuge at 150,000 G for two hours) should be attempted from all negative samples of clinically confirmed cases. Epidemiologists are requested to collect a sufficient amount of sample to perform reisolation, if necessary.

9. Continue with studies aimed at identifying the wild virus in pools that also have vaccine-virus (high EGT, acid treatment, PCR).

10. The laboratory will only analyze samples from contacts when the sample from the confirmed index case is found to be negative for poliovirus. Pool from up to five close contacts will be acceptable to attempt to isolate the virus.

11. Continue with the quality control program for poliovirus isolation and identification (i.e. coded samples) in order to maintain a quality level of over 90% of correct results.

12. The laboratories must continue to implement adequate measures to prevent intralaboratory viral contamination.

13. All workers of the laboratories included in the Program must be completely immunized against polio and hepatitis B, and PAHO should provide the necessary vaccines.

Table 1. Intratypical Differentiation of Poliovirus Strains Isolated from Confirmed Cases in the Americas

	1988 (63)			1989 (17)		
	W	V	P	W	V	P
MEXICO	3	1	-	2	1	3
GUATEMALA	3	1	-	-	1	-
HONDURAS	-	-	-	-	-	1
COLOMBIA	2	4	-	-	-	3
PERU	4	4	10	-	-	-
VENEZUELA	2	3	1	-	-	1
BRASIL	28	165	-	-	1	4
ARGENTINA	-	2	-	-	-	-
TOTAL	39	182	11	2	3	12

(W = Wild, V = Vaccine-like, P = Pending)

Table 2. Number of Stool Samples Analyzed in the Americas in 1988 and 1989

	1988	1989 1st. Semester
MEXICO	251	71 (142)
CENTRAL AMERICA	208	157 (314)
ANDEAN REGION	496	270 (540

( ) Projection for the entire year.

Table 3. Proposed Specimen Data

PATIENT NAME: _____

CASE No. _____ ____ CASE _____ CONTACT
COUNTY/STATE/COUNTRY _____
CLINICAL DIAGNOSIS _____
DATE OF ONSET (CASE) _____
DATES OF SPECIMENS F1 _____ F2 _____
NUMBER OF OPV DOSES (PATIENT) _____
DATE OF LAST DOSE (PATIENT) _____
DATE OF CONTAINMENT MEASURES _____
COMMENTS _____
_____
DATE SAMPLES SENT TO LABORATORY _____

LABORATORY 1

DATE SPECIMENS RECEIVED _____
CONDITION OF SPECIMENS ___GOOD ___BAD
VIRUS ISOLATION F1_____ F2_____
DATE REPORTED _____
SPECIMENS SENT TO REFERENCE LABORATORY
ISOLATES FROM F1 _____ F2 _____
COMMENTS_____
_____
DATE REFERRED TO REFERENCE LABORATORY____

LABORATORY 2 (REFERENCE LABORATORY)

DATE SPECIMENS RECEIVED _____
CONDITION OF SPECIMENS ___GOOD ___BAD
VIRUS IDENTIFICATION F1 _____ F2 _____
COMMENTS_____
DATE REPORTED: _____

Media Celebrity Promotes National Vaccination Day in Brazil

XUXA, the most famous and popular childrens' TV program personality in Brazil has given strong support to the Polio Eradication program in Brazil both during the airing of her daily TV program and by participating in a poster that promotes the National Vaccination Days in Brazil.

The participation of such media celebrities has proved to be a very powerful element in the social communication strategies of the immunization program. Celebrities such as XUXA and others in other countries should be praised for their efforts in promoting child health throughout the Americas.

No próximo 12 de agosto. Mais um dia Nacional de Vacinação. Mais uma etapa na luta pela erradicação da poliomielite.

Reported Cases of EPI Diseases

Number of reported cases of measles, poliomyelitis, tetanus, diphtheria, and whooping cough, from 1 January 1989 to date of last report, and for same epidemiological period in 1988, by country.

Subregion and country	Date of last Report	Measles		Poliomyelitis #		Tetanus				Diphtheria		Whooping Cough	
						Non Neonatal		Neonatal					
		1989	1988	1989	1988	1989	1988	1989	1988	1989	1988	1989	1988
LATIN AMERICA													
Andean Region													
Bolivia	12 Aug.	120	...	2	0	...	...	...	...	...	...	...	...
Colombia	*	...	...	10	31	...	...	...	...	...	...	...	...
Ecuador	*	...	...	6	6	...	...	...	...	...	...	...	...
Peru	*	...	...	6	46	...	...	...	...	...	...	...	...
Venezuela	17 Jun.	5 677	...	6	22	8	...	10	...	0	...	191	...
Southern Cone													
Argentina**(v)	25 Mar.	956	306	0	2	7	14	...	...	4	3	1743	1 120
Chile	17 Jul.	7 611	2 396	0	0	7	9	0	2	18	88	155	45
Paraguay	17 Jun.	73	...	0	0	40	...	12	...	4	...	220	...
Uruguay (v)	22 Jul.	3	42	1	0	3	1	0	0	0	0	7	8
Brazil	*	...	...	22	79	...	...	...	...	...	...	...	...
Central America													
Belize**	5 Aug..	5	63	0	0	0	0	0	0	0	0	0	0
Costa Rica	*	...	...	0	0	...	...	...	...	...	...	...	...
El Salvador	*	...	...	2	10	...	...	...	...	...	...	...	...
Guatemala	*	...	...	1	25	...	...	...	...	...	...	...	...
Honduras	1 Jul.	424	...	2	4	8	...	8	...	0	0	33	30
Nicaragua	29 Apr.	56	...	0	0	0	...	0	...	0	...	25	...
Panama	31 Mar.	81	...	0	0	1	...	1	...	0	...	28	...
Mexico**	12 Aug.	5 490	1 978	9	6	103	104	14	60	6	1	713	383
Latin Caribbean													
Cuba	31 Dec	121	858	0	0	5	6	0	0	0	0	32	103
Dominican Republic (v)	31 Dec.	336	...	1	2	...	76	...	7	...	126	34	149
Haiti	31 Dec.	17	...	8	12	...	85	...	41	0	83	23	307
CARIBBEAN													
Antigua & Barbuda	17 Jun.	0	0	0	0	0	0	0	0	0	0	0	0
Bahamas	15 Jul.	12	16	0	0	0	0	0	1	0	0	0	0
Barbados	1 Jul.	1	2	0	0	1	3	0	0	0	0	0	0
Dominica	*	...	...	0	0	...	...	...	...	...	...	0	0
Grenada	*	...	...	0	0	...	...	...	...	...	...	...	...
Guyana	25 Mar.	3	269	0	0	0	1	...	...	...	...	...	...
Jamaica	*	...	...	0	0	...	...	...	...	...	...	...	...
St. Cristopher/Nevis	*	...	...	0	0	...	...	...	...	...	...	...	...
St. Lucia	25 Feb.	0	...	0	0	0	...	0	...	0	...	0	...
St. Vincent & Grenadines	*	...	...	0	0	...	...	...	...	...	...	...	...
Suriname	*	...	...	0	0	...	...	...	...	...	...	...	...
Trinidad y Tobago	25 Feb..	123	54	0	0	0	0	0	0	0	0	1	0
NORTH AMERICA													
Canada**	29 Jul.	10 383	410	0	0	2	1	...	...	2	11	570	414
United Sates**	22 Jul.	7 854	1 748	0	0	29	...	...	...	1	...	1 354	1 273

** Country does not report neonatal tetanus data separately
# Data for polio includes only confirmed cases through week 32 (ending 12 August, 1989)
(v) Polio cases are vaccine-related.
(i) Polio cases are imported.
... Data not available.

In Memoriam

Dr. Ko Keja, principal architect of both smallpox eradication and the EPI, died suddenly of a heart attack in July. At the time, he was hard at work in formulating plans for the global eradication of poliomyelitis. His loss to the Program —and to the world— is immeasurable.

From personal experience, Ko knew well the practical problems of field progress. Combining this knowledge with his broad understanding of public health and people, he devised strategies and approaches which were innovative, yet practical. A delightful, amiable companion, he sought to ellicit the best from all with whom he worked. He never asked more of others than he demanded of himself, but his standards were high and none worked more selflessly or timelessly than did Ko.

We will all greatly miss that tall, gangly white-haired guy, bubbling with enthusiasm, with a hearty laugh that always made the day seem brighter and conversation punctuated by an explosive "Ya" to make a point or to express a doubt. One can be certain that his only request of us would be to finish the task with which he was so much concerned.

(Written by Dr. D.A. Henderson, President, PAHO Technical Advisory Group on the EPI and Polio Eradication).

Dr. Stephen R. Preblud, chief of the Surveillance, Investigations and Research Branch of the Division of Immunization at the Centers for Disease Control, died of leukemia in July.

Dr. Preblud, an epidemiologist and teacher, was an internationally recognized expert on rubella, varicella and mumps. He was awarded the Outstanding Service Medal by the U.S. Public Health Service last year. He made major contributions to the control and elimination of rubella, both in the United States and abroad, defined the epidemiology and health impact of varicella in preparation for licensure of a new vaccine and provided the necessary information to support and enhance the mumps vaccination program in the United States.

He was actively involved with PAHO on the activities related to measles and rubella control in the English-speaking Caribbean.

Between 1977 and 1989, he authored or coauthored over 70 papers, chapters and letters. He made 31 presentations at international, national and regional meetings and became an authority in the subjects mentioned above. These are statistics to be proud of when achieved over a lifetime career usually spanning 30 to 40 years. For Dr. Preblud, it was also a lifetime accomplishment - a lifetime career of only 12 years. His contributions, both personally and professionally will continue to affect us for a long time.

The *EPI Newsletter* is published every two months, 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.

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