EPI Newsletter

Expanded Program on Immunization in the Americas

Volume XI, Number 2 **IMMUNIZE AND PROTECT YOUR CHILDREN** April1989

Wild Poliovirus Isolation in the Americas, 1988

Of the 1 735 probable cases of poliomyelitis reported in children under 15 years of age during 1988, 1 416 (82%) had stool samples collected. Additionally, a total of 3 376 stool samples - sometimes including more than one sample per case and also samples taken from contacts - were investigated for the presence of wild poliovirus. Only 55 isolates were identified.

Most of these isolates are still under investigation for characterization (wild or vaccine-like), but preliminary results are presented in the table below.

These results should be interpreted with caution, since surveillance still needs improvements, particularly in the early detection of cases and early collection of specimens. For example, only 48% of the samples were collected within eight days of onset of paralysis.

Nevertheless, the data appear to indicate that the circulation of wild virus is now confined to a few areas of the Andean Region (Colombia, Peru, and Venezuela), the Northeastern Region of Brazil, and a few areas of Mexico.

COUNTRY	Total stool samples	Total isolates
Argentina	16	0
Bolivia	14	0
Brazil	2 647[1]	27
Chile	47	0
Colombia	149	1
Dominican Republic	7	0
Ecuador	13	0
El Salvador	22	0
Guatemala	57	0
Haiti	0	0
Honduras	81	0
Mexico	153	3
Paraguay	12	0
Peru	84	14#
Suriname	4	0
Venezuela	70	10#
TOTAL	3 376	55

1 1504 from probable cases and 1 143 from contacts of probable cases.

\# Not yet characterized.

In this issue:

Pediatric Neurologists and the Eradication of Poliomyelitis

In accordance with recommendations from the VI Meeting of the Technical Advisory Goup (TAG) and the Third Central American Meeting for the Eradication of Poliomyelitis, the First Central American Meeting of Pediatric Neurologists was held in Guatemala from 13 to 14 April, 1989.

The meeting was also attended by PAHO epidemiologists. Its purpose was to define uniform criteria that will facilitate the diagnosis of poliomyelitis at the field level and provide the professionals with an opportunity to exchange experiences and information related to the differential diagnoses of flaccid paralysis.

For the first time, pediatric neurologists and epidemiologists were able to jointly address the special problems encountered in each country and in case studies, and attempt to seek solutions aimed at making inferences about the variations in the clinical pictures and epidemiological patterns of poliomyelitis, Guillain-Barré Syndrome (GBS), and other diseases that enter the differential diagnosis.

What began as joint field work among pediatric neurologists and epidemiologists at the country level, has thus culminated in an international meeting with recommendations directed specifically to Central America.

The basis of discussion was the association of neurologists and epidemiologists in providing greater safety in clinical diagnosis, while in no way altering the discipline of epidemiology or in prematurely ruling out cases.

It was clearly established that epidemiology, clinical history, the presence or absence of sequelae, the results of neurological exploration, electrophysiology and laboratory analysis of fecal samples, should all be considered before discarding a case as non-polio.

Following is a list of the major conclusions and recommendations that resulted from this meeting:

1. Multidisciplinary committees for poliomyelitis surveillance should be established in each country (neurologists, pediatricians, infectious disease specialists, epidemiologists, virologists, physiatrists, etc.).

2. Conferences/workshops should be carried out with the participation of pediatric neurologists and epidemiologists, directed toward medical and paramedical personnel at the first and second levels, with special requests for the collaboration of pediatric societies in each country. The clinical pictures of poliomyelitis and GBS should be presented and discussed. Demonstrative neurological exploration in affected children is recommended; this could be done even in healthy children, if there are no cases of acute flaccid paralysis.

3. Pediatric neurologists should accompany the epidemiologists on field visits whenever this is feasible.

4. The criteria for taking clinical histories and performing physical and neurophysiological examinations should be standardized according to the case investigation form included in the Polio Eradication Field Guide. The presentations which are to be made at the next meeting of this group, during the second half of August, 1989, should be standardized.

5. Information on the studies carried out should be exchanged using the epidemiological bulletins of each country, which should be distributed to the pediatric neurologists, who will be listed in a directory.

6. Pathologists should be involved in the case study, given the high number of cases confirmed by death. Ideally, a complete autopsy should be done, but if this is not feasible for sociocultural reasons, spinal cord and peripheral nerve samples should be taken; this contributes sufficient information for diagnosis and avoids anterior incisions and evisceration. In the final analysis, a fragment of peripheral nerve can be studied, in order to search for evidence of demyelinization.

7. Sequelae should be described in detail, differentiating poliomyelitis and GBS.

8. The changes found in the cerebrospinal fluid (CSF) of poliomyelitis and GBS cases should be documented. They should be described as follows: "the CSF of poliomyelitis is inflammatory (with an increase in cells), while in GBS the CSF shows albuminocytological dissociation at any time during the first three or four weeks after the onset of paralysis. It is recommended that the first puncture be made on intake, regardless of the time of evolution, and repeated within a week.

9. Electrophysiological studies are recommended in the third week after the onset of paralysis. Nerve conduction velocity studies are preferable for differentiating poliomyelitis from GBS.

10. The clinical patterns at the onset of paralysis are random in poliomyelitis, with various muscular groups in the four limbs and the trunk affected. In GBS, the classical pattern is ascending, but descending forms can exist; i.e., from craneal nerves to upper limbs, and then to lower limbs; or with simultaneous involvement of upper and lower limbs, or with mixed ascending and descending patterns.

11. Sensitivity in poliomyelitis is manifested in hyperesthesias, spontaneous pain, or pain on touching affected limbs. After the acute phase, there is no change in sensitivity. In GBS there can be anesthesia, hypoesthesia, numbness of hands and feet, sometimes accompanied by perspiration and cramps, as well as peroneal pain. The anesthesia and distal vibration persist after the acute phase.

12. In the acute period in poliomyelitis, the tendon

Poliomyelitis Sequelae

Permanent, irreversible, with moderate to severe atrophy of various muscular groups with an asymmetric vertical and horizontal distribution, predominantly proximal. The sequelae are unpredictable and vary from patient to patient. Involvement of abdominal and back muscles resulting in various bone deformities such as lordosis and scoliosis and in lower limbs, talipes equinovarus, talipes equinovalgus, and talipes valgus; and shortening of severely affected limbs. The paralysis is permanent and always very flaccid, hence the children require braces. The absence of reflex persists in severely affected limbs.

Guillain-Barré Syndrome Sequelae

In most cases deficiencies are reversible in from 3 to 18 months. They consist of discrete to moderate atrophy of peroneal muscles, weakness of distal muscles with drop foot and hand, steppage gait, difficulty in the extension of hands at the wrist and finger level and extension of the feet at the ankle level, and difficulty in walking on the heels. The sequelae are predictable and very similar in each case.

In severe cases, recovery is slow or symmetric sequelae with predominantly distal atrophy remain. Difficulty in feeding, together with such a prolonged period of decubitus, can lead to severe undernutrition. There can be residual facial paresis. Areflexia or hyporeflexia in these cases tends to be very prolonged. Flaccidity disappears to the extent that the child recovers, since muscular tone and also the tendon reflex are recovered, in contrast to severe poliomyelitis where they are not.

reflex is diminished or absent only in the very affected limbs, since the disease of the motoneuron does not allow completion of the reflex arc. In the recovery stage hypo- or areflexia in the affected limbs persists. In GBS there is hypo- or overall areflexia, with recovery to the extent to which the patient recovers his muscular strength, due to remyelinization of the nerve which makes it possible to complete the reflex arc.

13. Laboratory response on fecal specimens should be accelerated, since many cases continue with final classification pending due to delay in the response.

14. These recommendations, especially with respect to uniformity in the study and presentation of cases, will allow for comparable results that could subsequently be published in order to share the experience and contribution of the Central American countries to the eradication of poliomyelitis.

15. All 1988 confirmed cases should be reviewed by pediatric neurologists, with special attention to the evaluation of sequelae, so that a final classification and "confirmation" of these cases can be reached.

Table 1. Criteria for the Differential Diagnosis of Poliomyelitis and Guillain-Barré Syndrome

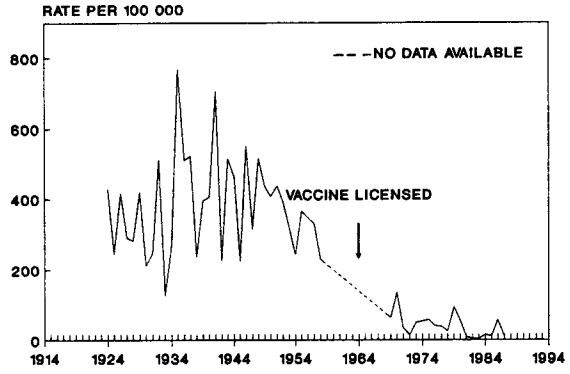
Criteria	Poliomyelitis	GBS
Installation	Rapid	Variable, progressive
Prodromes	Always present	Present/absent
Fever at onset	Yes	Sometimes
Asymmetry	Yes	Sometimes mild
Paralysis	Random distribution	Ascending, also descending
Paralysis	Proximal	Distal
Craneal nerves	Only in lower bulbar pairs	High and low S. Miller-Fisher
Deep tendon reflexes	Absent in very affected limbs	Globally diminished or absent
Respiratory insufficiency	Only in bulbar polio	Only in severe cases
Autonomic signs	Very rare	Frequent: perspiration, blood pressure changes, body temperature control
Sensitivity	Hyperesthesia, mialgias	Hypoesthesia, anesthesia, cramps, peroneal mialgias
Nerve conduction velocity first three weeks	Normal	Altered
Albumino-cytologic dissociation	Absent	Usually present
Sequelae	Moderate, severe asymmetric, generally present after 60 days, irreversible	Slight, moderate, distal, symmetric, reversible

Measles Elimination in Canada

Surveillance Summary

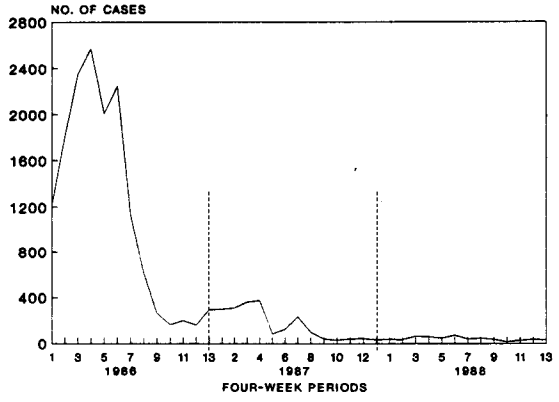
In 1987, 2 412 measles cases were reported in Canada (94.1 cases per 100 000 population). This total is 84% less than the 14 136 cases reported in 1986. It is also the lowest number recorded since 1983, and only 3% of the incidence observed in the prevaccine era (Figures 1 and 2).

Figure 1. Measles: Reported Incidence, Canada, 1924 - 1987



Source: Canada Diseases Weekly Report, Vol. 15 - 1, 1989

Figure 2. Measles: Reported Cases by Four-Week Periods, Canada, 1986 - 1988



Source: Canada Diseases Weekly Report, Vol. 15 - 1, 1989

Although official measles mortality data for 1987 are not yet available, preliminary information indicates that no deaths occurred. The last measles death, which occurred in an Ontario preschooler, was reported in 1984.

The clinical case definition, i.e., a person who has fever of 38.3°C (101°F) or higher, cough, coryza or conjunctivitis followed by generalized rash for at least three days - approved by provincial and territorial epidemiologists in late 1987 - was not always used nationwide in 1987. Most often cases were reported as physician-diagnosed, although in some jurisdictions, further verification using certain diagnostic criteria was carried out by public health officials.

Elimination Statement

"Elimination of measles in Canada is a desirable and feasible goal. Since the introduction of measles vaccine in Canada in 1963, there has been a marked reduction in reported measles incidence, but local epidemics have continued to occur. Because an effective vaccine is available and because there is no non-human reservoir or source of infection, measles elimination within a population is possible if high rates (greater than 95%) of immunization are maintained."

"The major components of a measles elimination program include:

a)achievement and maintenance of high immunization rates and documented proof of immunity in the entire population at risk;"

In recent years, immunization coverage among school children across Canada has reached an all time high. After catch-up immunization for school entrants, their measles immunization rate ranges from 95 to 100%. The rate among eligible preschoolers over age 2 is lower, but available data suggest that it may be in excess of 85%.

"Maintenance of high levels of immunization (more than 95%) requires strenuous effort to immunize all children as soon as possible after their first birthday and documented proof of immunity for all children on entry to day-care centers, schools or similar settings... In jurisdictions where voluntary programs are not effective, legislation should be introduced to require documented proof of immunity to measles before entry to day-care, preschool or school and university systems is permitted. Catch-up immunization or re-immunization programs for older school children and young adults who have not been adequately immunized in the past are particularly important and recommended. These programs should be implemented before those susceptible to measles have completed their education and are no longer easily accesible. MMR vaccine may be used for programs of this type and may safely be given to persons already immune to any of the components of MMR vaccines".

b)"intensive surveillance and rapid reporting of all suspected measles cases;"

More careful and intensive surveillance becomes necessary as Canada moves toward elimination of measles. It is important to implement the uniform case definition adopted by the Advisory Committee on Epidemiology.

In order to determine whether current immunization recommendations are adequate for achieving elimination, it is essential to determine the preventability status of

measles cases according to current criteria as specified in the above surveillance summary. This means collecting data regarding age, country of usual residence, date of measles immunization or reason for not being immunized. The absolute number and proportion of measles cases which are preventable show how well current immunization recommendations are being implemented. If the number or proportion of measles cases which are currently considered non-preventable remains unacceptably high, other immunization and control strategies will have to be considered.

c)"prompt outbreak control measures designed to prevent spread from index cases to susceptible contacts."

In order to immunize or exclude susceptibles from day care or school in the event of an outbreak, it is important to identify them quickly. Keeping immunization records for day-care and school populations up-to-date and readily accessible allows rapid identification of susceptibles in the event of an outbreak.

Conclusion

Worldwide, "an estimated 2 million children die annually from measles and its complications. Delayed mortality, occurring up to 12 months after infection, causes many additional deaths." (WHO Weekly Epidem Rec 1988; 63:9-13). As with smallpox or polio or any other communicable disease, elimination throughout the world means elimination country by country. Therefore, the success of elimination in Canada will be critical for future programs aiming at elimination in developing countries.

Source: Canada Diseases Weekly Report, Vol. 15-1, January 7, 1989.

Acute Flaccid Paralysis in Uruguay

An investigation was conducted in Uruguay to analyze if the cases of acute flaccid paralysis (AFP) registered in children during recent years, could have been cases of poliomyelitis.

The work was carried out in two successive stages that included the review, selection, and analysis of clinical history data, and the clinical study of some cases to review the evolution of symptoms 60 days after onset and possible sequelae.

All cases among children under 15 years of age at the time of onset, who presented a clinical picture characterized by the appearance of acute paralysis (or paresis, initially) with hypotonia (weakness), were studied. The data were obtained from outpatients or inpatients of six pediatric referral health care services in public and private institutions of the country.

The clinical histories of the cases hospitalized between January 1982 and July 1988 were reviewed and those that conformed to the definition of the investigation were selected (AFP in children under 15 years of age).

Twenty-six cases were found: three in 1982, three in 1983, four in 1984, three in 1985, five in 1986, six in 1987 and two cases between January and July of 1988. Five cases were under five years of age, 10 were between five and nine years of age, and 11 were 10 to 14 years of age.

Among the cases studied, eight had received at least three doses of poliomyelitis vaccine, in a national schedule which recommends five doses between birth and 5 years of age.

Two cases had incomplete vaccination schedules (one dose) and for 16, the data were not recorded in the clinical history. The histories analyzed did not expressly show any cases as not vaccinated. Of all the children who had been vaccinated, 80% had complete schedules.

Among the cases with involvement of all limbs (18 cases, 69%), 22% corresponded to quadriplegia, 67% to quadriparesis, and 11% to paralysis of both lower limbs with paresis of the upper limbs. Six cases (23%) had only lower limb involvement, and in one, there was only one limb involved.

Tendon reflexes were absent in eighteen cases (69%), decreased in two (8%), increased in the upper limbs but absent in the lower limbs in one (4%), normal in one (4%), and four cases had no data available (15%).

Deep tendon reflexes in the affected area were absent in 18 cases (69%), decreased but not absent in two cases (8%), augmented in the upper limbs but absent in the lower limbs in one case (4%), normal in one case (4%), and there was no data available for four cases (15%).

The meningeal syndrome was present in six cases (23%), absent in 16 (61.5%), and no data was available for four cases (15%). The paralysis had an ascending evolution in seven cases (17%).

The results of the cytochemical studies showed that 16 cases (61.5%), had albuminocytological dissociation compatible with Guillain-Barré Syndrome, five (19%) showed no changes, three (11.5%) had reported normal dissociation in the clinical history but had no actual data, and two (8%) reported hypercytosis with normal or slightly elevated protein in the spinal fluid.

Virology studies for polio isolation were carried out in 4 cases; all with negative results.

The second stage of the investigation consisted of locating, making appointments for and clinically examining the

patients. The examinations, which were carried out by a neuropediatrician, showed minimal presence of sequelae (weak or absent knee reflex, without signs or symptoms) or none in 78% of the cases seen.

In summary, this analysis led to the conclusion that four probable polio cases occurred between 1982 and 1988, which were later discarded, and that the majority of other cases of acute flaccid paralysis were due to Guillain-Barré Syndrome or other pathologies.

Nine patients (35% of the total) were found and examined at between 7 and 60 months of evolution, with confirmation of 2 cases with significant sequelae resulting from transverse myelitis in both.

There was no evidence that during the period studied, either the frequency, distribution or clinical characteristics of acute flaccid paralysis cases were any different than those described in the international literature.

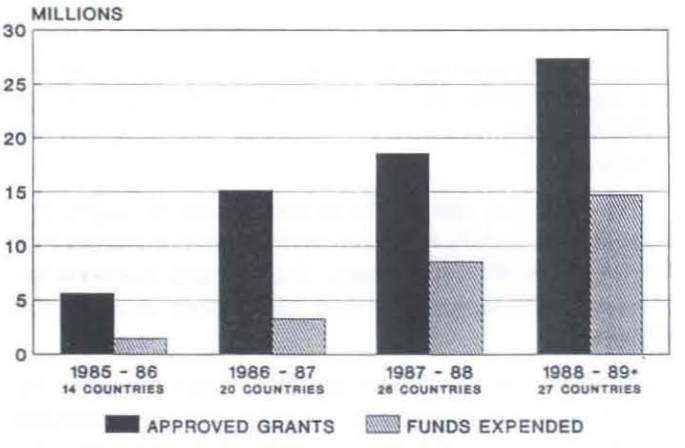
Rotary International's Support in the Americas

Rotary International, through its PolioPlus Program, had committed a total of US$ 27,364,960 in grants to 27 countries in the Americas to date. As shown in Figure 1, PolioPlus funds drawn down for the Americas projects between July 1985 (the year PAHO initiated the Regional polio eradication effort) and 31 March 1989 totalled US$ 14 698 266 - about 54% of total grant commitments. Over 90% of these funds were used to purchase oral polio vaccine.

The greatest increase in expenditures occurred between Rotary International's fiscal years 1986-1987 and 1987-1988, when the number of project countries increased from 20 to 26 and expenditures jumped by 260%. In the past year, Rotary increased its financial commitment to the Regional polio eradication effort another 48%, from US$ 18 600 000 to US$ 27 400 000.

To date, 13/27 grant countries in the Region have received two or more successive PolioPlus grants, including US$ 1 270 000 in special grant increases to support Mop-Up operations in nine countries through PAHO's EPI program. Based on current trends, it is predicted that up to seven project countries may request additional PolioPlus grants to insure that their polio vaccine needs are met through the end of 1990 - the target date for interruption of wild poliovirus transmission in the Americas.

Figure 1. Approved PolioPlus Grant Funds and expenditures (unaudited) - Americas Region 1 July 1985 - 31 March 1989 (in US$)



* First three quarters of Rotary International's fiscal year 88-89 only.
Source: The Rotary Foundation of Rotary International, May 1989.

In Memoriam: Dr. Robert J. Wilson (1915 - 1989)

Dr. Wilson, former Chairman and Scientific Director of Connaught Laboratories Limited died on March 30, 1989. He was responsible, through his research in the pertussis field, for the introduction of the concept of a chemically-defined medium for the cultivation of *Bordetella pertussis*. He promoted the development and utilization of combined bacterial vaccines for infants and children. He played a major role on the international health scene as a consultant to the Pan American Health Organization in the field of general communicable diseases control and the smallpox eradication program of the World Health Organization, particularly technology transfer for production of smallpox vaccine.

Reported Cases of EPI Diseases

Number of reported cases of measles, poliomyelitis, tetanus, diphtheria, and whooping cough, from 1 January 1988 to date of last report, and for same epidemiological period in 1987, by country

Subregion and country	Date of last Report	Measles		Poliomyelitis #		Tetanus				Diphtheria		Whooping Cough	
						Non Neonatal		Neonatal					
		1988	1987	1988	1987	1988	1987	1988	1987	1988	1987	1988	1987
LATIN AMERICA													
Andean Region													
Bolivia	31 Dec.	1 984	987	2	7	75	104	23	48	7	16	577	520
Colombia	16 Jul.	7 234	...	49	114	123	...	73	...	1 108	1 399	8 366	16 556
Ecuador	31 Dec.	8 004	1 537	9	10	129	105	128	81	9	18	193	312
Peru	31 Dec.	3 180	4 652	61	45	122	138	10	133	36	54	806	2 344
Venezuela	31 Dec	11 203	19 261	33	45	1	8	23	12	2	2	465	915
Southern Cone													
Argentina**(v)	5 Nov.	4 148	8 024	4	1	80	92	...	...	8	11	3 585	2 182
Chile (v)	31 Dec.	46 201	2 652	0	1	19	21	3	3	121	168	213	45
Paraguay	31 Dec.	543	1 360	0	0	34	59	52	59	13	18	825	261
Uruguay	10 Dec.	73	...	0	0	2	...	0	...	0	...	21	...
Brazil	31 Dec.	23 844	61 645	110	236	1 851	1 765	328	441	1 108	1 399	8 366	16 556
Central America													
Belize**	31 Dec.	74	224	0	0	0	0	...	...	0	1	0	0
Costa Rica	27 Feb.	97	...	0	0	0	...	0	...	0	...	4	...
El Salvador	3 Sept.	434	251	10	54	31	32	25	14	0	2	30	118
Guatemala	13 Aug.	140	...	38	22	50	...	21	...	2	...	439	...
Honduras	31 Dec.	619	858	6	15	13	12	24	6	0	0	107	310
Nicaragua	31 Dec.	314	693	0	0	...	...	...	...	0	3	144	225
Panama	31 Dec.	354	1 085	0	0	0	0	7	7	1	...	31	53
Mexico**	10 Dec.	3 590	2 691	20	80	254	264	...	...	2	21	448	745
Latin Caribbean													
Cuba	31 Dec	121	858	0	0	5	6	0	0	0	0	32	103
Dominican Republic (v)	13Aug.	336	...	1	2	22	...	7	...	51	...	34	...
Haiti	30 Jan.	17	...	8	12	4	...	3	...	0	...	23	...
CARIBBEAN													
Antigua & Barbuda	31 Dec.	0	0	0	0	0	0	0	0	0	0	0	0
Bahamas	31 Dec.	22	42	0	0	1	0	0	0	0	0	0	0
Barbados	31 Dec.	1	2	0	0	1	1	0	0	0	0	0	0
Dominica	31 Dec.	10	82	0	0	1	1	0	0	0	0	0	0
Grenada	31 Dec.	4	6	0	0	0	0	0	0	1	0	2	1
Guyana	31 Dec.	917	22	0	0	6	2	0	0	0	0	0	0
Jamaica	31 Dec.	35	35	0	0	3	1	0	0	5	2	7	20
St. Christopher/Nevis	31 Dec.	12	...	0	0	0	...	0	...	0	...	0	...
St. Vicent & Grenadines	31 Dec.	10	1	0	0	1	0	0	0	0	0	0	0
St. Lucia	31 Dec.	4	4	0	0	1	0	0	0	0	0	0	0
Suriname	10 Sept.	45	5	0	0	0	0	0	0	0	0	0	0
Trinidad & Tobago	31 Dec.	388	441	0	0	6	3	0	0	1	0	11	12
NORTH AMERICA													
Canada** (i)	31 Dec.	549	14 585	1	0	4	4	...	...	11	4	738	1 827
United States** (v)	31 Dec.	2 933	3 588	0	5	49	40	...	...	1	3	3 008	2 529

** Country does not report neonatal tetanus data separately
# Data for polio includes only confirmed cases through week 52 (ending December 31, 1988).
(v) Polio cases are vaccine-related.
(i) Polio cases are imported.
... No data available.

National Vaccination Days Planned for 1989

COUNTRY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
BOL		19	19	9/19		9			9			
BRA				8		10		12				
COL						24		26				
DOR			12				8/9				11/12	
ECU					28		31					
ELS			5	15								
GUT				22/23	27/28							
HAI	Dates not yet scheduled											
HON				7			7					
MEX		25		29								
NIC		25/26		8/9	20/21							
PAR					27/28		1/2	6				
PER				30				6			6	
VEN		19		16		11						

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