# EPI Newsletter

## Expanded Program on Immunization in the Americas

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# Further Consideration of Polio Case Definitions

In 1990, in the Region of the Americas less than one percent of the over 2 000 cases of acute flaccid paralysis (AFP) reported were confirmed as polio caused by wild poliovirus. To minimize inefficient use of limited resources needed for global eradication of polio, PAHO conducted a study to evaluate the use of operational screening criteria that maintain sensitivity, but achieve higher specificity so case investigation efforts could be focused on cases of AFP most likely caused by wild poliovirus.

All 4 333 cases of AFP in children less than 15 years of age that were reported to the Ministries of Health in Latin America from January 1989 to December 1990 were enrolled in this study. Information from these patients entered in PESS were used and included identifying information, demographics, clinical symptoms and signs, and laboratory results. Polio cases caused by wild poliovirus (the "gold standard")were compared with all other cases of AFP. Characteristics more likely to be statistically associated with polio caused by wild poliovirus as compared to other cases of AFP were grouped in combinations for use as screening criteria. Next, the cases of polio caused by wild poliovirus were compared with other cases of AFP for the presence of each screening criterion and calculated respective sensitivities and specificities. Because the objective of the screening criteria analysis was to identify a constellation of signs and symptoms that would guide early intervention and diagnostic efforts at the first patient encounter, subsequent analyses of screening criteria involve clinical findings that present early, rather than late in the course of the disease. When the 42 culture-confirmed polio cases were compared to the 4 291 other cases of AFP (discarded and other categories of polio), findings present early in the course of disease that were predictors of culture-confirmed polio cases were age less than six years (93% vs. 58%, Odds Ratio [OR]=9.3, p<0.0001) and fever at paralysis onset (81% vs. 45%, OR=5.1, p<0.0001)(Table 1). Although not significantly different, the characteristic of the time for paralysis to develop completely in less than four days was present in 90% of the confirmed polio cases; therefore, it was included in the analysis of screening criteria. Because the only difference between culture-confirmed polio cases and the other categories was age under six years, the other categories of polio were omitted from subsequent analyses.

**Table 1. Factors associated with Confirmed Polio Cases Compared to Other Cases of AFP Latin America, 1989 - 1990**

| Factor/organ involved | Confirmed | | Other[c] | | OR[d] | p[e] | m/M[f] |
|---|---|---|---|---|---|---|---|
| | N | % | N | % | | | |
| Age < 6 yrs. | 39 | 93 | 2443 | 58 | 9.3 | <0.0001 | 0/2 |
| Gender female | 20 | 48 | 1864 | 44 | 0.9 | ns | 0/1 |
| Prodromal Sx | | | | | | | |
| Fever | 17 | 81 | 1238 | 57 | 3.2 | 0.05 | 50/49 |
| Respiratory | 5 | 24 | 457 | 38 | 0.5 | ns | 50/72 |
| Digestive | 12 | 60 | 863 | 41 | 2.2 | ns | 52/63 |
| Meningismus | 3 | 15 | 201 | 10 | 1.6 | ns | 52/52 |
| Myalgias | 10 | 53 | 966 | 60 | 0.8 | ns | 55/62 |
| Fever at onset | 29 | 81 | 840 | 45 | 5.1 | <0.0001 | 14/56 |
| <4 days for paralysis to develop | 27 | 90 | 2107 | 84 | 1.7 | ns | 29/58 |
| Paralysis of cranial nerve | 3 | 15 | 757 | 39 | 0.3 | 0.05 | 52/54 |
| Sequelae | 26 | 87 | 829 | 32 | 14.0 | <0.0001 | 29/39 |
| Atrophy | 12 | 75 | 329 | 15 | 16.8 | <0.0001 | 62/49 |

[c]"Other" = discarded cases + other polio categories not culture-confirmed.
[d]Odds Ratio
[e]p-value by chi-square test
[f]"m" is % confirmed cases excluded from the analysis because information not present and "M" is % of other cases of AFP excluded from analysis because information not present

The combination of age less than six years *and* either fever or installation less than four days resulted in a small drop in sensitivity to 96% (95% Confidence Interval [C.I.] 90,103) and a substantial increase in specificity to 49% (95% C.I. 47,52). Using solely age less than six years, yielded a sensitivity of 93% (95% C.I. 85,101) and a specificity of 43% (95% C.I. 41,44). The presence of age less than six years *and* fever at paralysis onset resulted in a sensitivity of 75% (95% C.I. 61,89) and specificity of 73% (95% C.I. 71,75).

These findings suggest that by screening young children with AFP who present with either fever at onset of paralysis or who have rapid progression of their paralysis, the number of cases of AFP that need to investigated can be reduced by one half with only minimal compromise in the sensitivity of confirmed polio case detection.

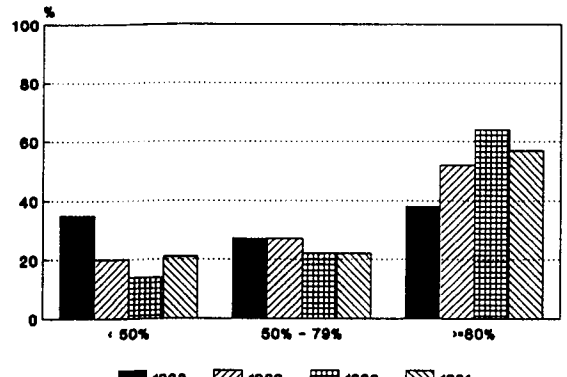
In this issue:

# Tenth Technical Advisory Group (TAG) Meeting on Vaccine-Preventable Diseases

The Tenth Meeting of the PAHO Technical Advisory Group (TAG) on Vaccine-Preventable Diseases took place in Rio de Janeiro, Brazil, from 16 to 19 March, 1992. Participants were welcomed by Dr. Carlyle Guerra de Macedo, the PAHO Director. The meeting was officially opened by Dr. Joao Carlos Pinto Dias, President of the National Health Foundation of the Ministry of Health of Brazil. A number of members of the International Certification Commission on Poliomyelitis Eradication (ICCPE) were present and met on March 19 to discuss the findings and provide recommendations for the certification process.

The information presented marked yet a higher level of achievement compared to the previous TAG meetings. Immunization coverage levels have surpassed 75% for all vaccines (Table 1); and continue to be monitored at the county level (Figure 1); surveillance indicators improved in most countries; and the incidence of all vaccine-preventable diseases continues to decline (see page 6).

**Figure 1. Distribution of Counties by Range of OPV3 Coverage among Children Under One Year of Age Latin America, 1988-1991**




Counties reporting: 1988=5791; 1989=9691; 1990=8731; 1991=9524
Source: PAHO (1991 data are for first semester)

Following is a summary of the major conclusions and recommendations reached at the meeting.

## POLIOMYELITIS ERADICATION

Available data suggest that poliovirus transmission in the Region of the Americas may have been interrupted or is, at the very least, rapidly approaching that point (Table 2). Despite investigation of more than 4 000 stool specimens in 1991, wild poliovirus transmission was documented in only two countries, with nine cases confirmed in 1991 (eight in Colombia and one in Peru). The last confirmed case had onset in August 1991 in Junin, Peru.

Over five years have elapsed since the last wild poliovirus was isolated in the countries of the Southern Cone; over ten years since an indigenous case was detected in the United States or Canada; more than nine years since an isolate was reported from the English-speaking Caribbean; more than 30 years from Cuba, more than four years since the last isolation of indigenous wild poliovirus in Central America (three isolates in 1990 are thought to have been imported from Mexico); three years in Brazil; and more than a year in Mexico.

**Table 2. Classification of AFP Cases Reported Region of the Americas, 1991**

| COUNTRY | NUMBER OF CASES | | | | |
|---|---|---|---|---|---|
| | Reported | Confirmed | Compatible | Probable* | Discarded |
| Argentina | 92 | 0 | 8 | 10 | 74 |
| Bolivia | 66 | 0 | 1 | 0 | 65 |
| Brazil | 1 004 | 0 | 11 | 2 | 991 |
| CAREC | 17 | 0 | 0 | 0 | 17 |
| Chile | 104 | 0 | 0 | 12 | 92 |
| Colombia | 183 | 8 | 14 | 2 | 159 |
| Costa Rica | 5 | 0 | 0 | 0 | 5 |
| Cuba | 12 | 0 | 0 | 0 | 12 |
| Dom. Rep. | 16 | 0 | 0 | 0 | 16 |
| Ecuador | 60 | 0 | 1 | 0 | 59 |
| El Salvador | 84 | 0 | 0 | 2 | 82 |
| Guatemala | 86 | 0 | 2 | 0 | 84 |
| Haiti | 16 | 0 | 0 | 11 | 5 |
| Honduras | 35 | 0 | 0 | 0 | 35 |
| Mexico | 433 | 0 | 1 | 8 | 424 |
| Nicaragua | 24 | 0 | 1 | 0 | 23 |
| Panama | 8 | 0 | 0 | 0 | 8 |
| Paraguay | 23 | 0 | 0 | 0 | 23 |
| Peru | 98 | 1 | 2 | 0 | 95 |
| Uruguay | 5 | 0 | 0 | 0 | 5 |
| Venezuela | 104 | 0 | 3 | 2 | 99 |
| TOTAL | 2 475 | 9 | 44 | 49 | 2 373 |

* Under investigation, final diagnosis not yet available
Source: PESS/PAHO

The TAG acknowledged the high level of commitment accorded to immunization programs by PAHO and the collaborating national and international organizations (UNICEF, USAID, Rotary International, IDB, and CPHA), and the high level of coordination achieved between all governments and the agencies supporting the program. National Immunization Days and Mop-up Operations to complement routine immunization services require a large measure of political and social commitment, but they have been primarily responsible for interrupting wild poliovirus transmission in the Americas (Table 3). As the EPI embarks on special programs for neonatal tetanus and measles, it will more than ever, rely on the continued support of its contributors to continue progress toward higher levels of achievement and to ensure that what has been gained is not jeopardized or lost.

**Table 3. Summary of Mop-Up Operations Latin America, 1991 (Preliminary Data)**

| Country | Target counties | Target pop. < 5 yrs. | Total homes visited | Pop. <5 immunized | % | Total pop.immunized |
|---|---|---|---|---|---|---|
| BOL | 25 | 342 516 | 76 625 | 58 991 | 17 | 65 496 |
| BRA | N/A | N/A | N/A | N/A | - | N/A |
| COL | 409 | 2 212 886 | 2 003 407 | 1 824 899 | 82 | 1 824 899 |
| ECU | 99 | 854 985 | 827 127 | 670 854 | 78 | 699 384 |
| ELS | 164 | 705 801 | 358 525 | 316 258 | 44 | 431 283 |
| GUT | 342 | 1 424 532 | 811 964 | 1 064 864 | 74 | 1 064 864 |
| HON | 122 | 582 320 | 468 600 | 527 168 | 90 | 527 168 |
| NIC | 116 | 249 978 | 170 207 | 121 577 | 48 | 121 577 |
| MEX | 61 | N/A | N/A | 509 474 | - | 509 474 |
| PER | 98 | 1 239 466 | 1 058 949 | 1 070 951 | 86 | 1 483 280 |
| VEN | 47 | 231 332 | 204 895 | 194 295 | 83 | 256 538 |
| TOTAL | 1 483 | 7 843 816 | 5 980 299 | 6 359 331 | 74 | 6 983 963 |

N/A No data availbale

The significant contributions made by social mobilization efforts undertaken in support of immunization programs is also recognized. However, more resources are required for all aspects of social mobilization, especially those that inform and educate the population about the importance of immunization in avoiding needless death and disability. Past efforts using mass media and well-known actors or personalities have had positive effects on coverage rates in national and regional campaigns, as exemplified in the Andean Region during Andean Immunization Day, and in the Caribbean Region during Measles Elimination Month.

The continued improvement of surveillance performance indicators reflected in the rate of cases of acute flaccid paralysis reported throughout the Region is noted (Figure 2). There are at present nearly 20 000 health units that report weekly on the presence or absence of cases (Figure 3).

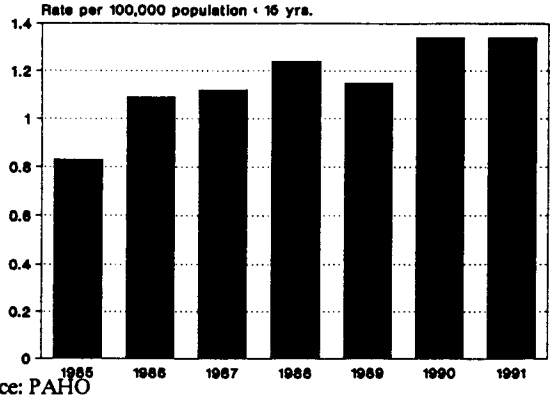
**Table 1. Vaccination Coverage in Children Under One Year of Age Region of the Americas, 1990 - 1991**

| SUBREGION/ COUNTRY | Children <1yr. of age | | DPT | | OPV | | Measles | | BCG | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1990 | 1991 | 1990 | 1991 | 1990 | 1991 | 1990 | 1991 | 1990 | 1991 |
| ANDEAN REGION | 2 363 278 | 2 413 690 | 71 | 71 | 76 | 77 | 67 | 68 | 82 | 83 |
| Bolivia | 221 956 | 218 874 | 41 | 58 | 50 | 67 | 53 | 73 | 48 | 67 |
| Colombia | 685 108 | 770 593 | 87 | 87 | 93 | 94 | 82 | 82 | 95 | 93 |
| Ecuador | 320 852 | 327 138 | 68 | 59 | 67 | 62 | 61 | 54 | 88 | 83 |
| Peru | 600 904 | 603 700 | 72 | 71 | 73 | 74 | 64 | 59 | 82 | 78 |
| Venezuela | 534 458 | 493 533 | 63 | 60 | 72 | 71 | 62 | 61 | 73 | 79 |
| BRAZIL | 3 932 546 | 4 020 070 | 65 | 80 | 95 | 96 | 78 | 83 | 79 | 75 |
| CENTRAL AMERICA | 1 016 133 | 1 022 522 | 75 | 73 | 81 | 76 | 79 | 63 | 71 | 68 |
| Belize | 6 734 | 7 125 | 90 | 82 | 85 | 82 | 85 | 76 | 86 | 79 |
| Costa Rica | 82 500 | 80 296 | 95 | 90 | 95 | 89 | 90 | 96 | 92 | 81 |
| El Salvador | 186 266 | 190 636 | 77 | 60 | 77 | 60 | 76 | 53 | 60 | 66 |
| Guatemala | 349 847 | 346 092 | 66 | 63 | 74 | 69 | 68 | 49 | 62 | 43 |
| Honduras | 180 721 | 184 450 | 84 | 94 | 87 | 93 | 90 | 86 | 72 | 100 |
| Nicaragua | 148 085 | 151 095 | 66 | 71 | 87 | 83 | 82 | 54 | 84 | 75 |
| Panama | 61 980 | 62 625 | 85 | 82 | 84 | 82 | 98 | 80 | 100 | 87 |
| ENGLISH CARIBBEAN | 132 747 | 130 848 | 86 | 85 | 86 | 84 | 75 | 83 | 94 | 92 |
| Anguilla | 200 | 154 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Antigua | 1 114 | 1 262 | 100 | 94 | 100 | 97 | 89 | 87 | 100 | - |
| Bahamas | 5 641 | 6 000 | 86 | 92 | 82 | 91 | 91 | 93 | 87 | - |
| Barbados | 4 040 | 4 310 | 91 | 82 | 90 | 84 | 87 | 92 | 95 | - |
| British Virgin Is. | 2 650 | 2 585 | 80 | 85 | 69 | 82 | 85 | 96 | - | - |
| Cayman Islands | 434 | 434 | 95 | 97 | 95 | 96 | 82 | 90 | 90 | 81 |
| Dominica | 18 500 | 17 000 | 83 | 81 | 79 | 81 | 73 | 76 | 85 | 89 |
| Grenada | 59 104 | 59 606 | 86 | 85 | 87 | 86 | 74 | 77 | 98 | 94 |
| Guyana | 154 | 173 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Jamaica | 980 | 976 | 100 | 100 | 100 | 100 | 100 | 100 | - | - |
| Montserrat | 3 652 | 3 652 | 91 | 96 | 90 | 95 | 82 | 97 | 97 | - |
| St. Christopher/Nevis | 2 505 | 2 457 | 98 | 99 | 92 | 99 | 96 | 100 | 100 | 100 |
| St. Lucia | 9 000 | 9 000 | 83 | 75 | 81 | 72 | 65 | 84 | - | - |
| St. Vincent | 20 980 | 20 980 | 83 | 82 | 87 | 81 | 71 | 93 | - | - |
| Suriname | 300 | 290 | 97 | 100 | 90 | 100 | 81 | 100 | 100 | 100 |
| Trinidad & Tobago | 238 | 350 | 100 | 98 | 100 | 95 | 100 | 84 | 100 | 90 |
| Turks & Caicos Is. | 1 715 | 1 619 | 92 | 98 | 94 | 94 | 88 | 98 | 99 | 99 |
| LATIN CARIBBEAN | 616 556 | 400 601 | 67 | 70 | 74 | 79 | 73 | 83 | 62 | 68 |
| Cuba | 186 556 | 173 896 | 92 | 100 | 94 | 97 | 94 | 100 | 98 | 98 |
| Dom. Republic | 222 265 | 226 705 | 69 | 47 | 90 | 64 | 96 | 69 | 23 | 44 |
| Haiti | 207 637 | - | 41 | - | 40 | - | 31 | - | 72 | - |
| MEXICO | 1 600 550 | 1 933 394 | 66 | 63 | 96 | 95 | 78 | - | 70 | 87 |
| NORTH AMERICA | 883 | 883 | 62 | 82 | 62 | 82 | 63 | 66 | - | - |
| Bermuda | 883 | 883 | 62 | 82 | 62 | 82 | 63 | 66 | - | - |
| Canada | - | - | - | - | - | - | - | - | - | - |
| USA | - | - | - | - | - | - | - | - | - | - |
| SOUTHERN CONE | 1 184 445 | 1 125 803 | 88 | 85 | 89 | 88 | 90 | 95 | 97 | 97 |
| Argentina | 686 289 | 676 061 | 87 | 84 | 90 | 88 | 93 | 100 | 100 | 100 |
| Chile | 303 340 | 308 019 | 95 | 91 | 95 | 91 | 93 | 93 | 94 | 90 |
| Paraguay | 138 802 | 141 723 | 79 | 79 | 76 | 79 | 70 | 73 | 90 | 93 |
| Uruguay | 56 041 | - | 88 | - | 88 | - | 82 | - | 99 | - |
| TOTAL | 10 847 138 | 11 047 811 | 70 | 75 | 88 | 89 | 77 | 79 | 79 | 81 |

- No data available

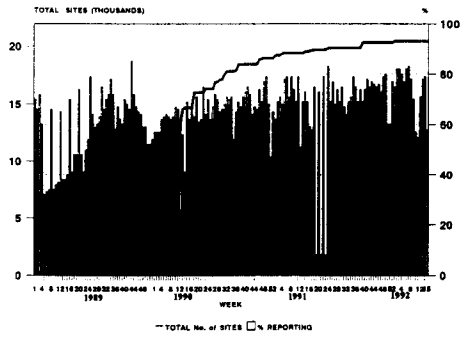
Source: Country reports to PAHO

**Figure 2. PFA Rate in Children Under 15 Years of Age Latin America, 1988 - 1991**




Source: PAHO

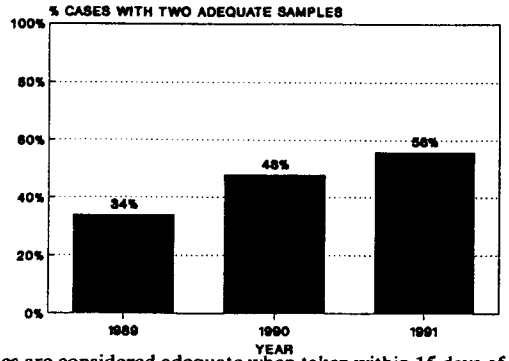
**Figure 3. Negative Notification System: Sites Reporting Weekly Latin America, 1988 - 1991**




Source: PAHO

The principal deficit now is in assuring the proper collection of two adequate stool specimens within 15 days of onset of paralysis from *every* case of acute flaccid paralysis (Figure 4) and from contacts. Without this information, a case remains classified as "compatible" and uncertainty remains as to whether poliovirus transmission has been stopped. During the coming months, *highest priority* must be given to the detection and thorough investigation of all cases, especially those which are compatible with polio and particularly those with acute febrile onset in children less than six years old (see page 1).

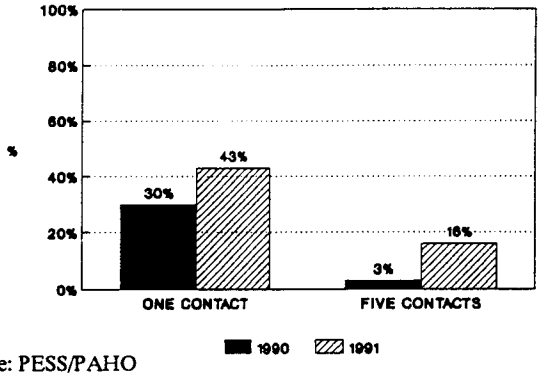
**Figure 4. Proportion of AFP Cases with Two Adequate* Samples Latin America, 1989 - 1991**




* Samples are considered adequate when taken within 15 days of onset of paralysis.
Source: PESS/PAHO

Between 1989-1991, 12% of all confirmed cases were identified by isolation of wild poliovirus from contacts, even though the stools of the cases were negative. Despite the importance of this, only 43% of all cases reported in 1991 had contact investigations and only 16% had five or more contacts (Figure 5). Of special concern were those polioviruses from stools of contacts of compatible polio cases which were still pending characterization.

**Figure 5. Proportion AFP Cases with Samples Taken from at Least One and Five Contacts Latin America, 1990 - 1991**




Source: PESS/PAHO

The intense efforts made in Colombia and Peru to eliminate transmission of wild poliovirus appear to be progressing well, but special alert measures will be required for the balance of the year. In both Colombia and Peru, mop-up campaigns to eradicate polio (called "sanitary mop-ups") incorporated cholera prevention activities, including the distribution of health education materials, to prevent further spread. Other countries not reporting confirmed polio cases will direct special attention to cholera prevention, especially during house-to-house mop-up campaigns.

***Vaccination, Vaccines and The Cold Chain:***

*1.* It will be critical to maintain high vaccination coverage uniformly with OPV in order to assure that pockets of susceptibles are reduced to a minimum and to prevent dissemination of wild poliovirus in the event of an importation.

*2.* Oral polio vaccine (OPV) remains the vaccine of choice for the eradication program in the Americas as it is for eradication programs in other parts of the world. Inactivated polio vaccine (IPV) does not induce intestinal immunity of a degree that stops further spread of the virus and is not recommended for national use in the Americas.

*3.* The quality control of vaccines continues to be of vital importance. As has been recommended in previous TAGs, all countries producing vaccines should have batches of their vaccines tested regularly by the PAHO/WHO reference laboratories.

*4.* Special efforts continue to be needed to improve and maintain the quality of the cold chain, both for vaccines and for transportation of stool specimens. Management and follow-up of the cold chain indicators need added emphasis, particularly in the Andean countries where the most recent transmissions occurred.

***Specimens:***

*1.* The laboratory network is functioning smoothly. Nonetheless, efforts should be made to minimize the turnaround time for reporting results, including molecular characterization.

2. Specimen collection from both cases of acute flaccid paralysis and their contacts remains the best way to rule out wild poliovirus transmission. Every case of acute flaccid paralysis needs to have two adequate stool samples collected within 15 days of onset of paralysis, and specimens from at least five contacts under the age of five. Because it is impossible to determine whether a patient will be available for follow-up, stool collection must take place during the first encounter with the patient.

3. The decision to test stools of contacts demands precise communication and coordination between the epidemiologists and the virologists. All available specimens from cases and contacts of every compatible case should be examined. To ensure that there are no delays in the investigation of contacts, the epidemiologist should have weekly contact with the virologist to discuss problems or issues raised by PAHO's *Weekly Polio Bulletin* and the investigation or follow-up of cases of acute flaccid paralysis and their contacts.

4. Inadequate collection of stool specimens accounts for the large number of compatible cases reported during the last two years: 71 cases in 1990, and 33 in 1991. The occurrence of compatible cases, particularly in children who are less than six years of age and had fever at onset of paralysis demands the highest priority in attention. Just one such case, inadequately investigated, could set back the date of eligibility for certification.

***Reporting and Maintenance of Data:***

The collection and evaluation of the appropriate clinical information is critical for justifying the "discarding" of cases. The TAG recognizes that a single, standardized information system, available at the national and regional levels of the program, will be critical for ensuring that the eradication of polio has been achieved and for facilitating the certification process. Accordingly, the TAG recommends that only data available in PESS be used in the certification process. This will require countries to place added emphasis on thorough collection of clinical information from cases of acute flaccid paralysis and that these data be entered into PESS.

***Community Surveillance of Wild Poliovirus:***

The results of pilot studies conducted last year during the Cartagena, Colombia outbreak, where wild-type 1 poliovirus was isolated from both the stools of surveyed children and from sewage, demonstrate the usefulness of environmental surveillance of wild poliovirus. The TAG recommends that such studies be continued using a targeted risk approach. As pointed out, such surveys need to be regionally planned and coordinated to assure that laboratory capacity is not exceeded.

***Certification Planning:***

The ICCPE considered issues relating to the certification of eradication. It was agreed that a plan should be developed by PAHO which would outline the steps necessary for a country (or region) to prepare for certification. It is anticipated that this plan will be presented to the ICCPE for discussion and approval by October 1992, and subsequently be distributed to member countries.

Although specific details remain to be worked out, issues to be addressed during the review process will include maintenance of immunization levels in each district; distribution and functioning of surveillance sites; frequency of notification (including negative reporting); surveillance indicators (including rapidity of investigations, adequate collection of stool specimens from the patient and contacts; results of laboratory studies on these specimens; and results of community sampling (both sewage sampling and stool surveys). Formal certification will not occur until at least three years have passed since the onset of the last case of paralysis caused by wild poliovirus *anywhere in the hemisphere*. Provisional certification may be granted to sub-regions of the Americas before hemispheric eradication is certified. Countries in which no cases have been reported in recent years may wish to consider establishing national commissions to aid in the review process.

***Research:***

1. With the advent of environmental surveillance, the laboratory network will be confronted with a dramatic increase in the number of stool specimens collected from sewage and surveys of children. Pooling of specimens will be necessary for the labs to handle this increased work-load. Studies should be done to determine optimal methods. Special antibody capture techniques as used for hepatitis A, cefadex columns, and organic compounds such as freon may be appropriate and should be evaluated. Once PCR technology has been transferred, these concerns will lessen.

2. Sewage collection methodologies should continue to be evaluated. Presently, the simple gauze pad collection method appears most promising.

3. The TAG encourages studies that may lead to reliable, direct application of polymerase chain reaction to raw sewage samples, thereby minimizing the need for virus culture and the delayed reporting of results.

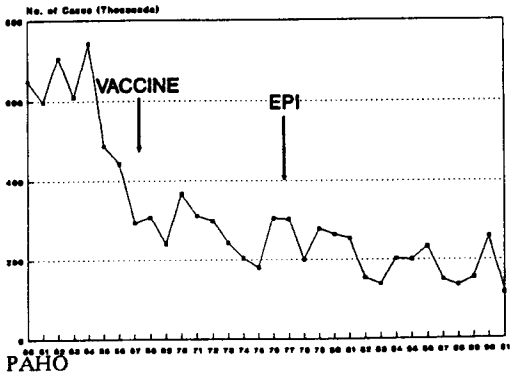
***Global Program***

The TAG calls on other WHO Regions to intensify their efforts toward polio eradication to protect their own populations and reduce the risk of importation of wild poliovirus into the Americas.

## MEASLES

Overall incidence of measles in the Americas continues to diminish and the patterns of outbreaks show a tendency toward longer interepidemic intervals (Figure 6). In order to get a better picture of the changes in measles epidemiology and adjust control activities, high priority should be given to obtaining minimal surveillance information (age, date of onset, vaccination status, date of vaccination) for all measles cases, particularly during outbreaks.

**Figure 6. Reported Cases of Measles Region of the Americas, 1960 - 1991**




Source: PAHO

The recent measles elimination initiative in the English-speaking Caribbean appears to have been successful in interrupting measles transmission in some countries which

followed the month-long, mass vaccination strategy. Experience gained from this initiative, and from others to come should be used to learn about the process and solve the problems unique to measles elimination; to reinforce measles vaccination and control efforts; to strengthen the surveillance systems; and to address issues of sustainability.

The Director of PAHO convened a group to review the measles initiatives currently underway and those being planned by several other countries, which met in Washington, D.C. on 28 February 1992. The TAG endorsed the conclusions and recommendations of the meeting:

*1.* The Group recognized that PAHO has historically played a lead role in the control of vaccine preventable diseases. The Region of the Americas was the first continent to become free of Smallpox; it developed several strategies that led to greatly improved immunization programs, such as the institution of a revolving fund for vaccine purchase. It was also the first Region to prioritize the development of surveillance within national immunization programs, and to decide on poliomyelitis eradication (the strategies now being applied globally were developed in the Region of the Americas). In this context, PAHO's efforts to enhance measles control, possibly leading to global eradication, would be yet another 'first'.

*2.* The Group emphasized the fact that of all known microorganisms, the measles virus is the most serious, resulting in more deaths than any other. Measles vaccination programs thus command the highest priority. Measles causes a substantial health burden in both developed and developing countries. Not surprisingly, data from recent studies of the cost effectiveness of health interventions shows measles vaccination to be the most cost effective medical procedure in terms of adding discounted healthy life years (DHLY). It was shown to be more effective than interventions such as neonatal care, vaccination against other vaccine preventable diseases, and other child health interventions such as ORS therapy and ARI antibiotic therapy.

*3.* Given the fact that man is the only host for the measles virus, that the illness is short-term and followed by permanent immunity and that a highly protective (over 90% efficacious) vaccine is available, the Group agreed that interruption of measles transmission is theoretically possible and has been achieved in some areas for limited periods. However, this has never been done over a wide geographical area. Thus, there is utility in determining the feasibility of achieving this objective in selected areas and countries.

*4.* The Group considers that these efforts to enhance the control of measles with actions that are designed to lead towards its elimination should be supported by PAHO. It therefore recommends that PAHO give support to the initiatives already under way in Cuba and the English-speaking Caribbean and those already planned in Brazil, Chile and the Central American countries, as they represent valuable steps towards assessing the feasibility of elimination of measles throughout the Western Hemisphere.

*5.* These initiatives should be pursued within the context of the overall PAHO policies of strengthening the health infrastructure and decentralizing services. The impact on measles morbidity and mortality should serve as a surrogate to the performance of the immunization program as a whole.

*6.* As lessons are learned and barriers are further identified and removed, PAHO should continuously reassess the feasibility and timing of an elimination goal for the Western Hemisphere.

## NEONATAL TETANUS

In 1991, there were 898 reported cases of neonatal tetanus, of which 780 (87%) were investigated. This marks a great improvement over 1990 when only 446 (35%) of the total cases were investigated. Of the 780 cases reported in 1991, vaccine history was obtained from 311 mothers. Only 19 had received two or more doses of tetanus toxoid. However, the data show that the majority of the countries are following the recommendations of the previous TAG meeting.

Because of their excellent sanitation conditions, high percentage of hospital births, and low proportion of women of childbearing age in high risk areas, Venezuela and Panama were challenged to vaccinate 100% of the women of childbearing age in high risk areas before the next TAG meeting in 1993. Argentina will accelerate its program to reach the target population before 1995.

To reach the elimination target for the Region, it will be necessary to vaccinate approximately 20 million women of childbearing age (22% of the women in endemic countries) who live in 1 140 counties (10% of the total counties in endemic countries). This will require additional activities at an estimated cost of US$ 34 million.

*1.* Continued adherence to previous TAG recommendations, including the separate reporting of neonatal and postnatal tetanus; the investigation of each case of NNT and implementation of active searches; awarding high priority to vaccination activities targeted at reaching women of childbearing age in high risk areas; and, involving traditional birth attendants in surveillance and control activities.

*2.* Improvements in the quality of the data collection system for neonatal patients that attend health services in high risk areas to make them useful in the control and investigation of individual cases of neonatal tetanus.

*3.* All endemic countries should report coverage rates specifically for women of childbearing age.

## PERTUSSIS

In most of the Region of the Americas, the data is inadequate for assessing any changes in pertussis epidemiology resulting from increases in DPT coverage. Efforts should be carried out to collect better epidemiological data on the morbidity and mortality of pertussis. Studies should be developed to devise the best case definition for use in controlling the disease (see *EPI Newsletter*, Vol. XIV, No. 1, February, 1992).

## ADVERSE EVENTS

Various countries in the Americas have developed systems to monitor adverse events to vaccination. In order to assist other countries in developing such systems, efforts should be made to disseminate information and exchange experiences on adverse events and their reporting systems.

## HEPATITIS B

The recommendations made at the Ninth TAG meeting are reaffirmed. Hepatitis B vaccination programs should be initiated and continued in areas of high prevalence and among groups at high risk, with wider use depending on the epidemiological situation and the availability of resources (see *EPI Newsletter*, Vol. XIII, No. 5, October 1991).

# Reported Cases of EPI Diseases

Number of reported cases of measles, poliomyelitis, tetanus, diphtheria, and whooping cough, from 1 January 1991 to date of last report, and for same epidemiological period in 1990, by country.

| Subregion and country | Date of last Report | Measles | | Poliomyelitis # | | Tetanus | | | | Diphtheria | | Whooping Cough | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Non Neonatal | | Neonatal | | | | | |
| | | 1991 | 1990 | 1991 | 1990 | 1991 | 1990 | 1991 | 1990 | 1991 | 1990 | 1991 | 1990 |
| LATIN AMERICA | | | | | | | | | | | | | |
| Andean Region | | | | | | | | | | | | | |
| Bolivia | 28 Dec. | 2012 | 751 | 0 | 0 | ... | 38 | 48 | 42 | 2 | 4 | 56 | 155 |
| Colombia | 28 Dec. | 7 401 | 17 520 | 8 | 4 | 62 | 129 | 141 | 166 | 6 | 16 | 685 | 1 872 |
| Ecuador | 28 Dec. | 2 024 | 1 673 | 0 | 1 | 50 | 45 | 80 | 88 | 3 | 3 | 520 | 487 |
| Peru | 28 Dec. | 1 401 | 1 437 | 1 | 3 | 87 | 136 | 89 | 125 | 3 | 44 | 187 | 1 134 |
| Venezuela | 28 Dec. | 13 845 | 9 981 | 0 | 0 | 64 | 99 | 36 | 28 | 0 | 0 | 777 | 1 389 |
| Southern Cone | | | | | | | | | | | | | |
| Argentina | 28 Dec. | 17 806 | 255 | 0 | 0 | 25 | 46 | 12 | 14 | 2 | 4 | 1 132 | 1 974 |
| Chile | 28 Dec. | 2 080 | 1 846 | 0 | 0 | 12 | 22 | 2 | 0 | 21 | 37 | 58 | 63 |
| Paraguay | 28 Dec. | 471 | 1 035 | 0 | 0 | 48 | 89 | 33 | 39 | 4 | 10 | 112 | 80 |
| Uruguay | 28 Dec. | 1 055 | 110 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 41 | 161 |
| Brazil | 28 Dec. | 32 335 | 61 435 | 0 | 0 | 1 141 | 1 248 | 223 | 250 | 558 | 840 | 5 858 | 14 057 |
| Central America | | | | | | | | | | | | | |
| Belize | 28 Dec. | 7 | 70 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 3 |
| Costa Rica | 28 Dec. | 6340 | 75 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 19 | 75 |
| El Salvador | 28 Dec. | 751 | 1 124 | 0 | 0 | 42 | 31 | 20 | 25 | 0 | 0 | 92 | 212 |
| Guatemala | 28 Dec. | 206 | 8 819 | 0 | 3 | 15 | 35 | 15 | 50 | 0 | 12 | 138 | 138 |
| Honduras | 28 Dec.. | 95 | 8 360 | 0 | 0 | ... | 39 | 18 | 39 | 0 | 0 | 89 | 147 |
| Nicaragua | 28 Dec. | 2 867 | 18 225 | 0 | 0 | 20 | 31 | 11 | 15 | 0 | 0 | 96 | 242 |
| Panama | 28 Dec. | 2 455 | 1 891 | 0 | 0 | 1 | 2 | 6 | 5 | 0 | 0 | 103 | 22 |
| Mexico | 28 Dec. | 2 997 | 68 782 | 0 | 7 | 184 | 219 | 152 | 145 | 1 | 0 | 127 | 1 078 |
| Latin Caribbean | | | | | | | | | | | | | |
| Cuba | 28 Dec. | 19 | 17 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 23 |
| Haiti | * | ... | 1 414 | 0 | 0 | ... | ... | ... | 143 | ... | 0 | ... | 913 |
| Dominican Republic | 28 Dec. | 7 512 | 3 477 | 0 | 0 | 54 | 56 | 4 | 12 | 11 | 27 | 10 | 227 |
| CARIBBEAN | | | | | | | | | | | | | |
| Antigua & Barbuda | 28 Dec. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bahamas | 28 Dec. | 0 | 65 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Barbados | 28 Dec. | 0 | 51 | 0 | 0 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 3 |
| Dominica | 28 Dec. | 6 | 13 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grenada | 28 Dec. | 2 | 5 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Guyana | 28 Dec. | 12 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Jamaica | 28 Dec. | 278 | 3 651 | 0 | 0 | 5 | 4 | 0 | 0 | 1 | 0 | 20 | 3 |
| St. Kitts/Nevis | 28 Dec. | 5 | 80 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| St. Vincent | 28 Dec. | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Saint Lucia | 28 Dec. | 8 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| Suriname | 28 Dec. | 10 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Trinidad & Tobago | 28 Dec. | 118 | 550 | 0 | 0 | 7 | 6 | 0 | 0 | 1 | 0 | 0 | 0 |
| NORTH AMERICA | | | | | | | | | | | | | |
| Canada | 28 Dec. | 5 817 | 726 | 0 | 0 | 3 | 2 | 0 | 0 | 2 | 8 | 1 808 | 6 266 |
| United States | 28 Dec. | 9 461 | 27 672 | 0 | 0 | 48 | 60 | 0 | 0 | 2 | 4 | 2 522 | 4 188 |

... Data not available.

## RUBELLA IMMUNIZATION STRATEGIES

The selection of appropriate control strategies depends on knowledge of the epidemiology of rubella (susceptibility according to age and parity), the incidence of rubella infection in pregnancy and congenital rubella syndrome (CRS), and the health impact of these. To this end, new surveillance systems need to be established, since no reliance can be placed on clinical reporting.

The ideal strategy for rubella control is the achievement of high coverage with rubella vaccine administered with measles vaccine combined with selective immunization to ensure that no woman enters the child-bearing years without being protected against rubella. Unless *all* these conditions can be assured, including the resources required to support the program in the long term, the vaccination strategy should target post-pubescent females to the extent that resources are available.

## CANDIDATE VACCINES FOR INCLUSION IN EPI

*Haemophilus influenzae* type B conjugate vaccines, now licensed for use in a number of countries, may prove to be sufficiently cost-effective to be recommended for addition to the vaccines now being used in the EPI. Such a decision awaits expanded studies of *Haemophilus* morbidity and vaccine efficacy in tropical countries, *and* identification of resources for the purchase of the vaccine.

## VACCINE PRODUCTION AND QUALITY CONTROL

The recent Regional increase in the demand for vaccines, mainly due to intensified implementation of vaccination programs, has brought on problems related to maintaining a continuous supply. In the Region of the Americas, there are several research institutions and several important groups of scientists involved in basic biological research. There are also institutions with long-standing traditions of development and production of biologicals which are playing an important role in providing the biologicals needed. In order to strengthen existing research groups and institutions in the Region and ultimately enable them to operate independently. PAHO has developed a proposal for a Regional Vaccine System (SIREVA), which encompasses all steps related to the development of vaccines (epidemiological surveillance, research, clinical and field trials, scale-up of production procedures, quality control and quality assurance).

There are already some important activities being carried out under the auspices of SIREVA, and the organization of a network of quality control and quality assurance laboratories is being discussed and workshops on quality control methodologies (organized jointly with WHO/Biologics) are underway.

*1.* The coordinated effort of SIREVA should be supported in order to make it possible for the Region to participate fully in the development of new or improved vaccines.

*2.* Strong support should be developed to improve the production capabilities of existing vaccine production facilities in the Region.

*3.* Existing technical requirements, such as GMP, quality control and quality assurance should be enforced in all production facilities.

*4.* Technical cooperation among laboratories in the Region should be strengthened to enhance existing capabilities.

*5.* A system of vaccine quality surveillance should be enforced through a network of quality control laboratories in order to insure the quality of the vaccines.

## INTER-AGENCY COORDINATION

The TAG endorsed the recommendations of the Regional ICC Meeting held on 12 December, 1991 in which it recommended that separate meetings continue to be held at the country level on the subject of EPI coordination and planning, in order to allow adequate time to accomplish these tasks. It may be necessary that this be done as a sub-group of the national child survival ICC, perhaps with operational level personnel rather than donor representatives and program directors. This could be especially important as the ICC is asked to take on a more active role in planning for and monitoring program financing as countries move towards more self-sufficiency in immunization programs. This model of sub-groups may also be useful for other topics such as diarrheal disease or acute respiratory infection control programs and other goals established by the Children's Summit.

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