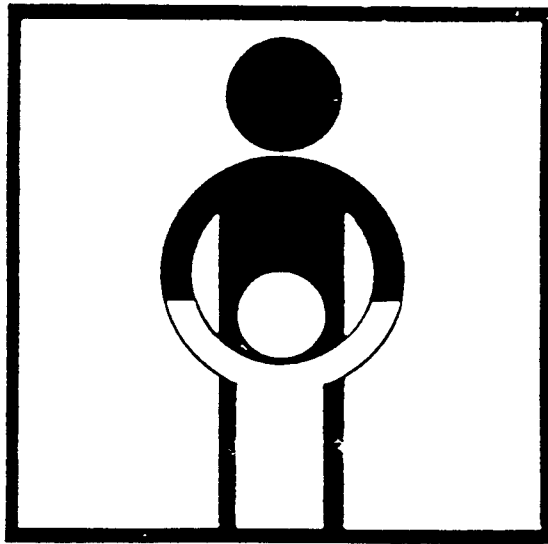


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SIXTH MEETING OF THE
EPI TECHNICAL ADVISORY GROUP
ON POLIO ERADICATION

FINAL REPORT
CONCLUSIONS AND RECOMMENDATIONS

Buenos Aires, Argentina
1 to 4 November, 1988



*Expanded Program on Immunization
Maternal and Child Health Program
Pan American Health Organization*



1. INTRODUCTION

The Sixth Meeting of the EPI Technical Advisory Group on Polio Eradication (TAG) was held November 1 - 4, 1988 in Buenos Aires, Argentina. Present at the meeting, were representatives of the agencies funding the effort (AID, IDB, PAHO, Rotary International, UNICEF, WHO, and the Task Force for Child Survival), the governments of the countries of the Region, and all the technical staff supporting polio eradication from the Americas. The main purposes of the meeting included the review of the polio situation in each country and the Region as a whole, the functioning of the laboratory network, reports of several studies on flaccid paralysis of sudden onset, which have been carried out in several countries.

The meeting was presided by Dr. Donald A. Henderson, president of the TAG, Dr. Alan Hinman served as Rapporteur, Dr. Ciro de Quadros was the Secretary. Drs. José Manuel Borgoño and Joao Baptista Risi Jr. also participated in the meeting. The Participants' List is included in Annex II.

During the course of the meeting four major areas were addressed. The first included a series of presentations about the status of EPI in the Region of the Americas, with a Regional presentation followed by summaries of the current situation in 10 individual countries (Argentina, Brazil, Chile, Colombia, El Salvador, Guatemala, Mexico, Paraguay, Peru, and Venezuela). Then followed a series of presentations on laboratory support, with a Regional overview and specific presentations from the laboratories of Argentina, Brazil, the Caribbean Epidemiology Center (CAREC), Colombia, the Institute of Nutrition of Central America and Panama (INCAP), Mexico, and the Centers for Disease Control (CDC). The representatives of the laboratories in the regional network held a two-day meeting immediately before the TAG meeting.

The third major topic addressed was surveillance, in particular issues relating to case definitions and investigation of flaccid paralysis. Individual reports were made of flaccid paralysis in Bolivia, Chile, Ecuador, Honduras, Mexico, Nicaragua,

Paraguay, and Uruguay. Finally, a series of other specific topics were addressed, including the current situation regarding neonatal tetanus in the Region, missed opportunities for immunization, new information regarding the use of measles vaccine in infants younger than 9 months of age, and the implications for the Americas of the recent outbreak of poliomyelitis in Israel.

Throughout the meeting, the quality and quantity of information presented attested to the maturation of the immunization programs in the Region. In the past three years, the focus of the programs has changed from immunization to prevention of disease. Coverage and disease data are now being analyzed by municipio, permitting targeting of actions and allowing assessment of the degree of development of the health infrastructure.

2. EPIDEMIOLOGICAL SITUATION OF POLIOMYELITIS IN THE AMERICAS

2.1 MEXICO

The third cycle of National Vaccination Days was successfully completed in 1988. DPT and tetanus toxoid were selectively administered on both occasions. The ten subdivisions with highest morbidity and/or lowest coverage rates were then selected for a third mass vaccination campaign. The immunization of newborns with OPV was also added to the regular vaccination schedule.

One-hundred and fifty-six (156) cases of polio had been reported in Mexico during the first 43 weeks of 1988. Seventy-nine (51%), had been discarded; 52 (33%), confirmed; and, 25 (16%) were probable cases still under investigation at the time of the TAG meeting. The majority of the cases have been confirmed on the basis of clinical criteria (42 or 81%); 10% (5) had received laboratory confirmation; and, the remaining five had been confirmed on the basis of clinical and laboratory evidence.

The cases are almost evenly distributed between children under and over five years of age.

Among the confirmed cases, 35 (67%) had received 3 or more doses of Sabin vaccine, whereas only 3 (6%) maintained they had never been vaccinated.

Only 48 (2% of the 2,362 counties in the country have

reported cases in 1988, and only three have confirmed cases in each of the last three years. One-hundred and forty-four fecal samples have been analyzed; 3 P1, 9 P2, 3 P3 and 6 non-polio viruses were isolated; 12 were not typed.

2.2 CENTRAL AMERICA

Of the six Central American countries, El Salvador, Honduras, Guatemala and Nicaragua have reported 204 probable cases of polio during 1988, 65 (32%) of these were confirmed. Nicaragua, Costa Rica and Panama did not confirm any polio cases in 1988 (see Table 1).

All the cases were confirmed on the basis of clinical criteria, since de regional reference laboratory has not isolated any wild virus so far this year.

Of the 1070 counties in the six countries in the Region, only 53 (5%) are infected.

Regarding the age distribution of the cases, the highest incidence is in the 1-4 age group. Honduras is the only country reporting cases in children under one year of age.

National Vaccination Days using DPT and measles vaccines have been held in Nicaragua, El Salvador, Guatemala and Honduras. It is important to note that El Salvador has aggressively attacked probable cases with ample containment vaccinations. Table 1 shows third dose OPV coverage in children under one year of age for 1988.

Table 1

Probable and confirmed cases, and OPV coverage (3rd. dose) in children under one year of age, by country

COUNTRY	Reported cases		Coverage in children under one
	Prob.	Conf.	
El Salvador	30	12	57%
Guatemala	68	35	36%
Honduras	100	18	65%
Nicaragua	6	0	N/A

Costa Rica	N/A	0	N/A
Panamá	N/A	0	N/A
TOTAL	204	65	

In spite of the achievements made in 1988, if transmission of the wild poliovirus is to be eradicated by 1990, there are still some areas that require special attention:

- increasing vaccination coverage
- implementing active search for cases and negative reporting in all health establishments
- complete investigation of every suspected case
- perform containment vaccination in accordance with the established norm, including house-to-house vaccination in the affected counties or districts
- guarantee that the technique, quality and timeliness of sample collection is in accordance with the guidelines established in the Polio Eradication Field Guide

2.3 ANDEAN REGION

All the countries in the Andean Region (Bolivia, Colombia, Ecuador, Peru and Venezuela) have made major efforts to improve their epidemiological surveillance activities. Due to improved capture and active case search, 286 cases have been reported to October 1988 of which 92 (32%) have been confirmed (see Table 1). Bolivia is the only country that has not confirmed any polio cases in 1988.

Table 1

Probable and confirmed polio cases and OPV coverage, by country - Andean Region 1988*

COUNTRY	Reported cases		OPV Coverage (3rd dose)
	prob.	conf.	
Bolivia	2	0	45%
Colombia	73	39	55%

Ecuador	9	4	59%
Peru	58	24	43%
Venezuela	42	25	65%

* Preliminary data

The wild poliovirus isolations performed at the reference laboratory in Colombia have confirmed that the three types are circulating in all countries, except Bolivia (See Table 2).

Table 2

Intratypic differentiation of 31 poliovirus strains
Andean Region, 1988*

COUNTRY	WILD				VACCINE-RELATED		
	P1	P2	P3	M	P1	P2	P3
Ecuador	0	1	0	0	0	0	0
Colombia	0	4	1	2	2	3	5
Peru	0	0	2	1	0	1	1
Venezuela	0	0	3	0	2	3	0
TOTAL	0	5	6	3	4	7	6

* The ones from Peru are from 1987, the ones from Venezuela, 1987 and 1988. (Preliminary data).

Source: Instituto Nacional de Salud, Bogotá, Colombia y CDC, Atlanta, EUA.

Only 67 (2%) of the 3140 counties in the subregion have reported cases and are therefore considered infected.

The highest incidence rate in the four countries is among children under one year of age.

As a strategy for increasing OPV coverage, all the countries held at least two national vaccination campaigns, in addition to reinforcing the activities of the routine services.

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2.4 BRAZIL

Following is the breakdown, by classification, of all the cases reported in Brazil in 1987 and 1988:

To week 43:

	Reported	Probable	Confirmed	Discarded
1988	662	197	88	377
1987	501	166	151	184

Reporting shows a 32% increase, reflecting improvement in case-finding through epidemiological surveillance. On the other hand, the confirmation rate shows a 42% decrease, revealing lower incidence of the disease.

An epidemiological analysis of the 1987 and 1988 confirmed cases yields the following observations:

- the incidence rates, by trimester, starting in the last trimester of 1986, show a gradually decreasing trend of approximately 25% per year.
- the number of counties with confirmed cases has decreased in almost every region of the country between 1986 and 1988.

These observations would seem to support the hypothesis that the cases which occurred after the 1986 outbreak are not epidemiologically linked, but rather represent a series of isolated cases, which, in turn, would indicate that wild poliovirus circulation may have been interrupted in some areas of the country.

This reduction in the number of cases is felt to principally represent a consequence of the decision to hold at least two

national vaccination days per year since 1986, plus one regional days for all the states in the northeast region, where most of the cases occur. Emergency vaccinations were also performed in other states in the region (Sergipe and Alagoas in 1986 and Rio Grande do Norte and Paraiba in 1987).

In order to reach the eradication goal by 1990, the national vaccination campaign coverages must be kept to at least 90%. Extraordinary political and operational efforts must be implemented in those states where coverage is below this. Epidemiological surveillance must guarantee early reporting, immediate control measures and thorough and adequate investigation of all cases of acute flaccid paralysis.

2.5 SOUTHERN CONE

The countries of the Southern Cone (Argentina, Chile, Paraguay and Uruguay) have reached higher OPV coverage rates than the Region of the Americas as a whole. Although the data for Argentina and Paraguay are still incomplete, almost 60% of the counties in the four countries have coverages above 90%, whereas for the Region it is only 30% of the counties.

Of the 122 polio cases reported by the subregion during the first 40 weeks of 1988, only 5 (4.1%) had been confirmed at the time of the TAG meeting; 102 had been discarded, and 15 were pending final classification. This confirmation rate is clearly different from the one for the Region, which is higher than 20%.

Three of the five cases confirmed in 1988 were reported by Argentina. Of these, two were confirmed by poliovirus isolation (they are still pending characterization) and one by presence of sequelae after 60 days. The remaining two cases were confirmed in Chile by isolation of Type 3 vaccine related poliovirus. There were no cases confirmed in Uruguay or Paraguay.

The confirmed cases occurred in 5 different counties, which represent 0.46% of the 1098 counties in the four countries. The overall rate for the Region is 1.81%, four time greater.

Using several of the criteria for evaluation of polio epidemiological surveillance, it can be concluded that, as an

average, the countries of the Southern Cone are reaching a better level of investigation of the reported cases than the Region of the Americas as a whole. With the exception of Argentina, all the countries have reported closer intervals between reporting and investigation in all stages of investigation. This is particularly noteworthy in the case of less than 15 days between onset of symptoms and reporting, under 11 weeks between onset and follow-up, between 21 and 35 days between first and second sera and for the proportion of cases with complete investigation (complete samples and follow-up).

Overall, the reports by the Southern Cone countries conveyed the impression that the wild poliovirus is probably not circulating, that vaccination coverages are generally good, with pockets of low coverage in some areas, and that, except for Argentina, the quality of surveillance is adequate.

3. FLACCID PARALYSIS STUDIES

During the meeting in Lima, the TAG recommended that prospective studies should take place to determine some of the characteristics and epidemiology of the flaccid paralyzes and principally the Guillain-Barré Syndrome. A Group of Experts met with this purpose at PAHO Headquarters who developed a research protocol.

Several acute flaccid paralysis case studies were presented at this TAG meeting. Most of these studies were of a retrospective character.

These presentations reinforced the fact that Guillain-Barré Syndrome is the most common differential diagnosis for poliomyelitis. This reinforced the importance of having complete clinical, viral and serologic studies for each probable case in order to have all the information necessary to make a final diagnosis.

5. NEONATAL TETANUS: REGIONAL STATUS

There are sufficient data in the countries of the Region to adequately identify the risk areas for neonatal tetanus (NNT). The methodology used in this study allowed for a short term analysis

of the ~~situation~~.

While immunization is reinforced in the known risk areas, other areas must be studied in order to identify new areas for control. The surveillance system must also be implemented in order to evaluate the impact of surveillance measures on the disease. These studies must use standardized data in order to permit evaluation of the control measures.

All women of childbearing age must be immunized with the tetanus toxoid (TT), even during pregnancy. The immunization should take place every time there is a contact with the routine health services and during mass immunization activities that should take place in the areas at risk, preferably during children's vaccination campaigns. School-aged children must also be immunized against tetanus.

Since ~~NT~~ exists in urban areas, it is of paramount importance that control measures be implemented here.

6. MISSED OPPORTUNITIES STUDY: HONDURAS

One of the strategies necessary to achieve adequate vaccination coverage rates is to offer vaccine at every contact that the child or woman has with the health services. A study was carried out in Honduras -- as others have in other countries of the Region -- to investigate some of the reasons that the opportunities to vaccinate are lost when children and women come in contact with the health services.

The study included 60 health establishments which were randomly selected. A total of 507 mothers who accompanied children under two who had vaccination cards, in their visits to the health centers, were interviewed. From these interviews, it was concluded that 477 vaccinations would have been necessary in these contacts, yet 215 were not administered, which represents a 45% overall lost opportunities' rate. The rate varied with each vaccine, ranging from 68% for BCG to 31% for polio, and with the type of health establishment or center -- hospitals had the highest rate probably due to their predominantly clinical component.

The mothers reported that disease or illness (as a contraindication to vaccination) or logistical considerations were the two most important causes of the missed opportunities.

In general, the mothers' survey revealed a high level of motivation towards vaccinating, whereas the health personnel survey revealed several limitations which hinder immunization practices. These personnel (83% of which are nursing staff) identified a fairly large number of contraindications to vaccine which are not recognized to be such by the Expanded Program on Immunization. Sixty percent stated that it was not only not a healthy practice to vaccinate children in the presence of fever or diarrhea, but also that the vaccine lost effectiveness when administered under these conditions. The study also revealed inequalities and inadequacies in the vaccine and overall supplies to the health units.

6. MEASLES VACCINES

Preliminary studies carried out in Mexico and the Gambia suggested that the Edmonston Zagreb strain of measles vaccine, resulted in higher seroconversion rates in the presence of maternal antibodies than the commonly used Schwarz strain, and that increasing the amount of virus administered, regardless of the strain, could also overcome maternal antibody and improve seroconversion at younger ages. At present, there are a number of studies being done to evaluate the effects of measles vaccine strain and dose on seroconversion. Preliminary results were presented at a workshop in Washington D.C. in September and at the recent EPI Global Advisory Group (GAG) Meeting in October.

Most studies evaluated vaccination at approximately 6 months of age, and although sample sizes, number of study groups, laboratory methods, and vaccines varied substantially from study to study, some tentative inferences can be made:

- the higher the titer of Schwarz strain measles vaccine, the better the rate of seroconversion.
- Edmonston Zagreb vaccine at high and medium titers appeared to induce higher seroconversion rates than Schwarz in the presence of maternal antibodies.

The GAG, after reviewing a summary of these data concluded that while the results were encouraging, a number of questions still required answers. The available information did not yet warrant a recommendation to administer routinely higher potency measles vaccines or different strains to infants younger than 9

months of age. In part, this was because current studies have not been fully analyzed. Achieving high coverage with standard doses of current measles vaccines at 9 months of age is the number one priority. Nevertheless, the GAG called for operational research in some selected urban areas where the incidence rates of measles in infants under nine months of age is high, to study the impact of a single dose of higher than standard potency measles vaccines administered to young infants at approximately 6 months of age.

7. POLIOMYELITIS IN ISRAEL, 1988

Prior to 1982, control of polio in Israel consisted of exclusive use of oral polio vaccine (OPV) at 2, 4, 6, and 12 to 14 months of age. Coverage in recent years for 4 doses varied from 84% to 91%. Beginning in 1982, inactivated polio vaccine (IPV) was used routinely in two of Israel's 15 subdistricts. The schedule consisted of three doses at two, three and a half, and 10 months of age. Hadera was chosen because it had the highest incidence rate of polio and because over half of the cases had received 3 or more doses of OPV. Studies with IPV had demonstrated virtual 100% seroconversion to all three poliovirus types. The other 13 subdistricts continued to use OPV. The use of IPV in the whole district (Ramle) or parts of the subdistrict (Hadera) was supplemented by annual campaigns using monovalent OPV type 1 in children 0 to 3 years through 1984. Between 1983 and 1987, both Hadera and Ramle were free of polio and only 3 cases of wild virus caused polio were reported in all of Israel.

In 1988, a provisional total of 14 cases of confirmed and probable poliomyelitis were reported in Israel, the largest outbreak of polio since 1979. The outbreak, which was caused by type 1 poliovirus was unusual due to the age and geographic distribution of the cases and by their vaccination status. The majority of the cases were in adolescents and young adults who had received at least three doses of OPV and who lived in Hadera, one of the two districts using only IPV since 1982. None of the cases received IPV.

An outbreak requires both a susceptible population and exposure to wild virus. Serosurveys among teenagers from 1981 through 1987 demonstrated potential susceptibility to type 1 nationwide ranging from 15% to 19%. Younger populations had lower rates of seronegativity. Because the outbreak occurred primarily

in Hadera and because IPV is known to be a poorer inducer of gut immunity than OPV, it is tempting to speculate that children in Hadera were protected by IPV from disease but still became infected and spread wild virus to susceptible teenagers and young adults. In contrast, other subdistricts which appeared to have the same susceptibility in teenagers and young adults were protected because children in those districts had received OPV which induced gut immunity and prevented spread.

Against this hypothesis is the occurrence of 3 cases outside Hadera and the detection in sewage from multiple areas, of viruses which grow at 40 C which may be wild type 1 polio virus. Because of these factors as well as the national problem with susceptibility to type 1, a nationwide campaign with trivalent OPV (the only OPV available in the quantities needed) was recommended for all persons under 40 years of age to control the outbreak.

Because of this experience, Israel is likely to consider a combined schedule of OPV and IPV in the future to take advantage of the properties of both vaccines.

8. CASE DEFINITIONS

A commission, made up of neurologists and epidemiologists was put together to discuss the present case definitions and to make suggestions in order to increase their specificity and maintain high specificity.

The commission made the following recommendations:

- 1- The suspected and probable case definitions should remain unchanged.
- 2- The confirmed case definition should be modified as follows:
 - a) Compatible clinical picture and positive complementary exams to lend clinical support (spinal fluid, EMG, conduction velocity).
 - b) Clinical picture and/or symmetrical, flaccid and atrophic paralysis at 60 days.
 - c) If the patient dies or is lost to follow-up, the case must be classified as confirmed if acute flaccid paralysis and other clinical criteria indicative of poliomyelitis are present.

9. CONCLUSIONS AND RECOMMENDATIONS

The following Conclusions and Recommendations are based on the presentations and discussions at the meeting:

1. Remarkable progress has been made since the goal of regional eradication of poliomyelitis was first enunciated in 1985. The progress is all the more notable when it is recognized that funding to permit a full range of field activities was not received until April 1987. Although reporting is far more complete than even a year ago and present procedures for case definition are recognized to be biased toward an overstatement of incidence, cases have continued to decline in number. Particularly it should be noted that only 10 wild poliovirus isolations have been made during 1988. When all isolates have been typed and all specimens have been processed, this number could rise to as many as 50 or even 100 wild virus isolates. Even so, it is apparent that the circulation of wild poliovirus is limited and confined to a comparatively few geographic areas. Fewer than 2% of the nearly 14,000 municipios or districts in the Region have reported cases of polio through week 42 of 1988. This emphasizes the fact that the polio eradication effort has contributed to strengthening the overall status of the EPI in the Americas. Furthermore, it has led the World Health Assembly to adopt a goal of global eradication by the year 2000. Although the goal for the Americas is in sight and there is great cause for optimism, much remains to be done in the 25 months remaining before the end of 1990, the target date for interrupting poliovirus transmission. To achieve the target, it is essential that a sense of urgency be established at all levels - regional, national, provincial, and local. Because this is a regional undertaking and because the remaining persisting foci of infection in the hemisphere pose a threat to the rest of the Region, it is essential that countries move forward together. This will require acceleration of efforts in many countries.
2. The major technical issues facing the eradication of

poliomyelitis have been addressed and the primary need at present is to implement uniformly within each country and improve the approaches that have been developed - active surveillance, ongoing immunization services, continued use of multi-antigen national vaccination days, and aggressive response to the occurrence of cases.

3. Through the extraordinary efforts of international agencies, both governmental and non-governmental, substantial external resources (both financial and personnel) are being made available throughout the region. Particular acknowledgment should be made for the cooperation of UNICEF, Rotary International, the U.S. Agency for International Development, the Inter-American Development Bank, the Canadian Public Health Association, and PAHO/WHO. The remaining task is to identify the internal resources essential for completion of the task and to make needed resources available at the local level.
4. Available evidence suggests that circulation of wild poliovirus is probably now limited within the Region, occurring primarily in urban and peri-urban areas in a few countries. In addition, evidence suggests that introduced wild viruses do not readily establish continuing transmission. No effort should be spared to identify the remaining foci of infection with special intensified immunization activities (such as house-to-house immunization campaigns) to eliminate the virus from these areas. Given that Peru, Colombia, Venezuela, Mexico and Guatemala have many cases and existing surveillance systems do not cover their entire countries, special attention should be given to these countries to ensure that, by March 1989, all foci of possible transmission of wild poliovirus are identified.
5. In many areas coverage levels have improved substantially suggesting that poliovirus transmission should be interrupted shortly, if it has not already been interrupted. However, coverage levels in some countries are not yet adequate and urgent efforts must be undertaken to improve and maintain coverage. Because coverage in countries is rarely uniform, intensified efforts should be targeted to the highest priority areas,

which are typically urban and peri-urban areas.

6. Major progress has been made in developing adequate laboratory support for the eradication program. The Regional network of reference laboratories is now functional and a third round of quality control proficiency testing is underway. A series of technological developments has made the role of the laboratory increasingly important in understanding the epidemiology of poliomyelitis and detecting the presence (or absence) of circulation of wild poliovirus. Nonetheless, the following problems remain which impede full realization of the laboratories' necessary role:
- a) A relatively low proportion of patients with probable polio are having appropriate stool specimens collected and dispatched to the laboratory in a timely fashion. The stool of a patient with probable polio is an important source of specimens to detect the presence of wild poliovirus. Increased efforts must be made to assure proper collection of specimens from all such patients early in the course of illness with prompt submission and proper transportation of the specimens to the laboratory.
 - b) Better communication is needed between epidemiologists and laboratorians to ensure that samples are taken and transported properly, that full information is provided, and that appropriate priorities are established for the processing of specimens.
 - c) In many laboratories the time interval between receipt of the specimen and provision of results is too long for the results to be programmatically useful. These delays must be abolished. Specimens from areas thought to be free of polio should receive special priority. Isolates of poliovirus from such specimens should be sent immediately to reference laboratories for intratypic characterization.
 - d) To ensure credibility of results, all laboratories carrying out polio diagnosis should include quality control procedures within their laboratories and participate in proficiency testing on an ongoing basis. Competence in isolating polio strains from feces as well as accuracy in determining serologic

titers should be established. A separate subgroup of laboratorians has been asked to develop criteria for certification of laboratories. Laboratories not participating in the proficiency testing program should send duplicate specimens to the reference laboratories.

7. The data gathered to date through the laboratory network indicate a relatively low isolation rate from patients with clinically probable (or even confirmed) poliomyelitis. This may be due in part to failure to obtain specimens early in the course of illness, improper transport of specimens, or to the case definition being relatively non-specific. In addition, the isolates obtained indicate a marked predominance of vaccine strains. There is no reason to suspect that these cases all represent vaccine-induced paralysis. However, further investigation is warranted and the following actions are proposed:
 - a) A regional registry of wild poliovirus isolates and case information should be established as soon as possible. Each wild poliovirus isolate should be fully characterized and compared with other isolates from the same area and from other parts of the world to determine whether it is indigenous or represents a new introduction.
 - b) To encourage a more intensive search for wild viruses, a reward (perhaps U.S. \$100) should be offered to the person who reports the first case in a municipio which is subsequently found to be due to wild poliovirus, to the health worker who investigates the case.
 - c) Work should continue to refine techniques and protocols to detect wild poliovirus in the presence of vaccine viruses, whether in the environment or in an individual's stool.
 - d) At least one and preferably two professional staff members should be added to the Regional Office to serve as full time surveillance officers to assist in the development of reporting; assessment of cases; integrating clinical, laboratory, and epidemiological information; developing criteria for "discarding" cases; assessing the efficacy of control measures; studying the occurrence of

vaccine-associated paralysis; etc.

- 8) Recent studies of patients with flaccid paralysis indicate that a substantial number of cases are now categorized as "confirmed" poliomyelitis which, with careful clinical evaluation, could be more properly diagnosed as having Guillain-Barré Syndrome (GBS) or some other illness. However, it is difficult to delineate stricter case criteria since there were very few culture-confirmed cases of polio for comparison. Two specific changes in procedure are proposed at present to address this problem. First, "suspected" cases of poliomyelitis (i.e., persons with acute onset of flaccid paralysis) will not be categorized as "probable" cases if the development of paralysis has extended over an interval of more than seven days or (as is already the case) another cause for the paralysis can be identified. Second, for purposes of final classification of cases, each country should establish a scientific group to review the clinical epidemiological, and laboratory data on each "probable" case and make a final determination 60 days or more after onset. Further studies should be carried out to determine other modifications in the polio case definition which would make it more specific without compromising sensitivity, for example, lowering the age criterion to 10 years. It should be recognized that, as polio becomes less and less common, the predictive value of a clinical case definition will diminish and laboratory findings will assume a more critical role. Development of a standard case definition of GBS which would differentiate it from polio would also be useful.
- 9) The recent adoption by the countries of the English-speaking Caribbean of a target of measles elimination by 1995 (using combined measles-mumps-rubella vaccine) represents another ambitious step forward and a demonstration that the polio eradication goal does serve as a foundation for enhanced control of other EPI target diseases. Full support should be given to help these countries achieve their target and to learn from their experiences in so doing.
- 10) Studies carried out during the past year indicate that neonatal tetanus remains a serious problem in some parts

of the Region. In such areas, increased efforts must be made to ensure vaccination of all women of child-bearing age with tetanus toxoid.

- 11) Studies of "missed opportunities" for immunization indicate a continuing need to ensure that health personnel are fully aware of the limited contraindications for administering vaccines and do not impose unwarranted barriers to immunization. Ensuring that vaccine is offered to all women and children at every contact with the health care system (even if this means opening a vial of vaccine for only one person) could substantially improve coverage.
- 12) Because of the accelerating pace of activities and the favorable prospects for interrupting polio transmission by the end of 1990, the TAG should hold its next meeting in approximately six months.

ANNEX I
REPORT OF THE REGIONAL LABORATORY NETWORK

A two-day meeting of representatives from the network of poliovirus reference laboratory was held immediately before the TAG meeting. The objective of this meeting was to review the methodology for the laboratory diagnosis of poliomyelitis, to analyze the laboratory results of confirmed cases and to discuss related issues. A summary of this meeting is presented below.

1) General Aspects: The isolation of poliovirus from probable cases followed by its molecular characterization is recognized as a very high priority. In order to achieve this, stools should be collected during the first two weeks after the onset of paralysis, before vaccination blockage. The samples should be well preserved and sent immediately to the laboratory. Information from each case should be provided to the laboratories, such as patient's identification, city of residence, date of onset of paralysis, date of collection of specimens, number of doses and dates of OPV. The epidemiologists and virologists should meet on a regular basis to discuss the interpretation of results and every month the laboratory should be supplied with a list of the cases confirmed by sequelae, death or other non-laboratory criteria. Virus isolation and identification, and strain characterization by dot-blot hybridization should be performed as early as possible, and laboratory reports sent to the epidemiologist as soon as possible.

Methodology: Experience of the reference laboratories in the polio eradication program has shown that polioviruses are most often isolated in RD (human rhabdomyosarcoma) cells. Vero cells, on the other hand, have not isolated any polioviruses which were not recovered in either RD or Hep-2 cells. Therefore, it was decided to make the use of Vero cells optional for isolation of polioviruses. Results of neutralization tests obtained so far in the polio eradication program in human sera have shown higher titers than anticipated. Accordingly it is now recommended that stable, high neutralization titers on paired sera be interpreted with great caution and that stable titers of 1:512 no longer be considered indicative of recent poliovirus infection. It was also recommended that re-isolation of poliovirus be attempted from any original stool specimen found positive in initial studies. This is considered a desirable step to confirm the presence of the virus in the specimen.

Research: The poliomyelitis eradication program has attained a stage of development that sensitive detection of wild polioviruses is of paramount importance. The laboratories of the network have

resolved to implement the following methods to optimize detection of wild polioviruses, which may be present in specimens containing an excess of vaccine-related strains:

1. Selective propagation of wild strains by careful selection of incubation temperatures.
2. Recognition of candidate wild isolates by plaque morphology.
3. Utilization of techniques to liberate polioviruses from immune complexes that may be present in some clinical specimens.
4. Continued development of wild strain-specific hybridization probes and polymerase chain reactions for selective amplification and detection of wild strains from clinical and environmental samples.
5. Analysis of results: Table 1 shows the laboratory results of confirmed cases of seven countries. Diagnosis by virus isolation and serology was achieved in 66 out of 221(30%) cases confirmed by all criteria, between weeks 32 and 41 of 1988. Virus isolations were obtained from 44 (25.9%) of 170 cases from which fecal samples were submitted to the laboratories. The results of intratypic differentiation by the dot-blot hybridization technique of 47 poliovirus isolates (three strains from Brazil isolated from cases confirmed after week 32/88 included in the analysis) are shown in Table 2. Only 10 of the viruses were typed as wild strains all of which were recovered from cases in Brazil, Colombia and Venezuela. Of the remaining strains 21 were identified as Sabin-like and 16 additional strains are currently being analyzed.
6. Testing of Contacts: Stool specimens from close contacts of the index case may, in many situations, be essential to the detection of the circulation of wild polioviruses. When stool specimens are obtained from contacts the following criteria should be applied:
 - 6.1. Contacts should be less than 5 years of age.
 - 6.2. Up to 4 contacts may be studied.
 - 6.3. Specimens should be taken from both the index cases and contacts before blockades, and approximately at the same time.
 - 6.4. The field epidemiologists should identify the most appropriate close contacts.