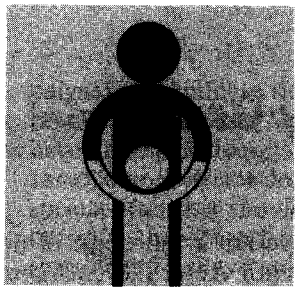

EPI Newsletter

Expanded Program on Immunization in the Americas

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Polio in the Americas in 1988

Figure 1. Confirmed Polio Cases, 1986 to 1988 Americas

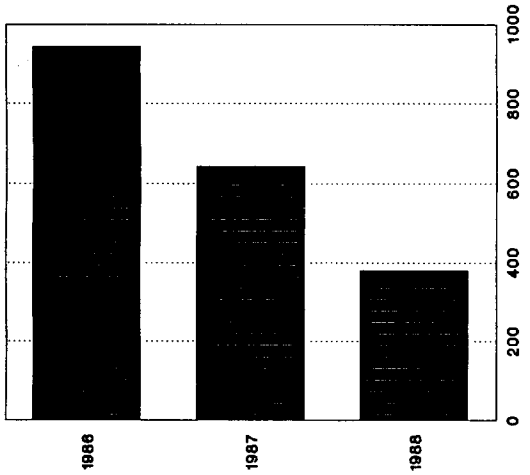
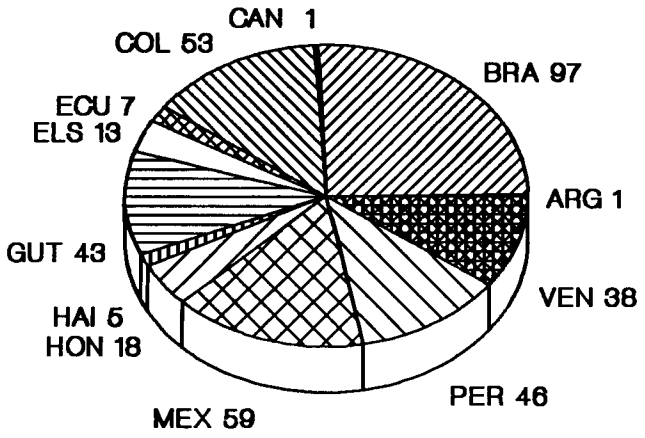
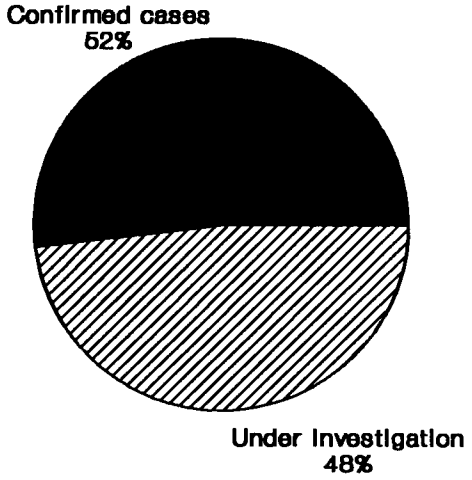


Figure 2. Confirmed Polio Cases, by Country, 1988



Total 381 cases

Figure 3. Confirmed Cases of Polio as a Proportion of the Total Cases Reported, Americas, 1988



The total of 381 cases reported in 1988 represents an historical low in polio incidence in the Hemisphere. Furthemore, there was less than two percent of the total number of districts or municipalities that were found affected by polio during the year, indicating that the disease has been now confined to very low geographical areas.

Special activities are being organized at the various countries geared at increasing vaccination coverage as well as intensification of surveillance. These activities have been labelled "mop-up" operations and besides the support already given by ICC member agencies (PAHO/UNICEF/RI/USAID/IDB) are receiving additional support from Rotary International.

In this issue:

Sixth Meeting of the EPI Technical Advisory Group

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 (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.

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 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. The new information system being organized for the EPI was also discussed.

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.

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 polio 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 wild 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 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 cam-

paigns) to eliminate the virus from these areas. Given that Peru, Colombia, Venezuela, Mexico and Guatemala have a comparatively large number of 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 virologists 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. 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, and 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. 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. 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 childbearing 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) There has been considerable progress in the development of computerized information systems for the management of surveillance and other types of information (vaccination coverage, for example). These systems are essential for the national and regional levels and should be expanded to include other aspects of immunization programs and surveillance.

13) 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.

The TAG reviewed and commended the advances made by the countries of the Region of the Americas towards the eradication of the wild poliovirus during its Sixth Meeting held 1 to 4 November 1988 in Buenos Aires, Argentina.

Measles Vaccines

Preliminary studies carried out in Mexico, the Gambia, and other countries, 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 held in Abdijan, Ivory Coast in October (see EPI Newsletter, October, 1988).

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,

The Regional Laboratory Network Reviews Diagnostic Methodology

Representatives from the network of poliovirus reference laboratories held a two-day meeting 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. Following are highlights of the major topics and issues discussed:

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 containment vaccination. 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.

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 55 poliovirus isolates (three strains from Brazil isolated from cases confirmed after week 32/88) were also included in the analysis. Table two shows that 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 vaccine-like and 24 additional strains are currently being analyzed.

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:

1. Contacts should be less than 5 years of age.
2. Up to 4 contacts may be studied.
3. Specimens should be taken from both the index cases and contacts before containment vaccination activities, and approximately at the same time.
4. The field epidemiologists should identify the most appropriate close contacts.

Table 1. Results of the laboratory analysis of the laboratory confirmed polio cases, 1988

COUNTRY	Until Wk No.	Confirmed Cases / Analyzed Cases	%	Poliovirus isolated / Fecal Samples	%
Mexico	41	7/33	21	3/22	13
Guatemala	40	6/34	18	3/20	15
El Salvador	40	7/15	47	4/7	57
Venezuela	40	8/25	32	8/22	36
Colombia	40	20/40	50	16/37	43
Brazil	32	16/71	22,5	8/60	13
Argentina	40	2/3	66	2/2	100
TOTAL		66/221	30	44/170	25,9

* Isolation and serology.

Table 2. Polio strains isolated from confirmed cases

COUNTRY	TOTAL	WILD	VACCINE-LIKE	NOT CHARACT.
Mexico	3			3
Guatemala	3		3	
El Salvador	4		4	
Colombia	16	4	7	5
Perú *	7			7
Venezuela	8	1	2	5
Brazil	11	5	5	1
Argentina	2			2
Paraguay	1			1
TOTAL	55	10	21	24

* Isolated at the Instituto Nacional de Salud, Lima.

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		Polio-myelitis		Tetanus				Diphtheria		Whooping Cough	
						Non-neonatal		Neonatal					
		1988	1987	1988	1987	1988	1987	1988	1987	1988	1987	1988	1987
LATIN AMERICA													
Andean Region													
Bolivia	*	...	...	-	7	...	...	...	...	...	...	...	...
Colombia	16 July	7 236	...	53	114	123	...	73	...	6	...	761	...
Ecuador	13 Aug.	3 569	721	7	10	80	70	86	54	5	7	140	255
Peru	16 July	1 606	...	46	45	48	...	50	...	15	...	248	...
Venezuela	24 Sept.	9 947	...	38	39	1	...	22	...	1	...	367	...
Southern Cone													
Argentina	13 Aug.	...	1 791	1	1	36**	55**	...	...	76	9	2 396	825
Chile	29 Oct.	24 036	1 813	-	1	11	12	2	3	110	148	166	30
Paraguay	05 Nov.	369	1 034	-	-	43	42	32	37	9	14	680	150
Uruguay	03 Dec.	71	...	-	-	2	...	-	...	-	...	21	...
Brazil	05 Nov.	15 036	...	97	236	1 535	...	377	...	988	...	7 397	...
Central America													
Belize	19 Nov.	74	222	-	-	-	-	-	-	-	1	-	-
Costa Rica	27 Feb.	97	...	-	-	-	...	-	...	-	...	4	...
El Salvador	26 Mar.	122	68	13	54	-	15	1	3	-	2	11	50
Guatemala	13 Aug.	140	...	43	22	50	...	21	...	2	...	439	...
Honduras	08 Oct.	542	761	18	15	11	12	16	4	-	-	89	279
Nicaragua	27 Feb.	71	163	-	-	-	-	-	1	-	-	19	19
Panama	16 July	133	...	-	-	47	...	20	...	1	...	381	...
Mexico	03 Dec.	3 423	2 691	59	80	251**	264**	...	...	2	21	742	745
Latin Caribbean													
Cuba	24 Sept.	117	...	-	-	5	...	-	-	-	-	25	...
Dominican Republic	16 July	326	...	-	2	36	...	10	...	54	...	38	...
Haiti	30 Jan.	17	...	5	12	4	...	3	...	...	...	23	...
CARIBBEAN													
Antigua & Barbuda	08 Oct.	-	-	-	-	-	-	-	-	-	-	-	-
Bahamas	05 Nov.	20	38	-	-	1	-	-	-	-	-	-	-
Barbados	05 Nov.	-	2	-	-	1	1	-	-	-	-	-	-
Dominica	03 Sept.	5	77	-	-	1	-**	...	...	-	-	-	-
Grenada	17 Sept.	4	6	-	-	-	-	-	-	1	-	2	1
Guyana	08 Oct.	147	2	-	-	-	-	-	-	-	-	-	-
Jamaica	16 July	21	26	-	-	...	...	...	...	...	...	...	...
St. Christopher/Nevis	28 May	1	1	-	-	-	-	-	-	-	-	-	-
St. Lucia	09 July	1	4	-	-	...	...	...	...	...	...	...	...
St. Vincent & Grenadines	30 July	7	2	-	-	...	...	...	...	...	...	...	...
Suriname	18 June	18	3	-	-	-	-	-	-	-	-	-	-
Trinidad & Tobago	24 Sept.	280	338	-	-	2	3	-	-	-	-	8	11
NORTH AMERICA													
Canada	24 Sept.	455	1 967	1	-	3**	4**	12	4	13	...	533	824
United States	10 Dec.	2 826	3 567	-	5	39**	33**	...	...	-	3	2 778	2 381

* No 1988 reports received.

** Tetanus data not reported separately; total tetanus data is reported in non-neonatal column.

\# Data for polio includes only confirmed cases through week 52 (ending 31 December 1988)

\- Zero

... No data available

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 vaccine doses would have been necessary in these contacts, yet 215 were not administered, which represents a 45% overall lost opportunities' rate (Figure 1). 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.

Wild disease or illness (as a false contraindication to vaccination) or logistical considerations (lack of vaccines and/or syringes) were the two most important causes of the missed opportunities (Figure 2).

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 supposed contraindications to vaccine which are not recognized to be such by the Expanded Program on Immunization (false contraindications). 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. (Source: MOH Honduras)

Figure1. Missed Opportunities Honduras,1988

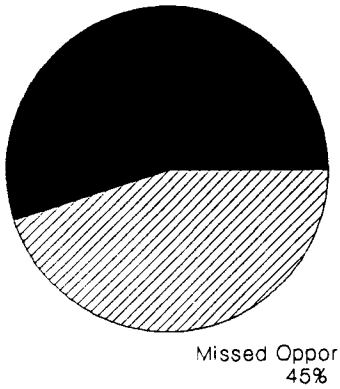
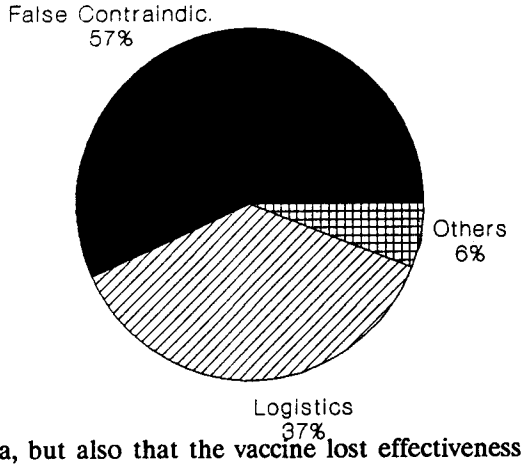


Figure 2. Causes of Missed Opportunities Honduras, 1988



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