



EPI Newsletter

Expanded Program on Immunization in the Americas

Volume XIV Number 1

IMMUNIZE AND PROTECT YOUR CHILDREN

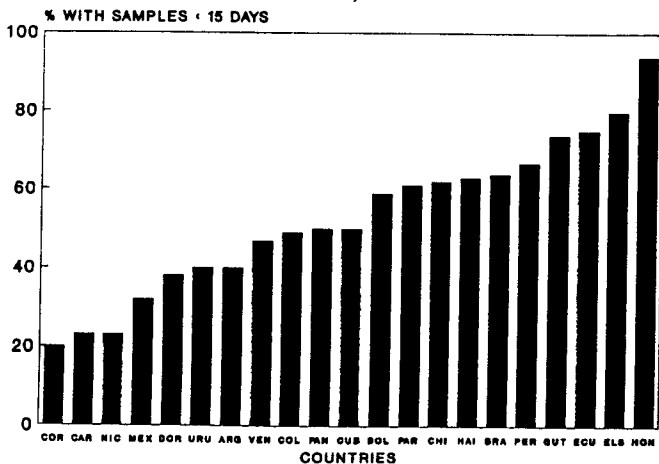
February 1992

Surveillance and Verification of Wild Poliovirus Eradication

Although most countries in the Western Hemisphere appear to have eradicated polio, none at this time would qualify for certification. The International Certification Commission on Polio Eradication (ICCP) will not certify countries as long as children with acute flaccid paralysis (AFP) do not have two adequate stool samples collected within 15 days of paralysis onset which will rule out wild poliovirus transmission. The proper collection of stools from patients remains the major stumbling block of the eradication initiative.

In 1991, 56% of all patients with AFP reported in the Americas had two stool samples taken within 15 days of onset, compared to 48% of the patients with AFP reported in 1990, and to only 34% in 1989. Despite this considerable improvement, the program is far from reaching the goal put forth by the ICCPE, which is to have all children with AFP in the Americas properly investigated. Figure 1 shows that there are still many countries that require urgent attention.

Figure 1. Percent AFP Cases with Two Stool Samples Taken within 15 Days of Onset, by Country Americas, 1991



Source: PESS/PAHO

In this issue:

- Surveillance and Verification of Wild Poliovirus Eradication 1
- A Call for a Pertussis Surveillance System 2
- Weekly Negative Reporting of Acute Flaccid Paralysis: Venezuela 4

In 1991, seven confirmed polio cases (all associated with wild-type 1, six from Colombia and one from Peru) were reported in the Americas, a 56% reduction from the 18 cases confirmed through wild poliovirus isolation in 1990, and a 67% reduction from the 24 in 1989.

In 1990, 4 045 stool specimens from 2 496 patients with AFP were studied in the Polio Laboratory Network of PAHO. Of the 4 045 stool specimens, 881 (22%) had enteroviruses isolated, and 23 (2.6%) of these were wild polioviruses (10 wild-type 1 and 13 wild-type 3). In comparison, 4 114 stool specimens taken from 2 390 patients were in the Laboratory Network during 1991. Of these, 700 (19%) had enteroviruses isolated, of which 11 (1.6%) were wild polioviruses (all wild-type 1). Although the enterovirus isolation rate declined from 22% in 1990 to 19% in 1991, there was a 38% reduction in the proportion of enteroviruses that were wild polioviruses (2.6% in 1990 vs. 1.6% in 1991). Because many patients have more than one stool specimen taken, the 23 wild-type polioviruses isolated in 1990 corresponded to 18 confirmed polio cases and the 11 wild polioviruses isolated in 1991, to seven.

More than nine years have elapsed since the last confirmed polio (indigenous wild poliovirus-associated) case was reported from the English-speaking Caribbean, more than five years from the Southern Cone countries, more than three years from the countries of Central America (the last three isolates in 1990 appear to have been importations from Mexico), almost three years from Brazil, and more than one year from Mexico. As the program enters 1992, it appears circulation of wild poliovirus is limited to two remaining at-risk areas, Colombia and Peru. However, other countries not reporting confirmed polio cases must verify the absence of wild poliovirus circulation. To that end, all children with acute flaccid paralysis must have at least two adequate stool specimens taken within 15 days after onset of paralysis; otherwise, the certification process will never be put into motion.

- The Use of Rectal Tubes for Stool Collection 5
- Jamaican Measles Surveillance System 6
- Reported Cases of EPI Diseases 7
- Response to Poliomyelitis in Peru 8
- Vitamin A Deficiency Elimination Within the Decade? 8

A Call for a Pertussis Surveillance System

Pertussis is outranked only by measles and neonatal tetanus as a vaccine-preventable cause of death among children. Estimates cite 350 000 as the number of children under five who die of whooping cough every year. Many more children probably die from the disease without its having been diagnosed correctly. Given its clinical presentation, whooping cough is often confused with other acute respiratory infections and pneumonias.

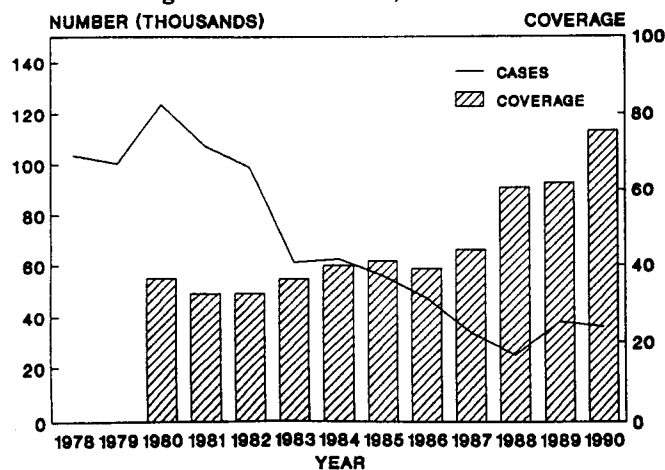
The health systems of the American hemisphere have vastly improved their surveillance systems for poliomyelitis, measles, and neonatal tetanus, yet they do not adequately monitor the incidence of whooping cough. Both its widespread occurrence and its preventability warrant that steps be taken to remedy this situation.

Epidemiologic Situation

Pertussis is a notifiable infectious disease worldwide. Recent estimates (Muller & Leeuwenburg) place its yearly incidence at up to 60 million cases. Although it affects all age groups, it kills primarily children under two years of age, and is especially deadly among those who are less than 12 months old. Unlike the case of measles, maternal antibodies do not confer immunity to newborns, so infants are susceptible to the disease from the moment they are born. (Some have estimated that, were it not for vaccination programs, 80% of the world's population would contract pertussis, and 50% would become clinically ill.)

The number of cases of pertussis that countries in the Americas reported to PAHO between 1980 and 1990 dropped by 67%, from 120 000 to under 40 000. The drop in reported incidence coincided with the increase in coverage of children under one with the DPT (Diphtheria-Pertussis-Tetanus) vaccine. Over the same ten-year period it is estimated that vaccine coverage with all three doses of DPT rose from 36.6% to an average of 75.5%. Even the subregions with the lowest coverage rates reported 65% in 1990. Simultaneously, the number of deaths attributed to pertussis in the Region also dropped (from 5 016 in 1978 to 1 398 in 1986, the last year with available data).

Figure 1. Pertussis: Cases and Deaths
DPT3 Vaccine Coverage
Region of the Americas, 1978 to 1990



Source: PAHO

Reporting Problems

Regional reports are not specific as to the age, sex, and vaccination status of cases. Nor is a standard case definition used to report or investigate occurrences.

Only 17 countries in the Americas reported deaths caused by whooping cough between 1978 and 1986, and not all of them issued reports every year. A few countries reported the bulk of the cases and deaths, and their case fatality rates varied widely. Some countries reported a decline in cases that corresponded to increased DPT coverage, while in others there seems to be no relationship between the two. All of these factors make it difficult to interpret the accuracy and meaning of the data, and point to the inadequacy of the surveillance system.

Clinical Case Definition

One of the major difficulties in setting up a reliable surveillance system is the variable nature of the symptom complex that typifies whooping cough. Symptoms range from slight to fatal paroxysmal coughing and vomiting. Complications can include pneumonia, encephalitis, and nutritional impairment. The severity of the disease is in turn related to the age and vaccination status of the patient. The vaccine is thought to be 80% effective when all three doses are administered. The remaining 20% of those vaccinated who get the disease, do not present typical symptoms, nor do those who were not properly immunized because they received only one or two doses of the vaccine.

There is currently no standard case definition that is both sensitive and specific. Since prolonged coughing is one of the signs, this is a problem especially in areas where tuberculosis and other respiratory ailments are endemic. Attempts to modify the case definition to include choking cough and a duration of over three weeks increase the specificity by eliminating other respiratory illnesses such as asthma, bronchitis and some pneumonias. They decrease the sensitivity of case finding, however, in that not all whooping cough meets those criteria.

Due to the difficulties of clinical certainty in diagnosing pertussis, laboratory backup is especially important. Yet culturing the organisms (*Bordetella Pertussis*) is difficult because a special medium is required, contamination by other bacteria and fungi must be avoided, the timing of the nasopharyngeal swabs is critical, and if the patient has received one or two doses of DPT, or some antibiotic treatment, the organism is especially difficult to isolate. Even in the best of circumstances, positive cultures are obtained for only 60 to 76% of cases. WHO therefore now includes positive ELISA tests for FHA (IgA or IgG) and for LPF (IgG)--the Pertussis toxin.

Standard Case Reporting

Despite these problems, the Region would have much more reliable data if all countries used a standard case definition. Even if it is not as sensitive and specific as one would like, standard criteria for reporting cases would make comparisons possible when analyzing trends and making EPI operational decisions.

Proposed case definition:

Suspected case: Cough lasting at least 14 days

Confirmed case: Suspected case plus one of the following:

1. isolation of *P.bordetella*
2. positive serology
3. cough followed by vomiting
4. cough with inspiratory whoop
5. contact with another confirmed case

Pertussis Reporting

Pertussis reporting should be integrated into other reporting systems. The local level notifies its supervisory unit, which in turn notifies the unit above it, until the information is received at the state and national levels.

All health units should eventually participate in the surveillance system and if possible private doctors should also be included in the network. As a first step, the health system may wish to give priority to existing surveillance units and hospitals in the most populous districts and cities. If possible, hospitals that are known to receive a large number of serious cases of Pertussis should be included right away in order to help identify what works best and what obstacles have to be overcome in including pertussis in the surveillance system.

As with most infectious disease reporting, a weekly frequency should be the goal. However, it may not be possible to meet this goal at the outset. Furthermore, authorities must decide what will be done with the information that is received. Are there enough personnel to investigate each case reported? Each outbreak? Each hospitalized case? What is the purpose of reporting? To look for trends? To detect areas of need for increased vaccination coverage?

Case Investigation

It is crucial that the follow-up to case reporting be established at the outset. As a minimum, authorities should proceed to obtain the age, sex, vaccine status, and symptom complex of the reported cases. Community investigation of reports should be standard and should be used to make whatever changes are necessary in the EPI program, especially since DPT is the most difficult of the vaccines to administer.

Investigation of reported cases in the community should include:

- investigate the actual case
- institute an active search for more cases in the same community
- obtain the names of contacts
- investigate the immunization status of contacts and vaccinate them if indicated
- evaluate coverage with three doses of DPT
- modify the immunization program in the area
- evaluate the sensitivity of the surveillance system

Data Analysis

Epidemiologists should analyze the data gathered through the investigation of case reports for trends in the

number of cases reported and the morbidity rates, their geographic distribution and distribution by age, sex, and vaccine status. Trends in mortality and case-fatality rates, the frequency of complications, and laboratory results should also be routinely analyzed.

Evaluating the System's Sensitivity

Once a pertussis surveillance system is set into motion, it should be evaluated periodically, using a system similar to that of the polio eradication program. Such a system identifies the major hospitals and clinics, reviews their intake and release forms, lists the diagnosed cases and compares the list to the reports received by the Ministry of Health. The correspondence between the two figures provides a measure of the surveillance system's sensitivity. Significant disparities serve to urge that reporting be improved, and may provide a picture of where vaccination coverage should be increased.

Simultaneously, the sensitivity evaluation provides an opportunity to estimate how many deaths due to pertussis were reported erroneously as caused by other respiratory infections. If, as many suspect, it is true that a large number of such deaths occur, the information would be useful to convince health authorities that pertussis control programs should be strengthened.

One way to check is to review a hospital's records of all children under five who were reported to have died from pneumonia, influenza, bronchitis, asthma, and other respiratory infections. These files should then be scanned to see how many of them had symptoms that fit the case definition of pertussis. A range can be obtained by using definitions that are highly sensitive (giving the highest estimate) and definitions that are highly specific (giving the lowest estimate).

As an example, suppose that in Hospital X there were 100 deaths of children under five due to pneumonia (30), bronchitis (45), and other respiratory infections (25). Their files are checked for the following criteria: duration of cough; inspiration whoop; vomiting after coughing and age and vaccination status.

The review shows that 38/100 had a cough that lasted 14 days or longer; of these, five had inspiration whoops, and another 10 vomited after coughing.

Using the sensitive case definition (cough lasting 14 days) it is possible to estimate that 38% of the deaths may have been due to pertussis (high estimate). Using the specific definition (cough lasting days and cough with vomiting or cough with whooping) it is possible to estimate that 15% of the deaths were likely due to pertussis (low estimate). This analysis hence makes it possible to conclude that 15% to 38% of the deaths were due to pertussis and not other respiratory diseases. Although this cannot be proven definitively without laboratory results, it is useful information to give health authorities an idea of the magnitude of the problem.

PAHO Responsibilities

PAHO will assist countries in setting up a good pertussis surveillance system by disseminating information on the epidemiology of the disease, encouraging countries to

speed up their surveillance activities, promoting the standardization of case reporting, identifying national laboratories that are capable of isolating *P.bordetella*, analyzing pertussis data and promoting similar epidemiologic analyses, and attempting to answer the following questions:

What is the best case definition for use in the Americas?

Is it necessary to recommend the use of DPT boosters in the Region?

What is the incidence of pertussis among children who are known and documented to have received three doses of DPT?

What percentage of cases is occurring among children who have been vaccinated?

Source: Vance Dietz, MD, MPH & TM, CDC and Advisor, EPI/PAHO.

Weekly Negative Reporting of Acute Flaccid Paralysis: Venezuela, 1991

The proportion of reporting units submitting weekly reports, even in the absence of any cases of acute flaccid paralysis (weekly negative reporting) is one criterion that has been used to monitor the development of surveillance systems as part of PAHO's strategy for eradicating the indigenous transmission of wild poliovirus from the Region of the Americas. In Venezuela, weekly negative reporting increased from 60% in 1988 to 72% in 1990, as the network of reporting units doubled, from 689 reporting units in 1988, to 1 376 in 1990.

The assumption underlying weekly negative reporting is that negative reports reflect an absence of cases of acute flaccid paralysis among the population served by a health unit. In order to evaluate the system for weekly negative reporting of cases, interviews were conducted with personnel involved in surveillance of acute flaccid paralysis at the regional level, as well as in selected districts and individual reporting units in a state with a high rate (80%) of weekly negative reporting.

Findings

There was good communication in the state between district epidemiologists and physicians in individual reporting units. Specific instructions have been given to physicians regarding management of suspected polio cases. In many places the reminder that stool samples should be obtained from persons with acute flaccid paralysis was prominently displayed. Most physicians were well-informed regarding the need to report cases of acute flaccid paralysis, and did make the weekly negative report. In ambulatory facilities with multiple physicians, a secretary reviewed patient log-books and prepared morbidity reports with variable physician supervision.

New reporting units had been added that were not included in the calculation of weekly negative reporting, most of which were hospitals that reported to district epidemiologists. Because data from the individual reporting units were aggregated at the district level before transmission to the regional level, it was not known at the regional level from how many reporting units the data were obtained. Data on completeness of negative reporting of acute flaccid paralysis as a proportion of total reporting units were not available at the regional level.

In many reporting units there was good community outreach. This increased the likelihood that cases of acute

flaccid paralysis in the community would be identified and reported.

In hospitals, medical records personnel reviewed daily records of new admissions and hospital outpatient visits (including emergency room visits) for routine weekly and monthly morbidity reporting. Review of hospital discharge data were not routinely performed for morbidity reporting. There had been substantive progress in extending reporting to facilities not operated by the Ministry of Health and Social Assistance.

Discussion

The surveillance system for the clinical syndrome of acute flaccid paralysis is a provider-based, theoretically active surveillance system which operates in the context of a passive morbidity reporting system. This situation is inherently difficult. Because it is provider-based, reporting is impossible in the absence of health services. Because it is a clinical syndrome, medical judgment is required to identify cases, but in facilities with more than one physician, the report is compiled by a non-physician. The purpose of a weekly negative report is to operate the surveillance system as if it were an active system, i.e., one in which each week each reporting unit is contacted and asked, "Were there any cases of acute flaccid paralysis this week?" However, in routine operation it is being performed as a component of a passive system. In areas with good health services and a good epidemiologic infrastructure, it is possible to achieve a high level of negative reporting that at a minimum probably does reflect the patient population seen in medical facilities participating in routine surveillance. The number of units actually making the weekly negative report is unknown.

Recommendations

Organizationally, the efficiency of the surveillance system will be increased by continued decentralization to the district level. Support for development of epidemiologic expertise at the district level should continue.

All physicians responsible for reporting should have written materials that describe their responsibilities for communicable disease reporting, including acute flaccid paralysis. There is substantial turnover among medical staff in

ambulatory facilities, and some have received little or no orientation regarding their reporting responsibilities.

All medical records or other paramedical personnel in hospitals who have responsibility for reporting cases of acute flaccid paralysis should receive training, written instructions (including a sample list of possible diagnoses or presenting symptoms), and close ongoing supervision by and feedback from a medical epidemiologist.

Because timeliness of public health response is vital, case finding at the time of outpatient visit or admission is clearly preferable to case finding post-discharge. However, case

ascertainment at admission is difficult due to incomplete admitting diagnoses or atypical clinical presentations. Therefore, all hospitals should periodically review hospital discharge data and compare it with information obtained from review of admissions and outpatient visits in order to identify local problems in case ascertainment at admission.

Where possible, a high priority should be placed on extending reporting to private and other facilities and hospitals.

Source: Melinda Wharton, M.D., Medical Epidemiologist, Ministry of Health of Venezuela/PAHO, with collaboration of the Division of Surveillance and Epidemiology, Centers for Disease Control, Atlanta, Georgia 30333

The Use of Rectal Tubes for Stool Collection

In 1991, confirmed polio cases occurred in only six of the more than 13 000 "municipios" or counties of the Americas. Despite what appears to be only few remaining areas of wild poliovirus transmission, the eradication initiative is challenged to verify the absence of wild poliovirus circulation in the great majority of "municipios" not reporting confirmed polio cases. To that end, the ICCPE has recommended that countries verify the absence of transmission not only by surveillance of children with acute flaccid paralysis and their contacts, but also by surveillance of wild poliovirus in the environment¹.

Environmental surveillance of wild poliovirus in high-risk areas can generally be accomplished through community stool surveys of normal children to rule out silent transmission and by environmental sampling of sewage. The methodologies for sampling of sewage are currently being developed and hopefully will prove useful for the eradication initiative. Much is known about environmental surveillance in temperate countries where "sophisticated" sewage systems exist; however, little is known about its applicability in more tropical countries with less developed or non-existent sewage systems. Environmental surveillance of wild poliovirus may prove useful in tropical urban areas where some form of sewage system exists or in less developed communities where excrement is disposed of in ditches or rivers that can be sampled. However, in the future, in the more remote, primitive, rural areas, without such disposal of sewage, the use of community stool surveys of children will need to be continued.

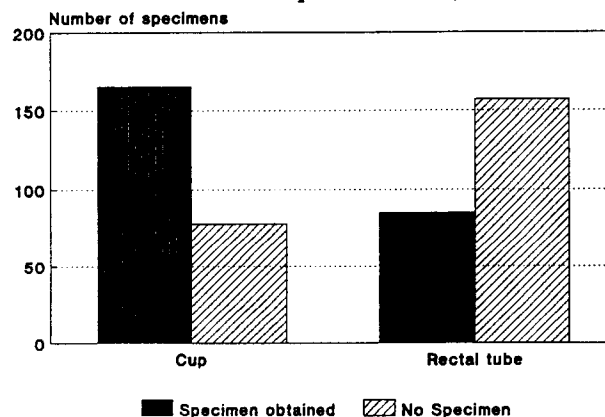
Because community stool surveys of normal children using the traditional cup technique of collection consume both laboratory and costly human resources, PAHO, with the collaboration of the Ministry of Health of Colombia, conducted a field study in Cartagena, Colombia, to evaluate the usefulness of polyethylene rectal tubes in screening normal children under five years of age. Because the traditional cup technique often requires a return visit for specimen collection, the rectal tube could potentially minimize the work required for conducting such surveys.

In April 1991, approximately one percent (242) of the children less than five years of age living in a high-risk section of Cartagena (estimated to have 20 000 children under five years of age) were enrolled in the study (Tambini

G, et al. Unpublished data). This section of the city was known to have had several confirmed cases of polio (the most recent, two months before). Children were sampled from day-care sites, community households, and local health clinics. Investigators were given detailed instructions to insure that the tube was inserted three quarters to two thirds its length into the rectum.

Preliminary results indicate that of the 242 children sampled, 67% of the children had specimens obtained using the traditional cup technique compared to only 36% with the rectal tube (Odds ratio [OR]=3.6, $p < 0.001$) (Figure 1). There were no differences in enterovirus (including poliovirus) isolation rates between the two procedures, once a stool sample was obtained.

Figure 1. Distribution of Stool Samples by Collection Technique. Colombia, 1991



Source: PAHO/Ministry of Health, Colombia. Provisional data.

These results suggest that the likelihood of obtaining stool samples from normal children under five years of age is over three times greater when using the traditional cup technique than the polyethylene rectal tube. The collection rate of rectal tube is unacceptably low to evaluate with confidence the possibility of silent transmission among high-risk children. Therefore, PAHO recommends at this time that the rectal tube not be used in the polio eradication program in the Americas, pending further studies.

¹Pan American Health Organization: Final Report. 1st Meeting of the International Certification Committee on Polio Eradication. 1990 Washington, DC:PAHO. (Ref. doc.: EPI/TAG9/91-Ref#4).

Jamaican Measles Surveillance System

The Americas-wide polio eradication campaign and the CARICOM goal of eliminating indigenous measles by 1995 call for strong surveillance systems. CARICOM countries have focused on building and improving these systems for several years now. Evaluations are used to test their adequacy and pinpoint weak areas. Jamaica, which is the largest of the CARICOM members, carried out a comprehensive evaluation of its surveillance system from October to November 1991, with an emphasis on determining its capacity to detect and investigate suspected cases of measles. The evaluation was conducted by the Epidemiology Unit and EPI Division (MCH) of the Ministry of Health with PAHO technical collaboration.

Scope of the Evaluation

The Jamaican surveillance system is based at the Parish level and uses the notification system, the sentinel sites system, active hospital surveillance, laboratory reporting, and special surveys. The evaluation studied the first three components through site visits to each of the thirteen Parishes that make up the country. The evaluation team interviewed Medical Officers of Health and Senior Public Health Nurses, and reviewed written records.

Notification System: The notification system classifies diseases according to the frequency with which they are to be notified. Class I diseases are to be reported on suspicion and require immediate investigation. Class II diseases are reported weekly by line listing, and Class III diseases are reported by numbers only on a monthly basis. Measles was recently elevated to a Class I disease in order to succeed in its elimination by triggering a prompt public health response and to obtain records of investigation results.

The evaluation of the notification system detected its weak point: notification follow-up, or case investigation. Of 208 suspected cases of measles reported in 1991, only 6 (<3%) were investigated within 48 hours and only 76 (36.5%) were investigated at all. Of those suspected cases that were investigated, 23 were confirmed. As a result of these findings, health authorities are now attempting to ensure that all reported cases are investigated promptly.

The majority of cases that were investigated serologically were actually rubella. This finding indicated that clinical diagnosis of measles is not as accurate as had been supposed and that blood sampling is essential to confirm the elimination of measles.

Sentinel Site Reporting: Each Parish has one or more designated sentinels, which include health centers, hospitals, or a physician. Each of the 44 sentinel sites is charged with collecting a weekly count of the number of cases of fever, gastroenteritis, and measles. Unlike the notification system, the purpose of sentinel site reports is to monitor trends, not to generate investigations.

The evaluation found that 39/44, or 87% were reporting weekly. Case definitions for these reports varied, as did other information. "Fever" was found to imply fever alone in 7/12 Parishes and fever with rash in 4/12. In one Parish, fever and rash were reported separately. Gastroenteritis

was reported consistently by all sentinel sites as three loose stools over a 24 hour period. Measles, too, was reported consistently--as clinical suspicion--although this definition lends itself to some variation between observers.

Hospital Active Surveillance: The hospital active surveillance system calls for public health staff to visit hospitals weekly to review cases of targeted diseases that are found on the wards and in casualty registers.

The evaluators found that at least one hospital was visited regularly in each parish in 1991. Inspection of measles data, with the purpose of evaluating the consistency of the reports found that 10/13 visit reports collected patient identification data (name, age, sex, address), 10/13 established the date of onset of illness, 4/13 included vaccination history, 7/13 outcome, and only 5/13 included final or discharge diagnosis. The lack of laboratory confirmation and final diagnoses indicated that the hospital reports were based on suspicion and not confirmation of measles.

Overall Efficiency

Of all of the cases reported through Class I notification, only 50% reached the central level. Furthermore, since Sentinel reports are only a sample of around 10% of health care sites, the fact that they reported more cases of measles than did the Class I notification system indicates that there is under-reporting by the latter. Lastly, detailed information was given only for 13 of 208 reported cases, making it impossible for evaluators to examine the remaining 195 suspected cases retrospectively.

Table 1. Number of Measles Cases Reported January-October 1991

Level	Number Reported	Line Listed	Confirmed	Laboratory Confirmed
Parish	208	47	23	1
Ministry	104	104	1	1
Sentinel	317	0	0	0

Source: EPI, CAREC/PAHO

Reporting of suspected rubella cases fared no better than that for measles (less than 50% reached the central level), but 57% of the cases reported to the EPI unit were confirmed, as compared to 11% confirmed cases for measles. Many of the cases that laboratory tests showed to be rubella were initially reported as "query measles and/or rubella." This confirmed the need to investigate all cases and to include serologic testing for confirmation.

Table 2. Number of Rubella Cases Reported January-October 1991

Level	Number Reported	Line Listed	Confirmed	Laboratory Confirmed
Parish	132	36	31	24
Ministry	49	49	28	28

Source: EPI, CAREC/PAHO

Source: CAREC Surveillance Report, Vol. 17, No 10 & 11, 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.	1 913	751	0	0	...	38	34	42	4	4	56	155
Colombia	5 Oct.	7 401	10 603	6	4	62	129	42	104	6	22	685	1 630
Ecuador	5 Oct.	1 069	1 272	0	1	50	45	48	49	3	2	401	401
Peru	12 Oct.	322	172	1	3	87	136	63	96	2	2	17	14
Venezuela	28 Dec.	13 845	9 981	0	0	64	99	35	28	0	0	777	1 389
Southern Cone													
Argentina	28 Sept.	17 806	1 084	0	0	25	46	12	4	2	7	1 132	1 391
Chile	28 Dec.	2 080	1 578	0	0	12	22	3	0	21	37	58	63
Paraguay	28 Dec.	234	1 035	0	0	48	89	37	39	4	10	112	80
Uruguay	5 Oct.	1 055	13	0	0	3	3	0	0	0	0	41	79
Brazil	7 Dec.	32 335	38 757	0	0	1 141	1 248	215	196	558	695	5 858	12 734
Central America													
Belize	14 Sept.	7	59	0	0	0	0	1	0	0	0	2	2
Costa Rica	5 Oct.	3 110	21	0	0	1	3	0	0	0	0	17	58
El Salvador	30 Nov.	722	721	0	0	42	31	12	12	0	0	62	135
Guatemala	14 Sept.	138	8 632	0	3	15	35	3	4	1	2	32	41
Honduras	28 Dec..	90	8 360	0	0	...	39	...	23	0	0	...	147
Nicaragua	16 Nov.	2 709	15 346	0	0	20	31	8	7	0	0	61	174
Panama	30 Nov.	2 425	1 701	0	0	1	2	3	5	0	0	102	22
Mexico	28 Dec.	2 965	84 008	0	7	184	219	46	80	1	0	125	1 067
Latin Caribbean													
Cuba	28 Sept.	11	41	0	0	1	4	0	0	0	0	0	22
Haiti	*	...	...	0	0	...	...	...	...	...	...	...	...
Dominican Republic	28 Dec.	7 512	3 477	0	0	54	56	4	12	11	27	10	227
CARIBBEAN													
Antigua & Barbuda	8 Jun.	0	0	0	0	0	0	0	0	0	0	0	0
Bahamas	6 Jul.	0	52	0	0	1	0	0	0	0	0	0	0
Barbados	10 Aug.	0	38	0	0	4	2	0	0	0	1	0	1
Dominica	27 Jul.	2	10	0	0	1	0	0	0	0	0	0	1
Grenada	29 Jun	2	1	0	0	1	0	0	0	0	0	0	0
Guyana	29 Jun.	2	1	0	0	0	0	0	0	0	0	0	0
Jamaica	29 Jun.	280	3 577	0	0	5	4	0	0	1	0	14	1
St. Kitts/Nevis	10 Aug.	5	74	0	0	0	0	0	0	0	0	0	0
St. Vincent	3 Aug.	2	1	0	0	1	0	0	0	0	0	0	0
Saint Lucia	27 Jul.	6	23	0	0	0	0	0	0	0	0	0	0
Suriname	13 Jul.	10	14	0	0	0	0	0	0	0	0	0	0
Trinidad & Tobago	10 Aug.	95	478	0	0	7	6	0	0	1	0	4	1
NORTH AMERICA													
Canada	28 Dec.	6 072	726	0	0	3	2	0	0	2	8	2 148	6 266
United States	28 Dec.	9 461	26 520	0	0	48	60	0	0	2	4	2 522	4 188

Data for polio includes only confirmed cases through week 52 (ending 28 December, 1991).
Data not available.

Response to Poliomyelitis in Peru

In 1991, confirmed polio cases were reported in the Americas only from Peru (one wild-type 1 poliovirus) and Colombia (six wild-type 1 poliovirus) [see front page of this issue]. One other wild-type 1 poliovirus was isolated from a case of acute flaccid paralysis in Peru with onset of paralysis in December 1990.

The response to the confirmed cases in Colombia was to target more than one million households in the risk area for mop-up vaccination campaigns. Approximately 80% of the children under five years of age were vaccinated in two rounds of campaigns. A third round is scheduled for February 1992.

The last confirmed polio case in Peru (date of paralysis onset August 1991) was reported from the Department of Junin. The initial immunization response was directed to essentially all the communities in the Department. Over 90% of the children of Junin were vaccinated with OPV in two rounds of mop-up campaigns held in 1991. However, vaccination activities have been greatly affected by civil disturbance, health strikes, and work slow-downs. The great majority of vaccine delivered in Peru in 1991 could only be delivered by way of house-to-house mop-up activities. In follow-up campaigns, 587 557 (96%) of the targeted children under five years of age were vaccinated. Of the 615 070 children targeted, 63% were also vaccinated one month later during the second round of activities.

Of the 22 million inhabitants in Peru, approximately three million are under five years of age. For 1992, the Peruvian Government has established that 66% of these children are under very high risk conditions and in critical need of special vaccination programs. The Ministry is mounting a house-to-house mop-up campaign that will be carried out from 29 February to 8 March and will include health education for cholera prevention.

As of the third week of 1992, the cholera epidemic continues to scourge Peru. Over 320 000 cases were reported in 1991, representing 75% of all cholera cases reported for all countries in the Americas in 1991 and 60% of the world's reported cases during 1991. The cholera epidemic in the Americas is the single largest cholera epidemic that has occurred in the world during this century. In response to the initial cases, Peru set up a cholera surveillance system patterned after the system established for acute flaccid paralysis. PAHO strongly believes that special attention to integrate mass vaccination campaigns with cholera prevention activities should help consolidate efforts toward achieving polio eradication in Peru. During the mop-up campaign that will take place -the largest ever carried out in the Americas-, approximately two million households will be visited in order to vaccinate the children and disseminate cholera information.

Vitamin A Deficiency Elimination Within the Decade?

The International Vitamin A Consultative Group held its 14th annual meeting in June 1991 in Guayaquil, Ecuador, where it reviewed the status of the campaign to eliminate Vitamin A deficiency disease by the end of the decade.

Discussants pointed to the need to take into account the social, economic, dietary, and health needs and resources of those who are affected by Vitamin A deficiency. Participants gave reports on their research into methods of assessing an individual's Vitamin A intake status and the

relationship between Vitamin A consumption and illness and death rates.

A compendium of the meeting--including abstracts of the presentations, the list of participants, and summaries of the current views and activities of UN agencies, bilateral agencies, nongovernmental organizations, and the private sector--can now be ordered from the Secretariat (The Nutrition Foundation, Inc., 1126 16th St., N.W., Washington, D.C. 20036, U.S.A.).

The *EPI Newsletter* is published every two months, in Spanish and English by the Expanded Program on Immunization (EPI) of the Pan American Health Organization (PAHO), Regional Office for the Americas of the World Health Organization (WHO). Its purpose is to facilitate the exchange of ideas and information concerning immunization programs in the Region, in order to promote greater knowledge of the problems faced and their possible solutions.

References to commercial products and the publication of signed articles in this *Newsletter* do not constitute endorsement by PAHO/WHO, nor do they necessarily represent the policy of the Organization.



Expanded Program on Immunization
Maternal and Child Health Program
Pan American Health Organization
525 Twenty-third Street, N.W.
Washington, D.C. 20037
U.S.A.

Editor: Ciro de Quadros
Associate Editor: Roxane Moncayo Eikhof

ISSN 0251-4729