

EPI Newsletter

Expanded Program on Immunization in the Americas

Volume XIX, Number 6

IMMUNIZE AND PROTECT YOUR CHILDREN

December 1997

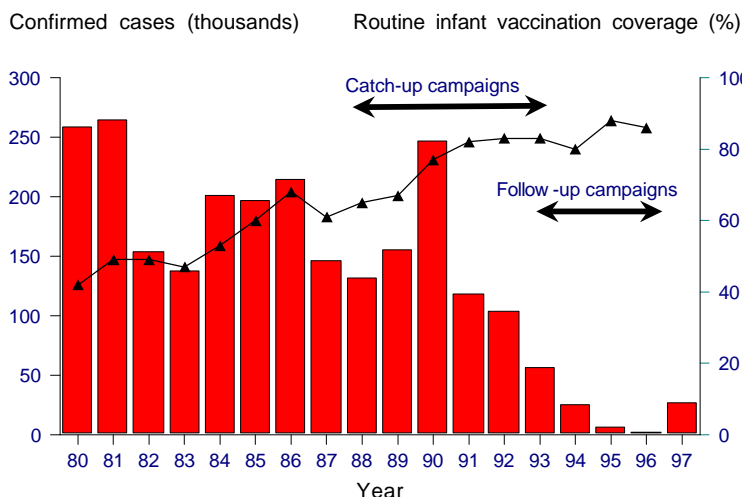
Measles in the Americas, 1997

Following an all-time record Regional low in the Americas of 2,109 confirmed measles cases in 1996, there has been a resurgence of the disease in 1997 in Brazil (Figure 1). Through 29 November 1997, a total of 75,236 suspected measles cases were reported from the countries of the Americas. Of these, 26,950 (35.8%) have been confirmed, 24,527 (32.6%) have been discarded, and 23,080 (30.6%) remain under investigation. Of the total confirmed cases, 26,508 (98.3%) have laboratory confirmation of measles infection or epidemiological linkage to a laboratory confirmed case, and 442 (1.6%) have been confirmed on clinical grounds alone. Together, Brazil (25,900 confirmed cases) and Canada (577 confirmed cases) accounted for 98.2% of the total confirmed cases in the Region. However it should be pointed out that Canada has had no cases for the last 18 weeks. Other countries reporting measles cases include: Guadeloupe (128 cases), the United States (127 cases), Paraguay (124 cases), Argentina (58 cases), Chile (47 cases), and Costa Rica (14 cases).

The majority of cases from Brazil have been reported from Sao Paulo State, the only state in the country which did not conduct a *follow-up* vaccination campaign in 1995. To date, over 20,000 cases have been confirmed in this outbreak, with most cases in the city of Sao Paulo. Over 50% of

cases have occurred in young adults 20-29 years of age. The highest age-specific incidence rates are in infants, young adults 20 to 29 years of age and children 1-4 years of age, respectively. To date, over twenty-five measles-related deaths have been reported, most in infants less than 1 year of age.

Figure 1
Reported measles cases in the Americas, 1980-1997**



Source: PAHO/WHO
* Coverage for children at one year of age
Cases reported through 29 November 1997

An investigation of measles cases in adults found that the majority were occurring among young adults who were members of certain risk-groups including: men who recently migrated to cities from rural areas in the Northeast of the country to work in construction projects and other manual labor, students, health care workers, persons working in the tourist industry, and military recruits.

Measles virus has been isolated from several patients from this outbreak at the measles laboratory of the Adolfo Lutz Institute in Sao Paulo. Genomic sequencing of these isolates conducted at the Centers for Disease Control and Prevention (CDC) Atlanta, USA, revealed that the virus circulating in Sao Paulo is virtually identical to virus currently circulating in Western Europe. Although an index imported measles case has not been identified, the molecular epidemiology data strongly suggest that the virus responsible for the Sao Paulo outbreak was imported from Europe.

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The Sao Paulo outbreak is waning after implementation of an aggressive outbreak response, which included a *follow-up* campaign targeting all children 1-4 years old, selective *mop-up* vaccination in schools and vaccination of young-adult members of groups at high-risk for measles.

Measles virus has spread from Sao Paulo to nearly every other state in Brazil. States most affected include: Rio de Janeiro, Ceara, Minas Gerais, Bahia, Parana, Rio Grande do Sul, Mato Grosso do Sul and the Federal District (Brasilia). Moreover, spread has been reported from several other countries in the Region, including Paraguay, Chile, Argentina, Peru, Costa Rica, and the United States.

A total of 577 confirmed measles cases were reported from Canada. A large outbreak with over 300 cases occurred primarily among young adults affiliated with Simon Fraser University, near Vancouver. This outbreak came somewhat as a surprise since the Province of British Columbia had just completed its school *catch-up* campaign in 1996. Genomic analysis of measles virus obtained from this outbreak performed at the Laboratory Centres for Disease Control suggests that measles virus was imported from Europe.

Measles virus from the British Columbia outbreak spread to school-aged children in Alberta, where 245 cases were reported. Other sporadic cases or small clusters have occurred in various Canadian provinces, mostly among adults due to importations. Since 1996, a total of 17 imported measles cases were documented in Canada, mostly from Europe and Asia. Since the end of July 1997, however, not a single measles case has been detected and transmission appears to have been interrupted in Canada.

To date, 127 confirmed measles cases have been reported during 1997 in the United States. This is the lowest number of cases ever reported in the United States, and is well below half the previous record low incidence of 309 cases in 1995. Almost half of the cases are documented importations. Spread from importations has been limited and the largest outbreak this year is only 8 cases. In 1995 and 1996, there were no measles importations from Latin America or the Caribbean. In 1997, however, there were 5 confirmed imported cases from Brazil.

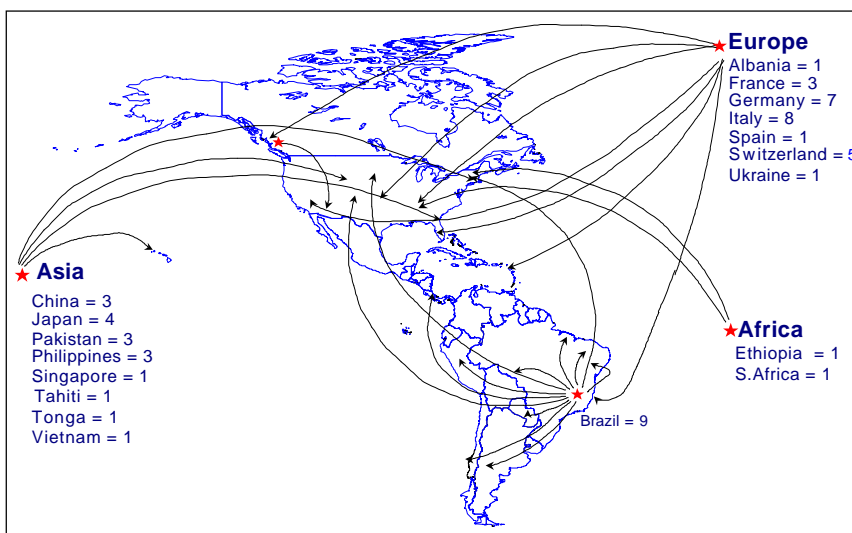
Between October 1996 and May 1997, a large measles outbreak occurred in the French department of Guadeloupe. This island had not implemented PAHO's recommended measles eradication strategy. A total of 128 confirmed

measles cases were reported. The majority of cases occurred in unvaccinated persons 12 to 18 years of age. The source of the outbreak is thought to be an unvaccinated 10 year old child visiting from metropolitan France. Moreover, genetic analyses of measles virus obtained from the outbreak revealed that the virus circulating in Guadeloupe is very similar to virus circulating in Europe. The Ministry of Health conducted a mass vaccination campaign in affected schools. Efforts were made to provide measles vaccine to all students without documentation of having received two doses of measles vaccine. Over 3,000 students were vaccinated.

Until 1997, the English-speaking Caribbean had not reported a single confirmed case of measles in over 5 years. However, in 1997 two laboratory-confirmed measles cases were detected. The first confirmed case was reported from the Bahamas. The patient, a young adult, had rash onset in March. The direct source of transmission was not identified, however, it is strongly suspected that the patient contracted

measles from a tourist. A search has been made in the country to identify any additional cases of measles. This search involved a review of over 80,000 diagnoses from health facilities in the country. The second case was reported from Trinidad and Tobago. It occurred in a young adult Italian sailor who had rash onset in April. The patient had acquired measles in Italy. A specimen was collected and found to be positive for measles IgM at the measles laboratory of the Caribbean Epidemiology

Figure 2
Measles Importations into the Region of the Americas, 1997*



Source: SVI/PAHO and CDC

* Data as of 29 November 1997

Centre (CAREC). No spread cases were identified despite careful investigation.

Editorial Note: While the resurgence of measles in the Americas during 1997 represents a major increase compared to cases reported in 1996, these cases represent only about 10% of cases reported in 1990. Nevertheless, important lessons can be learned from this experience which can be used to "fine-tune" the Region's measles eradication strategy and to assure its full implementation in all countries. The outbreak in Brazil can be considered a wake-up call to the countries of this Hemisphere to demonstrate that the absence of measles virus circulation does not mean absence of risk from measles infection.

Several factors combined to create conditions which facilitated widespread measles transmission in Sao Paulo. First, the lack of a timely *follow-up* vaccination campaign in 1995 for children aged 1 to 4, combined with low routine vaccination coverage (*keep-up*) among infants using a two-

dose schedule allowed for a rapid and dangerous accumulation of susceptible children. Second, the presence of large numbers of young adults who, for a variety of reasons, escaped both natural measles infection and measles vaccination increased the risk of a measles outbreak. Third, measles virus was imported into Sao Paulo, probably from Europe. Finally, the high population density of the city facilitated contact between persons infected with measles and susceptible persons.

Measles case surveillance data, combined with molecular epidemiologic information provided by PAHO's measles laboratory network, suggest that the countries of the Americas are constantly being challenged by imported measles virus from other regions of the world where measles remains endemic. During 1997, 23 separate importations of measles virus were detected from Europe, 17 from Asia and 2 from Africa (Figure 2) that resulted in measles transmission. These data, however, probably severely underestimate the true number of measles importations since many imported cases may not seek medical care and do not result in further transmission.

In addition to the challenge of imported measles virus, the outbreaks in Brazil, Canada and other countries of the Region suggest that there may be a significant number of young adults who remain susceptible to the disease. While PAHO's recommended vaccination strategy for measles eradication primarily targets infants and children, a small percentage of adolescents and young adults may have escaped both natural measles infection and measles vaccination. Furthermore, some young adults may have been vaccinated, but failed to respond immunologically. These young adults remain susceptible to measles.

For practical purposes, persons born before 1960 in most countries of the Americas can be assumed to have been exposed to naturally circulating measles virus, and thus be immune to the disease. Therefore, the overwhelming majority of adults are already immune, and most susceptible young adults are at very low risk for being exposed to measles virus. Mass campaigns among young adults are not recommended.

Experience has shown that certain institutional settings such as colleges and universities, military barracks, health care facilities, large factories and prisons can facilitate measles transmission, if measles virus is introduced to such populations. The close contact among persons in these settings increases the risk that a susceptible person can be exposed to measles. In fact, numerous measles outbreaks among adolescents and young adults have been documented in these settings, even in institutions with high measles vaccination coverage. In addition to persons living or working in these settings, adolescents and young adults who travel to countries with endemic measles transmission are at increased risk for being exposed to and contracting measles.

Moreover, in recent years many countries have experienced the migration of young adults from rural areas to urban areas for economic reasons. Because measles circulates more freely in cities with high population densities, persons who have recently migrated from rural areas with low population densities (and therefore lower risk for having been exposed to circulating measles virus), may be at

relatively increased risk of measles susceptibility. When these persons congregate in institutional settings which can facilitate virus transmission, they have greater risk for acquiring measles, should the virus be introduced.

To prevent the occurrence of measles outbreaks among adolescents and young adults, efforts are needed to assure measles immunity in groups potentially at high-risk for measles, including college and university students and professors, health care workers, military personnel, young adults working in large factories, young adults residing in institutions such as prisons and long-term care facilities, and persons traveling to measles endemic countries.

Vaccination of adolescents and young adults entering such facilities should be routine and ongoing and should take place **before** persons begin working or living in these high-risk settings. Moreover, *catch-up* vaccination activities may be considered for adolescents and young adults already in such settings. Young adults who are planning to travel to parts of the world where measles virus continues to circulate should be advised to be vaccinated before departing. These measures will enhance immunity levels in such population groups and help prevent measles outbreaks in these settings, should the virus be introduced.

The measles experience of 1997, clearly demonstrates that there are two major challenges to the Region's measles eradication goal by the year 2000. First, the countries of the Americas need to keep up their guard by maintaining the highest population immunity possible in infants and children, and targeting vaccination to adolescents and young adults who are at highest risk for being exposed to measles virus. Second, increased efforts are needed in other regions of the world to improve measles control and to decrease the number of exported measles cases to the Americas. As long as measles virus circulates anywhere in the world, the Americas will remain at risk for measles. The successful completion of the measles eradication goal will require full implementation of PAHO's recommended vaccination strategy in all countries of the Region and improved measles control/elimination in other regions of the world, especially Europe and Asia. As mentioned previously, the only way for the Americas to assure regional measles eradication will be through the ultimate global eradication of measles virus.

USAID Grant for Hib Surveillance

The United States, through its Agency for International Development (USAID) has approved a US\$ 50,000 grant to support epidemiological surveillance of *Haemophilus influenzae* type b (Hib) in Latin America and the Caribbean. A Regional surveillance system for Hib and other bacteria responsible for meningitis and respiratory diseases will generate important information to accurately determine disease burden and convince decision makers to incorporate a vaccine against the disease in regular immunization programs.

The overall incidence of Hib meningitis at ages 0 to 4 years has been initially estimated to be at least 35 per 100,000. This means that there would be more than 20,000 cases annually in the Americas.

Caribbean Meeting Stresses Surveillance

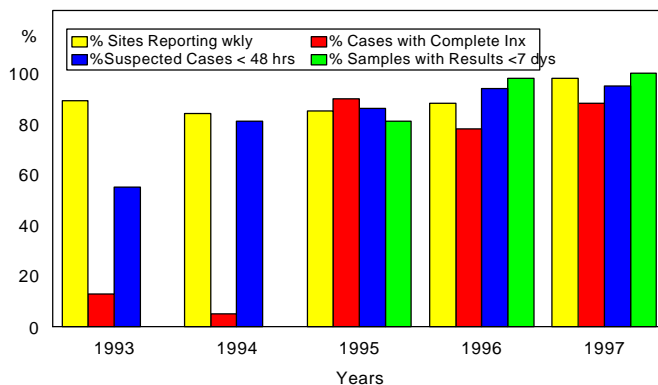
The following are some of the major conclusions and recommendations of the Fourteenth Meeting of the Caribbean EPI Managers held in Castries, Saint Lucia, from 18-20 November 1997. The meeting was officially opened by Her Excellency the Governor of Saint Lucia, Dr. Pearlette Louisy and the Honorable Minister of Health, Ms. Sara Flood delivered the keynote address.

Measles Eradication

The English-speaking Caribbean still holds the longest record in the Western Hemisphere of six years without indigenous measles transmission. Two recent importations into the Bahamas and Trinidad and Tobago stressed the danger of importations and the need for adherence to PAHO's measles eradication strategy, particularly the maintenance of high levels of immunization coverage and periodic implementation of *follow-up* campaigns. A large outbreak in Guadeloupe (please refer to page 2), in late 1996, illustrates the vulnerability of the countries to measles transmission if the strategy is not fully implemented.

The measles laboratory at the Caribbean Epidemiology Center (CAREC) provides confirmation for suspected measles cases (Figure 1). The laboratory is able to test for IgM antibodies for measles, rubella and dengue infections. Through week 44 of 1997, a total of 847 specimens had been submitted for laboratory confirmation. Of these, 2 (0.2%) were positive for measles, 276 (31.5%) were positive for rubella and 11 (1.3%) were positive for dengue. All specimens were tested and reported back to countries within seven days of receipt.

Figure 1
Measles surveillance indicators in the
English-speaking Caribbean and Suriname
1993-1997*



Source: MOH Reports to EPI/CAREC

* Data as of 25 October 1997 (Epidemiological week 43)

Recommendations

- MR or MMR are the vaccines of choice for measles and rubella elimination.
- Countries that are instituting a two-dose schedule should be aware that even with such a regimen, susceptibles will accumulate because coverage with two doses will never

achieve 100% and some children will remain unvaccinated. *Follow-up* campaigns are required to maintain interruption of transmission.

- To maintain the English-speaking Caribbean and Suriname free of measles, high vaccination coverage must be maintained. Efforts need to be made to ensure that at least 95% of each birth cohort is vaccinated with measles-containing vaccine at 12 months of age.
- The possibility of combining measles and rubella surveillance should be explored.
- To prevent the accumulation of susceptible preschool-aged children from reaching dangerous levels, *follow-up* campaigns should be conducted among children 1-4 years every 4 years. Countries should plan on conducting *follow-up* campaigns in the year 2000.
- The Brazil experience suggests that certain young adults may be at risk for measles. Efforts are needed to assure measles vaccination in young adults in high-risk groups, which include students, migrant workers, health care workers and the military.
- As long as measles circulates anywhere in the world, the English-speaking Caribbean will be at risk for measles importations. Measles surveillance systems need to detect these importations in a timely manner and respond accordingly when they occur.

Poliomyelitis

Presentations on polio stressed the importance of continuing technical and political commitment to surveillance and vaccination activities to keep the region polio-free. Although progress is being made towards global eradication of polio, importations still represent the biggest threat. All English-speaking Caribbean countries were making great efforts in sending all cases with stool samples for laboratory testing, one of the surveillance indicators. However, it was noted that the other three critical surveillance indicators were not consistently being met from countries that notified cases. Periodic evaluations of surveillance for acute flaccid paralysis (AFP) were recommended at all major health facilities to see if cases are being missed.

Rubella and CRS

Since 1982 significant rubella virus activity has been recorded in many CAREC-member countries, and cases of congenital rubella syndrome (CRS) have been documented as sequelae to these outbreaks. Following a *catch-up* measles campaign (Big Bang) in 1991, very low rubella incidence (fewer than 2.0 cases per 100,000 population) was recorded between 1992 and 1995. However, since the beginning of 1995 and continuing through 1997, sizable outbreaks of rubella have occurred in Jamaica, Barbados, Trinidad and Tobago, Guyana, and Belize. In 1996, rubella incidence rates of 10.3 cases per 100,000 population were recorded. To date, more than 20 cases of CRS have been reported since 1996.

The Bahamas implemented a major campaign with MMR targeting all individuals 4-40 years old in July of this year, aimed at the interruption of rubella transmission. The lessons from this initiative will be extremely useful to all other countries that are planning to eliminate rubella and CRS.

Recommendations

- It is imperative that Ministries of Health discuss and arrive at a consensus position with regard to the objective of rubella elimination.
- There is overwhelming evidence, both from estimated figures as well as from data collected over the last year, particularly in Guyana, Barbados and a regional review presented by CAREC, that the burden of rubella and its cost, both in financial terms and human suffering, warrant efforts towards its elimination.
- The Technical Advisory Group Meeting (TAG) held in Guatemala in September, 1997 outlined the strategies for the elimination and control of rubella and CRS. These include a one-time mass vaccination of all individuals, male and female, within a certain age range that will vary from country to country, but should cover individuals up to 35 years of age. The lower level age group will be defined by the previous vaccination activities that included rubella-containing vaccine.
- During 1998, senior MOH officials and political leaders in all countries should define national policy regarding rubella and CRS elimination, aiming at a Pan-Caribbean initiative. The conference of Ministers of Health, to be held in April of 1998, their Caucus in September and the current revision of the Caribbean Cooperation in Health (CCH) represent excellent opportunities for achieving consensus on this issue.

Immunization Coverage

The average coverage rates for all 19 countries were: DPT 89%, OPV 89%, measles containing vaccine 92%, and BCG 95%. Over 90% of the infant vaccinations in the countries are administered by the public sector through a network of clinics. However, not all countries have been able to attain very high coverage, and some still show rates between 80-85%. These are due to pockets of low coverage occurring in certain geographic areas, e.g., remote rural areas and dense urban centers. A review of coverage data for the English-speaking Caribbean for the period 1994-1996, indicates that special activities need to be carried out particularly in Suriname, Grenada, Guyana and Belize to reach coverage above 90%.

Introduction of New Vaccines

Vaccines currently being discussed for introduction in the English-speaking Caribbean are hepatitis B and *Haemophilus influenzae* type b (Hib). These two vaccines are already being administered, primarily by the private sector in the English-speaking Caribbean. In 1996, the private sector bought 42,208 (20mcg) adult-dose vials of hepatitis B. Pediatric doses accounted for about 6,000, and these could only fully immunize 1.4% of the birth cohort of the Caribbean Member Countries.

Whereas four countries are using hepatitis B vaccine in the public sector (1.7% of the sub-region total birth cohort) only two are using Hib vaccine. The uptake in the private sectors is 28,128 doses of Hib vaccine, which can only vaccinate 5-9% of the region's infants (the birth cohort for 1996 was 140,311).

Recommendations

- The introduction of new vaccines into a national immunization program should not simply reflect their availability, but should follow a careful investigation of their appropriateness to that particular epidemiology, and whenever possible, evidence that their introduction into routine use would be a cost-effective use of resources.
- The extensive experience of the Caribbean in implementing immunization campaigns will be invaluable in the introduction of new vaccines for routine use. All countries in the region should strive to introduce these vaccines in the public sector within the next three years.

Booster Dose Policy

A panel discussion revealed a great variety of schedules for booster doses in children, adolescents, adults and pregnant females. Many countries are giving at least 3 boosters between 1 year and the end of school. Often, these do not provide any protection or benefit to the recipient. In many instances, too many unnecessary booster doses are being administered, particularly for TT. Therefore, it was agreed that participants conduct a thorough review of schedules and real need for boosters in the Caribbean. The removal of unneeded boosters would result in savings that could be reallocated to the introduction of new antigens or strengthening of existing routine programs. When booster doses are needed, it is important to consider schedules that make it easier for parents to comply.

Surveillance of Adverse Events

Thorough surveillance of vaccine-associated adverse events conducted during the recent mass MMR campaign in the Bahamas has provided reassuring results about the safety of the vaccine when used in older groups. These results may help other countries gain better acceptance of similar campaigns aimed at the elimination of CRS. Draft guidelines for implementing a surveillance system for adverse events following immunizations were developed and presented by PAHO. Participants noted that it was extremely encouraging to see that many Caribbean countries had already developed such surveillance systems.

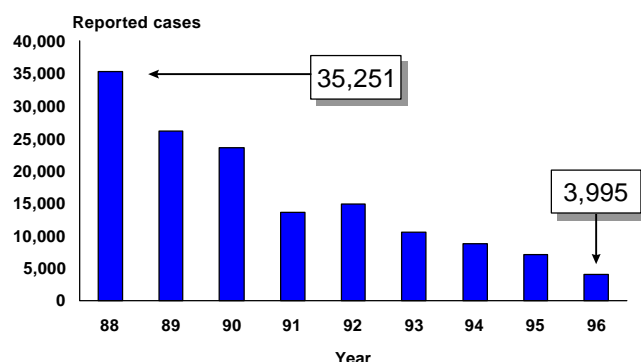
Surveillance Priorities at CAREC

CAREC has redefined its communicable disease priorities, which will continue to include measles, polio, rubella/CRS, diphtheria, pertussis, tetanus and tuberculosis. In addition, CAREC will work with national EPIs to develop surveillance systems for other diseases that are becoming targets of national immunization programs, such as Hib and hepatitis B. CAREC will also continue fostering partnerships with the private sector to strengthen their participation and use of disease data, including the establishment of a private physician sentinel surveillance system.

Polio Surveillance: Global Overview

As the year 2000 draws closer, the polio eradication initiative is gaining ground worldwide. More countries than ever before have begun to conduct surveillance for acute flaccid paralysis (AFP)—126 of 146 polio-endemic countries according to the World Health Organization (WHO). In 1996, there were a total of 3,995 confirmed polio cases, and as of 1 December 1997, 10,770 AFP cases were reported and 906 were confirmed as polio. The global AFP rate (per 100,000 children < 15 years of age) for the same period is 0.71, varying from 0.12 in the African Region to 1.22 in the Western Pacific.

Figure 1
Global annual reported polio cases
1988-1996



Source: WHO/GPV/EPI

While there are no technical obstacles toward reaching the goal of polio eradication by the year 2000, major impediments include the mobilization of adequate resources and the lack of public knowledge and support. Approximately 80% of the total cost of eradication is being paid by endemic countries, yet there is an estimated need for US\$ 600 million from collaborating countries and organizations to accomplish this goal.

Table 1
AFP Surveillance Indicators

Country	80% Weekly reporting units	80% of cases investigated within 48 hours	80% of cases with 1 adequate stool sample taken	AFP rate $\geq 1:100,000$ in children < 15 years
Chile				
Colombia				
Cuba				
Ecuador				
El Salvador				
Honduras				
Nicaragua				
Venezuela				
Bolivia				
Dominican Republic				
Guatemala				
Mexico				
Paraguay				
Peru				
Brazil				
Panama				
Argentina				
Costa Rica				
Uruguay				
Haiti				

Meet criteria

* Data as of 6 December 1997

Source: SVI/PAHO (PESS)

In the Region of the Americas, although polio has been eradicated, constant guard must be maintained to prevent a possible importation of wild poliovirus from resulting in the spread of the disease. Of continued concern is the decline in compliance with indicators for AFP surveillance, as can be seen in the Table 1. The overall Regional AFP rate through epidemiological week 49 was 0.99—the lowest for this period since PAHO began to track this number in 1991. This indicator requires a minimum rate of 1:100,000 in children less than 15 years of age as a measurement of the sensitivity of AFP surveillance. PAHO once again urges that the maintenance of polio eradication be a priority in all countries of the Region until global eradication is achieved.

1998 Prices for Vaccines Purchased through the EPI Revolving Fund

Vaccine	Number of doses per vial	Prices per dose FOBUS\$
BCG	10	0.0948
	20	0.045
DPT	10	0.0647
	20	0.0495
DT (adult)	10	0.0493
	20	0.0370
DT (pediatric)	10	0.0495
	20	0.0385
Measles	1	0.6000
	10	0.1022
MMR	1	0.82
	10	0.4895
Polio (glass vial)	10	0.0800
	20	0.0710
Polio (plastic)	10	0.0765
	20	0.066
TT	10	0.0350
	20	0.0235
<i>Haemophilus influenzae</i> type b w/pre-filled syringe	1	3.35*
Hepatitis B recombinant (20 mcg)	10	0.82

*Not under EPI 1998 contract.

Editorial Note: The table above indicates vaccine prices that members of the PAHO/EPI Revolving Fund will pay for 1998. The Fund provides participating countries with a reimbursement mechanism for the purchase of vaccines, syringes/needles, and cold chain equipment. Orders are consolidated on an annual basis on behalf of Member States and placed for international bidding. As can be seen in table above, the price of hepatitis B is US\$ 0.82, the lowest price ever for this vaccine! The Fund will continue playing a critical role in ensuring that a wide sector of the population enjoys the benefits of vaccination and that new vaccines can be added to the regular EPI schedule.

Reported Cases of Selected Diseases

Number of reported cases of measles, poliomyelitis, tetanus, diphtheria, and whooping cough, from 1 January 1997 to date of last report, and the same epidemiological period in 1996, by country.

Country/Territory	Date of last report	Measles				Polio		Tetanus				Diphtheria		Whooping Cough	
		Confirmed 1997			Confirmed* 1996	1997	1996	Non Neonatal		Neonatal		1997	1996	1997	1996
		Labo-ratory	Clini-cally	Total				1997	1996	1997	1996				
Anguilla	6 Dec	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Antigua & Barbuda	6 Dec	0	0	0	0	0	0	0	...	0	...	0	...	0	...
Argentina	6 Dec	48	10	58	38	0	0	18	33	3	4	0	1	321	433
Bahamas	6 Dec	1	0	1	0	0	0	0	0	0	0	0	0	0	0
Barbados	6 Dec	0	0	0	0	0	0	0	...	0	0	0	...	0	...
Belize	6 Dec	0	0	0	0	0	0	2	0	1	0	0	0	0	0
Bermuda	6 Dec	0	0	0	0	0	0	0	...	...	...	0	...	0	...
Bolivia	6 Dec	1	0	1	4	0	0	2	4	7	6	1	1	77	11
Brazil	6 Dec	25,495	405	25,900	209	0	0	304	708	45	64	150	137	548	1,055
British Virgin Islands	6 Dec	0	0	0	0	0	0	0	...	0	...	0	...	0	...
Canada	6 Dec	577	—	577	320	0	0	...	1	...	...	...	...	...	1,112
Cayman Islands	6 Dec	0	0	0	0	0	0	0	...	0	...	0	...	0	...
Chile	6 Dec	47	0	47	0	0	0	4	10	0	2	0	1	825	766
Colombia	6 Dec	5	5	10	42	0	0	18	85	17	22	2	40	15	12
Costa Rica	6 Dec	11	3	14	7	0	0	2	...	0	...	...	...	10	...
Cuba	6 Dec	0	0	0	0	0	0	0	3	0	0	0	0	0	0
Dominica	6 Dec	0	0	0	0	0	0	0	...	0	0	0	...	0	...
Dominican Republic	6 Dec	1	0	1	0	0	0	17	21	0	0	4	6	1	2
Ecuador	6 Dec	0	0	0	30	0	0	42	89	19	32	17	15	148	67
El Salvador	6 Dec	0	0	0	1	0	0	3	...	2	...	0	...	2	...
French Guiana	22 Mar	0	0	0	...	0	0	...	...	...	...	...	...	...	...
Grenada	6 Dec	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Guadeloupe	6 Dec	116	0	116	1	0	0	...	...	...	...	...	...	...	...
Guatemala	6 Dec	2	0	2	0	0	0	5	2	6	10	0	0	92	24
Guyana	6 Dec	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Haiti	22 Mar	0	0	0	...	0	0	...	...	...	...	...	...	...	...
Honduras	6 Dec	1	5	6	3	0	0	5	9	1	4	0	0	121	134
Jamaica	6 Dec	0	0	0	0	0	0	2	...	0	...	1	...	4	...
Martinique	22 Mar	0	0	0	...	0	0	...	...	...	...	...	...	...	...
Mexico	6 Dec	0	8	8	84	0	0	142	165	39	64	0	0	199	32
Montserrat	6 Dec	0	0	0	0	0	0	0	...	...	...	0	...	0	...
Netherlands Antilles	22 Mar	0	0	0	...	0	0	...	...	...	...	...	...	...	...
Nicaragua	6 Dec	0	0	0	0	0	0	10	10	0	1	0	0	41	6
Panama	6 Dec	0	0	0	0	0	0	1	2	1	0	0	0	84	0
Paraguay	6 Dec	124	0	124	5	0	0	24	23	11	8	0	0	24	13
Peru	6 Dec	0	1	1	65	0	0	42	44	26	36	1	4	608	203
Puerto Rico	6 Dec	0	—	0	7	0	0	...	...	...	...	...	...	...	...
St Vincent/Grenadines	6 Dec	0	0	0	0	0	0	0	...	0	...	0	...	0	...
St. Kitts/Nevis	6 Dec	0	0	0	0	0	0	0	...	0	...	0	...	0	...
St. Lucia	6 Dec	0	0	0	0	0	0	0	...	0	...	0	...	0	...
Suriname	6 Dec	0	0	0	0	0	0	2	4	0	1	0	0	0	2
Trinidad & Tobago	6 Dec	1	0	1	0	0	0	2	15	0	0	1	0	7	56
Turks & Caicos	6 Dec	0	0	0	0	0	0	1	...	0	...	0	...	0	...
United States	6 Dec	127	—	127	466	0	0	...	...	...	...	...	...	...	481
Uruguay	6 Dec	0	0	0	0	0	0	0	1	0	0	0	0	10	15
Venezuela	6 Dec	3	15	18	35	0	0	18	...	6	5	0	0	393	135
TOTAL		26,560	452	27,012	1,317	0	0	666	1,229	184	259	177	205	3,530	4,559

... Data not available.

—Clinically confirmed cases are not reported.

* Laboratory and clinically confirmed cases.

1997 PAHO Award for Immunization

Dr. Rosario Quiroga, EPI Program Manager from Bolivia, became the third recipient of the PAHO Immunization Award, which recognizes outstanding contributions to a national immunization program and to a country's efforts in controlling and/or eliminating vaccine-preventable diseases. The award includes a certificate and US\$ 2,000. Previous recipients were Ms. Clarice Watson, EPI Nurse Coordinator in Guyana, and Ms. Miriam Strul, EPI Manager for Peru.

The PAHO Award for Immunization was established in 1993, following the receipt of the Prince Mahidol Award by Dr. Ciro de Quadros, Director of PAHO's Special Program for Vaccines and Immunization, for his contribution to the 1991 eradication of poliomyelitis in the Western Hemisphere. A portion of the monetary component of the Prince Mahidol Award was matched with funds from PAHO to establish an annual Immunization Award. Dr. Quiroga was selected by a Committee which is generally integrated by the members of PAHO's Technical Advisory Group on Vaccine-Preventable Diseases (TAG).



Dr. Rosario Quiroga addresses the XL Meeting of PAHO's Directing Council in September, upon receiving her award for outstanding contribution.

Dr. Quiroga is a medical doctor with post-graduate studies in the area of maternal and child health. After extensive field work, Dr. Quiroga joined Bolivia's EPI in 1987 in charge of cold chain operations and was promoted to EPI Manager in 1990. Under her leadership the national immunization program in Bolivia has seen marked improve-

ments, particularly in the development of information systems at the local level and in fostering active community participation for immunization activities. Dr. Quiroga has also been successful in mobilizing the support of several agencies and organizations for the EPI.

Immunization coverage in Bolivia is now at its highest level, from an average of 48% for BCG, DPT, OPV and measles vaccines in 1990, to an average of 90% for the same

vaccines in 1996. Missed opportunities to vaccinate have virtually been eliminated. The country has also notably increased its national contribution for the procurement of biologicals, and there has been increase in national resources toward the areas of cold chain and social mobilization.

The *EPI Newsletter* is published every two months, in Spanish and English by the Special Program for Vaccines and Immunization (SVI) 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.

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Pan American Health Organization

Pan American Sanitary Bureau
Regional Office of the
World Health Organization

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ISSN 0251-4729