EPI Newsletter

Expanded Program on Immunization in the Americas

Volume XVIII, Number 3 **IMMUNIZE AND PROTECT YOUR CHILDREN** June 1996

USA Supports Measles Elimination

The United States of America, through its Agency for International Development (USAID), has approved a US$ 8 million grant in support of the Pan American Health Organization's (PAHO) goal to eliminate measles in the Americas by the year 2000. Over a period of five years (1996-2001), the USAID grant will complement Regional efforts towards achieving measles elimination. The USA support was first pledged by the First Lady, Mrs. Hillary Rodham Clinton, during her visit to PAHO on the occasion of World Health Day 1995.

USAID played a key role in the successful completion of the poliomyelitis eradication initiative in 1994, contributing approximately 60% of the external costs associated with the hemispheric campaign against polio. With the announcement of this new grant agreement, the United States is reaffirming its commitment to immunization, which is recognized as an effective public health strategy to safeguard the well-being of children in the Americas.

"Follow-up" Measles Campaigns

In 1995, record low levels of measles cases were reported from nearly every country of the Region. However, as long as measles virus circulates in the rest of the world, the risk of importation remains.

The First Lady of Panama, Mrs. Dora Boyd de Perez Balladares and the Health Minister, Dr. Aida de Rivera, inaugurate the "follow-up" measles campaign carried out in Panama.

A major obstacle to measles elimination is the accumulation of susceptible preschool-aged children. As the proportion of susceptibles expands, the risk of a measles outbreak increases, should measles virus be re-introduced. To prevent this, periodic "follow-up" measles campaigns are being conducted throughout the Region, focusing on all children aged 1 through 4, regardless of previous vaccination or disease history.

PAHO recommends "follow-ups" whenever the number of susceptible preschool children has approached the size of an average birth cohort. The interval between these campaigns and the specific age group targeted will depend on the vaccination coverage obtained through routine services since the last campaign.

Cuba conducted its "follow-up" campaign in 1993; Belize, Brazil, Colombia and Jamaica in 1995; and Chile and the countries of Central America conducted campaigns during April 1996 (Table 1). To date, these campaigns have reached approximately 19 million children. "Follow-up" campaigns are planned for the remaining countries of the English-speaking Caribbean later in 1996.

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Table 1
Measles vaccination coverage achieved through "catch-up" and "follow-up" campaigns in the Americas, 1987-1996.

Country	CATCH-UP CAMPAIGNS			FOLLOW-UP CAMPAIGNS				
	Year	Target age group	Coverage	Year	Target age group	Children vaccinated	Target population	Coverage
Cuba	1987	1-14 years	98%	1993	2-6 years	888,000	898,000	99%
Belize	1991	1-14 years	82%	1995	1-4 years	25,000	34,000	74%
Jamaica	1991	1-14 years	71%	1995	1-10 years	423,223	499,723	85%
Brazil	1992	1-14 years	96%	1995	1-3 years	6,461,899	8,357,172	77%
Chile	1992	1-14 years	99%	1996	1-14 years	4,060,759	4,022,026	100%
Peru	1992	1-14 years	75%	1995	1-4 years	2,386,027	2,465,277	97%
Colombia	1993	1-14 years	96%	1995	1-3 years	2,046,619	2,286,218	90%
El Salvador	1993	1-14 years	96%	1996	1-4 years	437,500	535,000	82%
Guatemala	1993	1-14 years	85%	1996	1-4 years	899,110	1,500,000	60%
Honduras	1993	1-14 years	96%	1996	1-4 years	585,585	691,506	85%
Nicaragua	1993	1-14 years	94%	1996	1-4 years	513,385	529,306	97%
Panama	1993	1-14 years	88%	1996	1-4 years	229,641	243,877	94%

Source: PAHO/WHO and country reports

Measles in the United States, 1995

As of March 20, 1996, local and state health departments had reported a provisional total of 301 confirmed measles cases to the Centers for Disease Control and Prevention (CDC) for 1995. This represents the lowest number of cases ever reported in 1 year since measles first became notifiable in 1912 and a 69% decrease from the 963 cases reported for 1994. This report summarizes the epidemiologic characteristics of measles cases reported in the United States in 1995, and documents important epidemiologic trends, including a shift in age distribution and the continued occurrence of international importations.

Age. Of the 285 measles patients for whom age was known, 109 (38%) were aged <5 years, including 39 (36%) aged <12 months and 34 (31%) aged 12-15 months. A total of 64 (22%) measles patients were aged 5-19 years, and 112 (39%) were aged ≥20 years. Of the 33 measles patients with internationally imported cases, eight (24%) were aged <5 years, 14 (42%) aged 5-19 years, and 11 (33%) aged ≥20 years.

Vaccination status. Vaccination status was reported for 219 (73%) measles patients. Among the 96 (44%) who were not vaccinated, 56 (58%) were eligible to be vaccinated (i.e., aged >12 months and born after 1956). Vaccination status varied by age group: 29 (55%) patients aged 1-4 years were unvaccinated, compared with 12 (26%) aged 5-19 years and 28 (32%) aged ≥20 years. Of 62 measles patients for whom data were available about dates of vaccination, 55 (89%) had received at least one dose of measles-containing vaccine (MCV) on or after their first birthday and ≥14 days before onset of symptoms; seven (11%) were considered to be unvaccinated or inadequately vaccinated; three (5%) received their first dose of measles-containing vaccine (MCV) <14 days before onset of symptoms; and four (6%) had received one dose of MCV before their first birthday. Five (8%) cases were reported among persons who had received two doses of MCV after their first birthday.

Case classification. Among the 301 reported cases, 268 (89%) were indigenous to the United States, including 259 cases (86%) acquired in the state reporting the case and nine (3%) resulting from the spread from another state. International importations accounted for 33 cases (11%), and an additional 11 cases were epidemiologically linked to imported cases of measles. Importations originated from or occurred among persons who had travelled in Germany (10), Canada (three), Italy (three), Pakistan (three), China (two), France (two), Malaysia (two), Austria (one), Belgium (one), Costa Rica (one), Egypt (one), Japan (one) and the Philippines (one). For two of the imported cases, the exact source was unknown because the patient had travelled in more than one country outside the United States during the exposure period.

Outbreaks. Nineteen outbreaks (i.e., clusters of three or more epidemiologically linked cases) were reported by 12 states in 1995 and accounted for 74% of all reported cases. Five of these outbreaks began in late 1994. The number of cases involved in outbreaks ranged from three

to 73 (median: seven cases). The largest outbreak (73 cases) occurred in a community in Ventura County, California, and primarily involved adults. Two outbreaks (25 cases in New Mexico and 17 cases in Louisiana) occurred primarily among unvaccinated children in day-care settings, and a fourth outbreak (13 cases) occurred among students in a college in Washington. The outbreak that occurred latest in the year primarily involved adult members (nine cases in 1995, 18 in 1996) of a group in Minnesota that declines vaccination because of religious reasons.

CDC performed genomic sequencing of measles viruses isolated from five different outbreaks in 1995. None of the sequences were related to genotypes of viruses circulating during the measles resurgence in the United States during 1989-1991. The isolates from 1995 are genotypically similar to viruses recently isolated in Europe and Japan.

Reported by: State and local health departments. Measles Virus Section, Respiratory and Enteric Viruses Branch, Division of Viral and Rickettsial Diseases, National Center for Infectious Diseases; National Immunization Program, CDC.

Source: MMWR, Vol.45, No.15; April 19, 1996.

Editorial Note: Similar to the rest of the Western Hemisphere, in 1995 the United States has provisionally reported a record low number of measles cases since surveillance was instituted in 1912. The 301 confirmed cases represent a 98.9% reduction compared to those reported in 1990.

An increased percentage of measles cases were reported among persons $\geq$ 20 years of age. This change in the epidemiology of measles is due to major advances achieved recently in the United States in raising and maintaining high levels of measles immunity among preschool and school-aged children.

Nearly 15% of these cases were reported to have acquired measles infection in another country or were cases linked to an international importation. Of the 33 international importations, only 4 (12%) were reported to have acquired measles from another country within the Americas. In comparison, during 1990 over 200 measles cases were imported to the United States from Latin America. Most had originated in Mexico, and these represented over 80% of the total imported measles cases to the United States. Since then, the number and proportion of importations from Latin America and the Caribbean has decreased markedly.

Of the four documented international importations from the Americas during 1995, three were from Canada and one was from Costa Rica. Canada experienced a large measles outbreak during 1995, and given the high level of communication between the two countries, it is not surprising that some "spillover" occurred. The case reported as imported from Costa Rica, however, deserves further discussion. This case occurred in a 54 year-old American citizen who developed a febrile rash illness four days after returning to the United States following a three-week stay in Costa Rica. The patient was examined by a physician and met the clinical case definition. Blood samples drawn on the day of rash onset and three weeks later were positive for measles IgM antibodies by indirect EIA in two different laboratories. No confirmation by the "gold standard" IgM Capture test was performed.

The Pan American Health Organization questions the classification of this case as confirmed for the following reasons: first, the laboratory results were not validated by the IgM Capture test; indirect IgM tests may produce false positive results, especially in settings where measles incidence is low. For this reason, PAHO requires an IgM Capture assay for a case to be classified "laboratory confirmed." Second, despite adequate surveillance, there was no documentation of measles virus circulation in Costa Rica during 1995. An active search following the notification of this case failed to detect any measles transmission in the country. Finally, the patient's age makes the measles diagnosis less likely. The overwhelming majority of persons born before 1957 in the United States are immune to measles.

The criteria used by countries to classify measles cases as being indigenous or imported need to be well-defined and standardized. Some currently used criteria were developed at a time when measles virus was circulating freely in most countries in the Western Hemisphere. If a person were to develop measles after travelling to virtually any country in the world, it could be safely assumed that he or she had acquired the infection in that country.

However, in 1996 the epidemiologic situation is quite different. Measles is now a rare infection in Latin America and the Caribbean. Surveillance evaluations conducted recently in Mexico and in El Salvador did not detect any evidence of sustained measles transmission. Many countries in the Americas have experienced two or more measles-free years. Furthermore, those countries that are reporting confirmed measles cases have only reported sporadic cases which are isolated in terms of time and place. These cases have been labeled "spontaneous" since virtually all lack both a source of infection and documented transmission. A possible explanation for these confirmed cases is that they may be false positive laboratory results.

Measles virus circulation has been greatly reduced, if not eliminated, in most areas of the United States. The challenge now for the United States and other countries of the Region is to maintain the interruption of measles transmission, given the ease with which importations can occur.

In addition to maintaining high levels of population immunity in the Western Hemisphere, increased efforts are needed to improve measles control in other regions of the world. The only way to ensure long-term regional interruption of measles transmission will be through global eradication. The measles elimination experience in the Americas provides strong evidence that given the implementation of an appropriate vaccination strategy throughout the world, measles eradication can indeed be achieved.

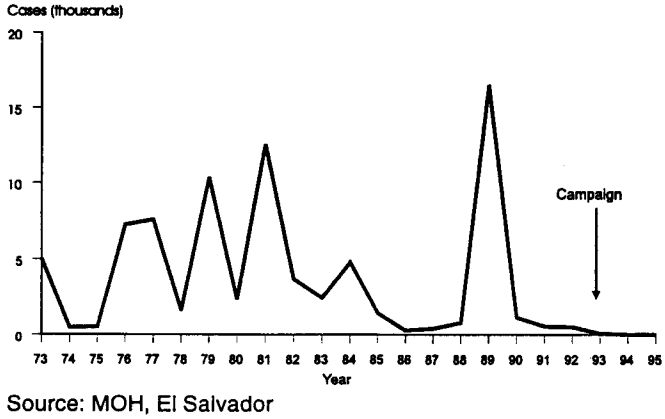
Measles Surveillance: El Salvador

At the request of the Ministry of Health, an evaluation was conducted in February, 1996, in El Salvador to determine the capacity of the national epidemiological system to promptly detect the circulation of the measles virus in all municipalities of the country. The evaluation sought to:

- assess the procedures for detection, reporting, investigation and classification, and the performance of laboratories in the surveillance of suspected measles cases at the different levels of the health system;
- identify problems and make concrete recommendations to enhance surveillance at the various levels.

Structured interviews were conducted with health workers at 12 departmental offices, 6 hospitals, 5 health centers, 25 health units, the National Office for Epidemiology, the Maternal and Child Health Office of the Social Security Department, the Central Virology Laboratory and the EPI national coordinating center. Furthermore, approximately 12,000 registers of patients' visits to doctors and emergency services at hospitals were reviewed, as well as the national measles surveillance database. Emphasis was placed on visiting high-risk areas.

Reported measles cases
El Salvador, 1973-1995



Source: MOH, El Salvador

Results

The evaluation determined that 90 to 95% of the health units were reporting regularly on a weekly basis. During 1995, a total of 278 suspected measles cases were reported to the Ministry of Health. Seventy percent of cases were investigated within the first 48 hours following notification. Ninety-four percent of the suspected cases had an adequate serum sample collected, and 63% had a second sample collected. Of all the blood samples tested, nine were positive for measles by the commercially available indirect IgM test; each of these positive specimens was re-tested in Panama using the highly specific IgM Capture test, and all tested negative. The initial laboratory results are thus considered to be "false-positives". False positive test results are expected in a percentage of suspected measles cases, due to the relatively low specificity of the commercially available IgM tests and the absence of measles transmission in many parts of the Americas. Six cases were "clinically confirmed"; that is to say that measles virus infection was suspected by a health care worker, yet an appropriate laboratory investigation was not conducted.

Health personnel are aware that any case of measles should be notified immediately. At the operational level, however, the implementation of the measles case classifications needs to be strengthened. At this point, only cases with samples are incorporated into the surveillance system. Weekly negative reporting from the department level is not consistently reaching the central level. The existing network of health promoters has facilitated case reporting within their respective communities. Surveys of patients attending health centers, which were carried out at some health units, also represent an example of community surveillance. However, alternative notification sources need to be further identified and incorporated into the national surveillance system.

Approximately 80% of reported cases examined by the evaluation team were well investigated. The current system seeks samples from all suspected cases. El Salvador's central laboratory has the technical competence to process samples and the coordination between the laboratory and the epidemiology center is adequate at the central level. Case investigation forms, however, require too much information and are difficult for health care workers to complete. There are some delays with the processing of samples, reporting of results to the local levels and shipping of positive samples to the reference laboratory. The availability of a central distribution entity for biologics is considered to be an essential step to ensure the proper functioning of laboratories. Equally essential will be the steady flow of communication between the central laboratory and the Regional Reference Laboratory in Panama.

A formal organizational structure is in place at the department level, which facilitates collaboration with the local systems. There is an Inter-Agency Coordinating Committee (ICC) at the national and departmental levels and in some municipalities. Nevertheless, departments find themselves at various levels of managerial development. The availability of health staff trained in epidemiology needs to be addressed. Also, some departments lack designated staff to follow-up on the measles elimination effort.

El Salvador has a computerized database at the national level which allows for periodic analysis of measles surveillance indicators. Monitoring and evaluation of vaccination coverage is performed at all levels. Through this system, the country has identified areas at high-risk for measles. There is a greater need to expand the reach of information related to measles among departments and among the various organizations involved in the measles elimination efforts. The program could also benefit from formal, ongoing feedback mechanisms for measles surveillance data.

The evaluation team concluded that there is no evidence of measles circulation in the country at the present

time. Although there are some areas that require improvement, the surveillance system appears capable of promptly detecting the presence of measles virus circulation in most municipalities. The marked decrease in the number of measles cases is an indicator of the impact of the mass immunization efforts and the maintenance of high vaccination coverage levels.

Recommendations

- PAHO's recommended operational case classifications for suspected measles cases should be used to avoid confusion. All suspected cases of measles, including those that lack serum samples, should be included in the surveillance system.
- Efforts should be made for greater integration of other health sector institutions, at all levels, into the national surveillance system. Local epidemiological surveillance should continue to be expanded through health promoters and further use of surveys of persons using health facilities.
- El Salvador's central laboratory should participate in the final classification of cases, and efforts should be made to improve communication between the national Central Virology Laboratory and the Regional Reference Laboratory in Panama. Samples should be processed at least twice a week in the national laboratory. All positive sera and a 10% random sample of negative sera should be sent on a monthly basis to the Regional Reference Laboratory in Panama for quality control purposes. The laboratory should be authorized to ship the results directly to the reporting unit in a timely manner. Supervision needs to be strengthened at the Reference Laboratory. Also, a computer system should be installed at the central laboratory to facilitate data management and analysis.
- The ongoing exchange of information among departments and with different institutions needs to be promoted. An epidemiological bulletin should be re-instated and the quarterly program evaluation needs to be distributed to all health departments.
- The managerial capacity of epidemiological surveillance at the departmental level needs to be strengthened, targeting those departments that are less developed. More staff should be trained in epidemiology at the departmental level, and in overall management of the national program. Also, efforts are needed to ensure the proper functioning of all epidemiological surveillance committees in the country, and to enhance the inter-institutional coordination with NGOs and private physicians through ICC meetings. Staff should be designated at the national and departmental levels to follow-up and promote the national measles elimination activities.
- Supervision of and training in surveillance methodologies in use need to be strengthened at the departmental level and at hospitals. Due to the rapid turnover of personnel, all staff should receive training in epidemiological surveillance before entering service. At the local level, training in measles surveillance should take place by more frequent supervisory visits. The joint participation of private and public institutions at these training sessions should be encouraged.

Polio Eradication in Our Grasp

Target 2000: A World Without Polio

As the target date for global polio eradication nears, efforts being made by polio endemic countries have intensified significantly. Key to reaching the target set for the year 2000 is the continued collaboration of a wide range of partners, which includes WHO, UNICEF, the Centers for Disease Control and Prevention (CDC), Rotary International, as well as governments from polio-free countries. Following the successful eradication of polio in the Region of the Americas, countries around the world are making substantial use of the strategies developed and implemented by the Pan American Health Organization. These strategies call for:

- maintaining elevated levels of vaccination coverage;
- conducting National Immunization Days (NIDs) to deliver oral polio vaccine (OPV) to all children under five years of age;
- ensuring acute flaccid paralysis (AFP) surveillance to detect and investigate every suspected polio case;
- incorporating "mop-up" immunization campaigns to deliver OPV to hard-to-reach areas and populations where poliovirus transmission persists after widespread circulation has been interrupted by NIDs.

The incidence of polio cases reported worldwide fell to 6,179 in 1995. This represents a 28% decline from the 8,635 cases reported in 1994 and an 82% decline from the 31,251 cases reported in 1988, when the eradication target was set. A total of 150 countries reported zero cases of polio, 27 countries reported from one to 10 cases, and 30 countries reported more than 10 cases. Seven countries failed to report. Because epidemiological surveillance is still incomplete in many polio endemic countries, WHO estimates that approximately 80,000 cases of paralytic polio occurred in 1995.

Every WHO region has reported a decrease of cases in 1995. The largest came from the Western Pacific Region with a 51% decline from the 700 cases reported in 1994, followed by the South-East Asia Region whose 3,398 cases of polio represent a 33% decline from the 5,112 cases reported in 1994 and an 87% decline from 25,711 cases reported in 1988. More modest, but important declines were reported from the regions of Africa, the Eastern Mediterranean and Europe.

Global immunization coverage with three doses of OPV was estimated at 83%. The African Region, whose coverage rate is significantly below that of other regions, increased coverage above 50% for the first time in 1994, and achieved 58% coverage in 1995. National Immunization Days have helped increase these rates in many countries. In 1995, the number of countries conducting at least one NID rose to 62. Of these, 25 countries held their first NID in 1995. Approximately 300 million children, representing 47% of the world's children under the age of five received OPV during NIDs. During NIDs held in China, India and Pakistan in December 1995, 195 million children were immunized. It is anticipated that by the end of 1996, all polio endemic countries of Europe and Asia, and half the countries in Africa will have conducted at least one NID. The African Region plans to conduct NIDs in all countries by the end of 1997.

In total, 120 countries are now conducting AFP surveillance. Of these, only 35 countries achieved the standard for satisfactory surveillance, which is one case per 100,000 children. The WHO Polio Laboratory Network was expanded to include six Specialized Reference Laboratories, 12 Regional Reference Laboratories and 60 National Laboratories.

In the Region of the Americas, where polio eradication was certified in 1994, with the last case occurring in August of 1991, the challenge is to maintain a polio-free status while poliovirus still circulates in other parts of the world. The surveillance system currently in use in the Americas requires full compliance with the AFP surveillance indicators by all countries of the Region to ensure success. The table below shows how the countries of the Americas are maintaining their surveillance systems and the areas that require additional investments.

Source: WHO, Fact Sheet No. 114, May 1996.

AFP Surveillance Indicators

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

Meet criteria

* Data as of 11 May, 1996 - Source: EPI/PAHO(PESS)

Canada "Catches-up" with Measles

British Columbia

In British Columbia, on January 25, 1996, the Health Minister officially announced the introduction of a routine two-dose measles and one-time "catch-up" vaccination program to begin in April 1996. Both programs started concurrently. The "catch-up" vaccination campaign was administered by public health nurses and took place in schools and other public locations. The campaign targeted all children between 18 months and those completing secondary school. Measles-rubella (MR) vaccine was used for the "catch-up" campaign.

Prince Edward Island

On February 7, 1996, the Prince Edward Island Ministry of Health announced the introduction of a two-dose measles schedule, starting in March, 1996, with the second measles-mumps-rubella (MMR) [dose] to be given at school entry for those 4-6 years of age. A second dose of monovalent measles vaccine will be offered to all students in grades 1 to 12 in 1996 as part of the "catch-up" program. This "catch-up" program started in March and will be completed this fall.

Ontario

In Ontario, a routine two-dose measles schedule with the second dose of MMR given at school entry and a "catch-up" campaign using monovalent measles vaccine for all school-aged children have been introduced. Although the "catch-up" campaigns were expected to start officially on February 1, 1996, some health units began immunizing a week earlier. As of February 20, over 400,000 children had been immunized. The program ran smoothly, and, as expected, no serious adverse events were documented. The acceptance rate was >95%.

The Yukon

In the first week of January, 1996, the Yukon Territory began implementing a routine two-dose measles schedule, with the second MMR to be given at 18 months. A "catch-up" campaign using monovalent measles vaccine and targeting school-aged children started in March.

Quebec

In some regions in Quebec, the "catch-up" program with monovalent measles vaccine targeted at school-aged children began on February 13, 1996. Province-wide implementation was expected by mid-March. The routine second dose of MMR at 18 months has already been incorporated in the regular immunization schedule. The "catch-up" program for pre-schoolers (those ≥ 18 months) will start at a later date, and will be done only on a progressive basis for completion by December 1996.

The current "catch-up" *programs and the anticipated campaign will immediately protect approximately 75% of Canadian school-aged children.*

Source: Measles Update, Vol. 4, #1, February/March 1996.

Reported Cases of Selected Diseases

Number of reported cases of measles, poliomyelitis, tetanus, diphtheria, and whooping cough, from 1 January 1996 to date of last report, and the same epidemiological period in 1995, by country.

Country/Territory	Date of last report	Measles				Polio		Tetanus				Diphtheria		Whooping Cough	
		Confirmed 1996			Confirmed			Non Neonatal		Neonatal					
		Laboratory	Clinically	Total	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996	1995
Anguilla	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Antigua & Barbuda	11 May	0	0	0	0	0	0	...	0	...	0	...	0	...	0
Argentina	11 May	0	7	7	73	0	0	7	13	0	2	0	2	29	555
Bahamas	11 May	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Barbados	11 May	0	0	0	0	0	0	...	0	...	0	...	0	...	0
Belize	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Bermuda	11 May	0	0	0	0	0	0	...	0	...	0	...	0	...	0
Bolivia	11 May	0	0	0	0	0	0	...	...	0	2	1	1	1	12
Brazil	11 May	0	32	32	20	0	0	13	121	5	13	0	27	79	491
British Virgin Islands	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Canada	11 May	210	...	210	202	0	0	...	1	...	...	...	1	...	2,175
Cayman Islands	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Chile	11 May	0	0	0	0	0	0	4	4	0	0	0	0	245	56
Colombia	11 May	0	6	6	216	0	0	...	...	10	9	...	...	...	...
Costa Rica	11 May	0	0	0	19	0	0	...	...	...	...	...	...	...	...
Cuba	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Dominica	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Dominican Republic	11 May	0	0	0	0	0	0	...	...	0	0	1	0	0	0
Ecuador	11 May	0	19	19	618	0	0	...	...	8	13	1	56	15	73
El Salvador	11 May	0	0	0	0	0	0	4	...	0	...	0	...	1	...
French Guiana	...	...	...	...	...	0	0	...	...	...	...	...	...	...	...
Grenada	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Guadeloupe	4 May	0	1	1	...	0	0	...	...	...	...	...	...	...	...
Guatemala	27 Apr	0	0	0	25	0	0	...	...	...	...	...	...	...	...
Guyana	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Haiti	...	...	...	...	...	0	0	...	...	...	...	...	...	...	...
Honduras	11 May	0	0	0	0	0	0	...	...	...	...	0	0	0	0
Jamaica	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Martinique	...	...	...	...	...	0	0	...	0	...	0	...	0	...	0
Mexico	11 May	0	0	0	15	0	0	49	32	22	15	0	0	0	0
Montserrat	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Netherlands Antilles	...	...	...	...	...	0	0	...	...	...	...	...	...	...	...
Nicaragua	11 May	0	0	0	6	0	0	4	1	0	2	0	0	3	0
Panama	11 May	0	0	0	4	0	0	0	0	0	0	0	0	0	3
Paraguay	11 May	0	4	4	9	0	0	...	...	...	...	...	...	...	...
Peru	11 May	0	0	0	103	0	0	23	68	24	89	4	4	116	873
Puerto Rico	11 May	1	...	1	3	0	0	...	...	...	...	...	...	...	...
Saint Lucia	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
St. Kitts/Nevis	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
St. Vincent	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
Suriname	11 May	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trinidad & Tobago	11 May	0	0	0	1	0	0	...	0	0	0	0	0	0	0
Turks & Caicos	11 May	0	0	0	0	0	0	...	...	...	...	...	...	...	...
United States	11 May	108	...	108	152	0	0	...	4	...	...	...	0	...	625
Uruguay	11 May	0	0	0	...	0	0	0	...	0	...	0	...	6	...
Venezuela	11 May	0	6	6	43	0	0	...	...	5	6	0	0	135	102
TOTAL		**319**	**75**	**394**	**1,509**	**0**	**0**	**104**	**244**	**74**	**151**	**7**	**91**	**630**	**4,965**

... Data not available.

Streptococcus pneumoniae Vaccine Development

The first meeting to initiate the collaborative development of a conjugated vaccine against *Streptococcus pneumoniae* among five laboratories of the Americas was held in Cuba in February, 1996. Participating laboratories included the Finlay Institute (Cuba), Butantan Institute (Brazil), Bio-Manguinhos/FIOCRUZ (Brazil), Malbran Institute (Argentina) and the Institute of Hygiene (Uruguay). The initiative is being coordinated by the Regional System for Vaccines (SIREVA), which is part of PAHO's Special Program for Vaccines and Immunization (SVI).

Through this joint collaboration, the five laboratories seek to develop the necessary technologies for the production and purification of *S. pneumoniae* polysaccharides, particularly those of the most prevalent serotypes in the Region. These activities follow the culmination of the first stage, during which a *S. pneumoniae* serotype prevalence study was carried out in six countries (Argentina, Brazil, Chile, Colombia, Mexico and Uruguay), allowing the establishment of the most frequent serotypes that should be included in the vaccine. These are 1, 5, 6A, 6B, 14, 18C, 19A, 19F and 23F, which represent more than 70% of the serotypes responsible for pneumococcal invasive diseases among children less than 5 years of age. During this second phase, PAHO is coordinating the technical cooperation among the five laboratories.

At the Havana meeting, participants stressed the need to form partnerships among vaccine-producing countries to develop vaccines that require complex technologies. High costs are associated with the development of a conjugated vaccine and there are few laboratories in the Region in the position to make the investment required. Furthermore, the great number of antigens needed to formulate a vaccine of wide coverage in the Region requires that laboratories collaborate to potentiate and increase their capacities for research, technological development and vaccine production. The technology developed for the production of this vaccine is analogous to the technology required for the development of other bacterial vaccines, such as those against *H. influenzae* type b and *S. typhi*.

This recent effort is consistent with PAHO/SVI's objective of strengthening the Region's real and potential capacity for the development, quality control, and evaluation of effective immunization agents for use by Member Countries.

During the meeting, the participating laboratories agreed to:

- search for adequate growth conditions (synthetic media without complement of animal protein) considering its industrial applicability
- select an adequate polysaccharide-producing strain (as a minimum 0.05 to 0.1 gram per liter of media)
- prepare a seed lot of each serotype for regional distribution
- develop appropriate methodologies to measure the concentration of polysaccharides and polysaccharide C
- develop methods for purification of polysaccharides, keeping in mind their applicability on an industrial scale

The serotypes of *S. pneumoniae* that will be subjects of a collaborative study during the second phase of the plan of action are 1, 5, 6B, 14, 19F and 23F. Serotypes have been assigned to the five participating laboratories.

Within a year, these laboratories plan to have developed standardized protocols to obtain purified polysaccharides and the respective quality control methodologies. Progress will be evaluated during a meeting scheduled for January, 1997 at the Butantan Institute (Brazil).

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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ISSN 0251-4729

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