

EPI Newsletter

Expanded Program on Immunization in the Americas

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IMMUNIZE AND PROTECT YOUR CHILDREN

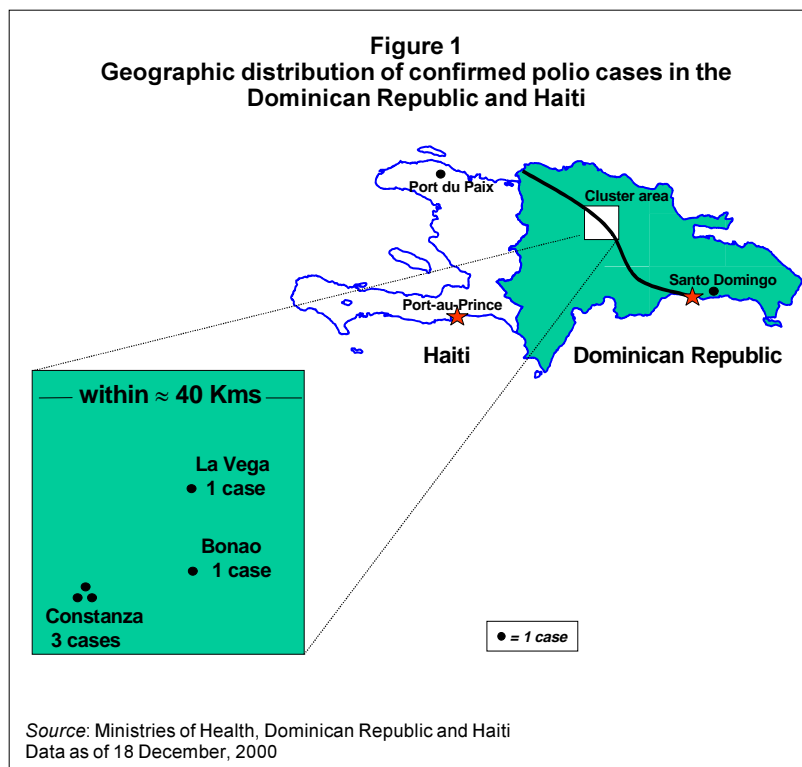
December 2000

Outbreak of Poliomyelitis in Dominican Republic and Haiti Low Vaccination Coverage with Oral Polio Vaccine allows Sabin-Derived Vaccine Virus to Circulate

An outbreak of poliomyelitis caused by Sabin type 1 derived poliovirus was detected in the Dominican Republic in October, 2000. The first confirmed case in the province of Monseñor Nouel county of Bonao (1) had onset of paralysis 18 July 2000, is an unusual derivative of the Sabin type 1 oral polio vaccine. Five polio cases due to the vaccine derived poliovirus type 1 have subsequently been confirmed up to mid-December. These confirmed cases are located in the province of La Vega, counties of Constanza (3) and La Vega (1) and 1 case in the capital city of Santo Domingo (Figure 1).

In Haiti, one confirmed case due to Sabin-1 derived virus was reported to date in the town of Nan Citron (Figure 1), with paralysis onset on August 30, 2000. Following intensive case-finding activities in Haiti in October-December, 14 suspected cases have been investigated epidemiologically, clinically and by laboratory. Six cases have been negative for polio virus in the laboratory. Eight are pending final lab results.

The virus was first isolated by the PAHO Poliovirus Laboratory at the Caribbean Epidemiology Center (CAREC), and subsequently characterized at the Poliovirus Laboratory of the Centers for Disease Control and Prevention (CDC). It is unusual because being derived from the original OPV Sabin vaccine it has 3% difference to the parental OPV strain (normally OPV derived viruses share genetic similarity of 99.5%) and appears to have assumed the characteristics of wild poliovirus type 1, both in terms of neuro-virulence and transmissibility. The difference in nucleotide sequence suggests that the virus has been either replicating for a prolonged period in an immunodeficient individual, or circulating for as long as two years in an area where vaccination coverage is very low, resulting in ongoing genetic changes to the original Sabin virus with properties of wild poliovirus.



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Prolonged circulation of OPV-derived polioviruses in areas with very low OPV coverage has been documented in only one other setting—type 2 OPV-derived virus circulated in Egypt for an estimated 10 years (1983-1993) and was associated with more than 30 reported cases. In this instance, vaccination coverage was very low in the affected areas, and circulation of a vaccine-derived poliovirus was terminated rapidly once OPV vaccination coverage increased.

The Western Hemisphere has been free of wild poliovirus circulation since 1991. The last case of poliomyelitis in the Dominican Republic was reported in 1985. The global plan for interrupting poliovirus transmission, originally set for the end of the year 2000, is expected to be achieved within the next 12 to 24 months, with the plans for the certification of polio eradication set for the year 2005 (see box below).

The Ministries of Health of the Dominican Republic and Haiti, with the assistance of the Pan American Health Organization and the Centers for Disease Control and Prevention are investigating these outbreaks to determine the extent of the spread and to evaluate the reasons for prolonged circulation. Environmental sampling is being conducted as part of the investigation. The latter's results are expected in the next six months. An aggressive plan of control measures was immediately put in place. As part of these efforts, health

authorities carried out a mass polio vaccination campaign, December 15, (refer to page 3) in the Dominican Republic aimed at reaching 1.1 million children under 5 years of age. In Haiti, three nationwide vaccination rounds with oral polio vaccine (OPV) are planned for 2001.

Measures for controlling the circulation of OPV-derived viruses are the same as those required to control wild poliovirus circulation: achieving and maintaining high vaccination coverage. No evidence for circulation of OPV-derived virus has ever been found in any area with high coverage. Therefore, it is crucial to maintain high OPV coverage to protect against imported wild polioviruses and to prevent person-to-person transmission of OPV-derived viruses. The current outbreaks have reinforced PAHO's message to countries to maintain high coverage levels with polio vaccine, even in polio-free areas to maintain high quality AFP and poliovirus surveillance.

PAHO has recommended that travelers to the Dominican Republic and Haiti who are not adequately immunized are considered to be at risk of acquiring poliomyelitis, and should make sure that they are fully immunized against polio based on national vaccination policies. Countries currently using OPV for routine immunization should, at a minimum, recommend a 3-dose primary vaccination series.

Progress towards Global Polio Eradication

The Fifty-second World Health Assembly of the World Health Organization called for the acceleration of the initiative to eradicate poliomyelitis to meet the goal of interrupting wild poliovirus transmission globally by the end of the year 2000. Almost all Members States endemic for poliomyelitis aggressively accelerated such activities, with most countries doubling the number of rounds of national immunization days and using a house-to-house immunization strategy in high-risk areas. The rapidity of this acceleration and the scale of activities outstripped the global supply of oral poliomyelitis vaccine; concern about this deficit will continue into 2001.

As a result of this acceleration, only 30 countries were endemic for poliomyelitis at the end of 1999, compared with 50 in 1998. In contrast, it took a decade to reduce the number of countries endemic for polio from 125 to 50. On October 2000, the Western Pacific was certified polio-free, the last case of polio due to indigenous virus having occurred in Cambodia in March 1997. By the end of the year 2000, poliovirus transmission will continue in approximately 20 countries. Special attention will be required in Angola, Chad, the Democratic Republic of the Congo, Ethiopia, Nigeria, Somalia and the Sudan in Africa and in Afghanistan, northern India and Pakistan in Asia.

In September 27, 2000, the Secretary-General of the United Nations joined the Director-General of WHO and leaders of the other major partners in polio eradication to announce the strategic plan for 2001-2005 at the Global Polio Partners Summit in New York. The plan outlines the strategies for interrupting poliovirus transmission globally within the next 12 to 24 months, so that the 2005 target of certifying the world polio-free, as recommended by the Global Commission for Certification of the Eradication of Poliomyelitis, can still be achieved.

The strategic plan emphasizes that all Member States play a critical role in the final stages of global polio eradication, the countries where polio is still endemic, as well as those that are free of virus circulation. Countries endemic for poliomyelitis must further intensify national immunization days and mopping-up campaigns. Global certification by 2005 requires that all countries have achieved certification-standard poliomyelitis surveillance for at least three years and containment of laboratory stocks of wild poliovirus.

Three essential actions are outlined in the strategic plan: 1.) Reaching and immunizing all children with OPV, especially those in areas of conflict; 2.) Ensuring adequate financial resources to meet the shortfall in funding for the 2001-2005 global plan of US\$ 450 million, US\$ 263 million of which is needed for activities in 2001-2002 (for every year that polio eradication is delayed, for financial or other reasons, overall costs of the initiative will increase by at least US\$ 100 million); and 3.) Securing high-level political commitment in the face of a disappearing disease and competing health priorities.

Source: Executive Board document, 107th Session, World Health Organization, November 2000.

National Polio Immunization Campaign in the Dominican Republic

The Ministry of Health of the Dominican Republic carried out a national polio immunization campaign, December 15 to 17, 2000 in an effort to stop the transmission of Sabin derived poliovirus in the country. The campaign was officially inaugurated by Mr. Hipolito Mejia, President of the Dominican Republic and his wife, Mrs. Rosa Gomes de Mejia, and the Minister of Health, Dr. Jose Rodriguez Soldevila.

President Mejia visited one of the 2,000 vaccination posts set up by the Ministry of Health to reach a target population of approximately 1.1 million children under the age of 5. Vaccination in remote areas was carried house-to-house. Available data show that 1.2 children were reached during the December campaign. Rapid assessments of vaccination coverage carried out at the end of the campaign confirmed that coverage figures of almost 100% had been obtained. These results were the product of the joint efforts of various governmental and non-governmental institutions, professional associations, organized groups and international organizations, as well as a public awareness campaign which sensitized the population about the importance of vaccinating their children against the disease.

The Pan American Health Organization has been providing technical support throughout all phases of the vaccination campaign, from planning to the evaluation stages. For the year 2001, three national campaigns against polio and other vaccine-preventable diseases are being planned during the months of February, April and August.



President Hipolito Mejia and Dr. Jose Rodriguez Soldevila administer a dose of OPV during the national polio campaign of December 15, 2000, Santo Domingo, Dominican Republic.
Source: El Nacional

Spain Renews Support for Measles Eradication

The government of Spain, through its Agency for International Cooperation and Ministry of Health, has renewed its commitment in supporting the goal of measles eradication in the Americas.

Spain's grant in the amount of US\$292,500 will be used to continue strengthening surveillance activities for vaccine-preventable diseases in the Region, especially for the implementation of an active search for suspected measles cases. Priority of the active search effort is being accorded to high-risk areas, such as over-populated urban centers with low vaccination coverage, hard-to-reach areas, and those with a high number of migrant population. The grant will complement national resources in ensuring the availability of diagnostic kits and other critical laboratory material, which are key for the timely and adequate investigation of suspected measles cases. Resources will also seek to support site visits of health staff to local areas, as well as the timely

transport of samples to laboratories. Training will remain a key component under the new grant, especially in the areas of surveillance, the use of information systems in support of epidemiological surveillance functions, the effective planning of vaccination campaigns to maximize resources, and the adequate investigation of all suspected measles cases.

Measles transmission appears to have been interrupted in most countries of the Region. In the year 2000, only 1,500 cases were reported, the lowest number ever to be reported in the Americas. Countries that have implemented the vaccination strategy for measles eradication recommended by PAHO in full have successfully interrupted disease transmission. Examples of successes include Peru, Chile, Costa Rica, Uruguay, Canada, Mexico and the United States, where they have experienced measles importations in the last two years without resumption of indigenous measles transmission.

Advances towards Measles Eradication in Brazil, 1999-2000

Background

In 1992, Brazil adopted the goal of measles eradication by the end of the year 2000, and developed the National Measles Elimination Plan to achieve that goal. As part of this plan, the first national *catch-up* campaign was implemented, with measles vaccination targeted to all children ages 9 months to 14 years. More than 48 million children were vaccinated, for a coverage of 96%. Of the 4,510 existing municipalities in that year, 68% had a coverage ≥ 95 . The number of reported measles cases declined from 42,532 in 1991 to 2,396 in 1993.

In 1995, Brazil held the first national measles *follow-up* campaign among children aged 1-3 years, achieving a coverage of 77%. The following year, after a 4-year period of measles control, Brazil experienced a measles resurgence, with initial outbreaks in the states of Santa Catarina and São Paulo. In 1997, the outbreak spread throughout the country, with 53,335 confirmed cases and 61 deaths nationwide. The strategies to control the outbreak included:

- Intensification of surveillance
- Following reporting of suspected cases, vaccination of contacts aged 6 months to 40 years without evidence of prior measles vaccination
- Vaccination in schools, identifying children through 11 years of age not previously vaccinated for measles
- A second national *follow-up* campaign among children ages 6 months to 4 years, which achieved a coverage of 66%.

Current Strategies

Immunization

Since 1985 the measles immunization schedule has consisted in one dose of monovalent measles administered between 9 and 11 months of age. In 1992, a second dose of measles was introduced into the routine schedule, through vaccination with the measles-mumps-rubella (MMR) vaccine beginning at 12 months. MMR was introduced into Brazil between 1992-2000 in a phased manner by state, beginning with the state of São Paulo in 1992. By June 2000,

measles-rubella (MR), or MMR were part of the routine childhood vaccination schedule in all Brazilian states.

Beginning in 1999, routine vaccination activities have been intensified, with the objective of achieving $\geq 95\%$ coverage in each municipality. Vaccination activities have included community-based activities such as house to house search for unvaccinated children, with the assistance of

community health workers, identifying unvaccinated children in the community, vaccination in schools, and increased emphasis among public health workers about the need for achieving uniformly high vaccination coverage. By September 2000, 51% of the municipalities of Brazil had achieved a coverage of 95% (Table 1).

Table 1
Measles vaccine coverage among children aged <1 year and number of municipalities with vaccination coverage $\geq 95\%$, Brazil, 1995-2000

Year	Total Municipalities	Vaccine Coverage $\geq 95\%$ municipalities		Coverage <1 year	Population <1 year
		#	%		
1995	4982	1,131	37	90	3,363.340
1996	4998	1,034	24	80	3,432.229
1997	5507	2,485	51	100	3,161.042
1998	5507	2,150	39	96	3,206.080
1999	5507	2,341	43	98	3,251.279
2000*	5507	2,808	51	100	3,296.663

Source: COPNI/CENEPI/FUNASA/MS
* Preliminary data through September, 2000

On June 17, 2000, the 3rd na-

tional *follow-up* campaign was held in Brazil, with mass vaccination of children aged 9 months to 4 years, and introduction of measles-rubella (MR) vaccine in 9 states. The campaign lasted approximately two weeks. Coverage was 100% for measles among children aged <1 year, and 94% among children aged 1-11 years. Overall, 60% of municipalities had a coverage of $\geq 95\%$.

Surveillance

Measles has been a legally notifiable disease since 1968. With the implementation of the Measles Elimination Plan in 1992, immediate reporting was implemented, with the target of investigating all cases within 48 hours. Investigation includes collection of blood samples for detection of measles IgM antibodies, vaccination of contacts in the area, and active case finding for secondary cases.

In 1999, as part of efforts to strengthen surveillance, Brazil implemented the Task Force for Measles Eradication. One surveillance technician was assigned to each of the states to assist the State Secretaries of Health. The objective of the Task Force was to achieve the goal of eradication, with an emphasis on strengthening epidemiologic surveillance, through implementation of the following strategies:

- Effective implementation of weekly negative notification, through which each municipality is required to report weekly on the presence or absence of suspected cases

- Timely and complete investigation of cases and outbreaks, with rapid implementation of control measures
- Active case finding
- Assisting and guiding in immunization efforts, including identification and vaccination of high risk groups
- Analysis of surveillance data, with feedback to technical and political levels
- Strengthening partnerships with governmental and non-governmental institutions.

Measles Epidemiology, 1999-2000

In 1999, the national reporting network included approximately 8,000 reporting units, of which only 50% were reporting weekly. Of 10,007 suspected cases of measles reported during 1999, 890 (8.9%) were confirmed, 378 (42%) by laboratory or epi-link. The 890 confirmed cases were distributed in 24 (89%) of the 27 Federal units (26 states and the Federal District). Overall, 235 (26%) occurred among children aged <1 year, and 437 (49%) among children aged 1-14 years. Cases were concentrated in the Northeastern region of the country, which reported 371 (42%) cases, of which 240 (65%) were reported from the state of Pernambuco. Measles control in Pernambuco was achieved through (Figure 1):

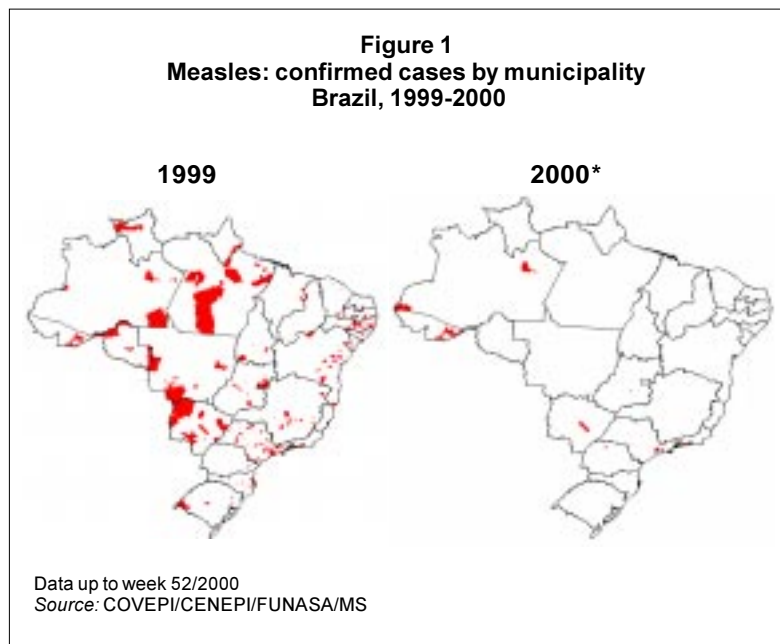
- Intensification of routine vaccination
- Indiscriminate vaccination of children through age 15 years
- Vaccination of high-risk groups (personnel in health care and tourism, and migrant farm workers).

The last case in Pernambuco occurred in December 1999.

In 2000, the reporting network was expanded to 9,213 reporting units, of which 81% are reporting weekly. Of 8,560 suspected measles cases notified through December 30, 37 (0.4%) were confirmed, 33 (89%) by laboratory or epi-link. Four were clinically confirmed. The 37 cases were distributed in 8 states and 23 municipalities, of which only one had a case reported in the last 12 weeks (active municipality). Of the confirmed cases, 16 (43%) occurred among children aged <1 year, and 13 (35%) among children aged 1-14 years. The greatest proportion of cases were reported from Acre (37%), followed by São Paulo (37%). The states of Rio de Janeiro, Parana and Amazonas reported two cases

each, while Santa Catarina, Goias, and Mato Grosso do Sul all reported one case each (Figure 1).

The last outbreak of measles occurred in the state of Acre in February, 2000, with a total of 15 reported cases (one of which was a patient residing in the state of Amazonas, but in Acre during the incubation period and hospitalized in Acre). The outbreak affected primarily unvaccinated children: 13 (87%) of case-patients were unvaccinated, and 9 (60%) were aged 1-14 years. Of the remaining cases, 4 (27%) were aged <1 year, and 2 (13%) were aged 15-29 years. The outbreak was controlled through house-to-house vaccination in the affected areas, targeted to persons aged 6 months to 39 years, active case finding in the community, and mobilization of health care professionals for enhanced surveillance and vaccination activities.



Of the 13 cases reported to date from São Paulo, 10 (77%) occurred among children aged ≤1 year, of whom 9 (90%) had received a dose of monovalent measles vaccine within the last month. The remaining 3 confirmed cases were aged 15-26 years.

For all confirmed cases, extensive investigations were conducted in the community. These investigations included active case finding in health centers, schools, and day care centers. Despite these searches, no secondary cases were identified.

Conclusions

Measles virus circulation in Brazil appears to have been interrupted since March 2000. Despite an increase in the sensitivity of the surveillance system, with more complete case investigation, the number of measles cases was reduced by 95% between 1999 and 2000. During the same period, the uniformity of measles vaccine coverage by municipality among children aged <1 year increased from 43% to 51%, and overall coverage in the recent *follow-up* campaign among children aged 1-14 was 95%. The political commitment of the State and Municipal Health Secretaries has been an important factor in the strengthening of surveillance and immunization activities necessary to successfully interrupt measles transmission in Brazil. In addition, the commitment of the State Surveillance Coordinators, State Immunization Coordinators, State Measles Eradication Task Force Advisors, State Public Health Laboratories, and technical staff of the Municipal Health Services has been critical.

Recommendations

To maintain the interruption of indigenous measles virus circulation in Brazil, sensitive and timely surveillance must continue, and high routine uniform measles coverage must be achieved ($\geq 95\%$ in each municipality). The following recommendations have been disseminated to the Municipal State Health Secretaries throughout Brazil, to ensure effective integration of surveillance, immunization, and laboratory teams for continued interruption of measles transmission:

- Increase awareness among health professionals for immediate notification of suspected cases of measles and rubella.
- Guarantee timely investigation of suspected cases, with vaccination of contacts and collection of blood samples within 48 hours after notification.

- Ensure collection of urine and nasopharyngeal secretions from suspected cases for viral isolation.
- Vaccinate in each municipality at least 95% of children aged <1 year with one dose of measles vaccine.
- Vaccinate at least 95% of children in each municipality aged 12 to 23 months with measles-mumps-rubella (MMR), or measles-rubella (MR) vaccine.
- Guarantee vaccination of high-risk groups.
- Ensure timely and complete data entry into the national information system, for effective use of surveillance data.
- Carry out ongoing analysis, evaluation and feedback of measles and rubella surveillance data.

Source: Maria Salet Parise, Rebecca Prevots, Teresa Cristina Segatto, Maria Carolina Q.C. Perreira, Marcia Mesquita, National Health Foundation, Ministry of Health, Brazil.

Workshop on Immunization at the XII Latin American Congress of Pediatrics

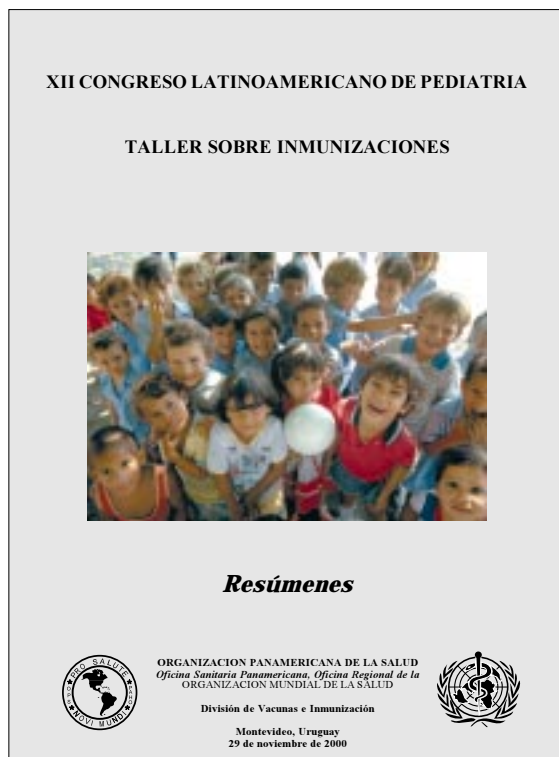
A workshop covering the major issues of immunization in the Americas was organized by the Pan American Health Organization November 29, 2000 during the XII Latin American Congress of Pediatrics in Montevideo, Uruguay. Participating members of the International Association of Pediatrics pledged their support to the goal of measles eradication in the Americas and announced their active participation in implementing effective measles control efforts worldwide.

The opening session offered some directions to maintain the leadership role of immunization in reducing the burden of disease worldwide in the 20th century. Mention was made in fulfilling the goals of global poliomyelitis eradication and measles eradication in the Americas, and in embracing new challenges that will continue benefiting the health of children. These new challenges will demand the technical excellence for which immunization programs in the Americas are known worldwide, but they will also call for enhanced skills in advocacy at the political levels and communication with the public.

Issues covered included progress achieved on the global initiative to eradicate poliomyelitis and the goal to eradicate measles in the Americas, as well as efforts being made by countries endemic for yellow fever to effectively prevent and control the disease. A review was made of the advances

and issues in the area of research and development of vaccines, particularly new technologies for the development of vaccines, lessons learned with the introduction of conjugated vaccines against meningococcal C and B in Great Britain, prospects for the use of a rotavirus vaccine, and progress in establishing a surveillance infrastructure for bacterial meningitis and pneumonias. Attention was also placed on the experiences of national immunization programs in introducing new or underutilized vaccines. These entailed the critical aspects that need to be considered when introducing vaccines, the impact of *Haemophilus influenzae* type B introduction in Chile and Mexico, lessons learned from the introduction of the vaccine against chickenpox in Uruguay and influenza vaccine in Brazil, as well as the technical and financial issues surrounding the potential use of a vaccine against Hepatitis A. The workshop also covered issues related to vaccine safety, especially immunization among immuno-compromised individuals, and those with HIV infection. This section also covered aspects of vaccine registration and lot release, the role of national immunization programs in monitoring injection safety, as well as the role of ethics in the area of vaccines and immunization.

For a copy of the abstract book covering the immunization workshop, please contact PAHO's Division of Vaccines and Immunization in Washington D.C., USA.



Annual Summary of Polio and Measles Indicators

POLIO SURVEILLANCE INDICATORS FOR THE PERIOD BETWEEN WEEKS 01 TO 52, 2000

Site	TOTAL 1999		Last 52 weeks (2000/01-2000/52)				
	Cases	Rate	Cases	Rate	% INV. < 48 hours	%1 Sample	% Sites Reporting
Argentina	104	1.01	136	1.32	90	73	100
Bolivia	31	0.96	25	0.77	92	72	93
Brazil	438	0.79	373	0.67	85	55	84
Canada	NR	...	NR	...	...	...	...
CAREC	20	0.90	13	0.59	62	62	94
Chile	89	2.08	88	2.06	86	81	92
Colombia	189	1.39	162	1.19	86	82	86
Costa Rica	31	2.25	21	1.52	95	0	84
Cuba	29	1.18	26	1.06	100	62	91
Dominican Republic	10	0.31	29	0.91	88	59	87
Ecuador	49	1.15	44	1.03	89	95	95
El Salvador	77	3.48	71	3.21	48	87	65
Guatemala	59	1.21	84	1.72	92	73	94
Haiti	3	0.12	9	0.35	0	0	42
Honduras	45	1.79	47	1.87	100	89	89
Mexico	398	1.20	369	1.11	97	80	88
Nicaragua	29	1.32	30	1.36	100	100	100
Panama	8	0.90	10	1.12	80	100	86
Paraguay	36	1.68	19	0.89	79	63	76
Peru	117	1.37	60	0.70	97	93	85
Uruguay	5	0.39	2	0.16	0	0	...
USA	NR	...	NR	...	...	...	...
Venezuela	94	1.15	112	1.37	96	91	88
TOTAL ♦	1861	1.10	1,730	1.02	89	74	87

+ Taken within 14 days of onset of paralysis

♦ Excluding Canada and USA NR or ... No reports received

MEASLES SURVEILLANCE INDICATORS FOR THE PERIOD BETWEEN WEEKS 01 TO 52, 2000

Country	% Sites Reporting Weekly	% Cases with Adequate Investigation	% Cases with Adequate Sample	% Lab. Received <=5 days	% Lab. Result <=4 days	Number of Active Municip.
Argentina	8	32	91	14	77	0
Bolivia	92	56	90	69	73	0
Brazil	75	47	74	52	68	1
Canada	...	...	...	...	...	0
CAREC	100	57	83	36	95	0
Chile	95	72	100	60	88	0
Colombia	87	46	97	72	79	0
Costa Rica	...	...	...	...	...	0
Cuba	99	100	100	99	0	0
Dominican Republic	46	59	97	51	36	6
Ecuador	95	45	98	81	77	0
El Salvador	48	4	95	89	79	0
French Guiana	...	...	...	...	...	0
Guadeloupe	...	...	...	...	...	0
Guatemala	94	52	99	67	72	0
Haiti	...	...	20	76	50	13
Honduras	88	94	99	53	82	0
Martinique	...	...	...	...	...	0
Mexico	91	67	91	71	18	0
Nicaragua	100	67	97	59	57	0
Panama	87	44	91	77	71	0
Paraguay	84	53	91	72	57	0
Peru	87	49	96	90	74	0
Puerto Rico	...	...	...	...	...	0
Uruguay	...	...	...	...	...	0
USA	...	...	...	...	...	0
Venezuela	88	88	94	34	90	2
Total and Average	81	57	90	64	65	16

Source: PESS and MESS, PAHO

PAHO's Revolving Fund Vaccines Prices for 2001

The following table shows 2001 prices for vaccines purchased through the PAHO Revolving Fund for Vaccine Procurement. The Fund was established by PAHO in 1979 for the purchase of vaccines, syringes/needles, and cold chain equipment for countries in Latin America and the Caribbean.

As seen in the table, almost all vaccines have experienced a price increase. A notable exception is the price of hepatitis B (recombinant) vaccine, which shows a decrease from the previous year. Likewise, the price of pentavalent vaccine (DTP, HEP B/Hib) shows no price increase. Vaccine against *Haemophilus influenzae* type B, both in liquid and freeze dried presentations, also registered a price decrease. Yellow fever has been included in the 2001 vaccine contract. Fluctuations in prices reflect normal inflation and costs incurred by the pharmaceutical industry for new installation and expansion of equipment. However, there is also an indication of a situation where global demand for vaccines seems to be outstripping global supply.

A recent independent study produced by Abt Associates Inc., *Analysis of International Mechanisms Supporting Immunization Programs: The Pan American Health Organization Revolving Fund*, concludes that the bulk procurement system of PAHO offers a continuous and reliable source of funds for the purchase of vaccines, providing an advantage over grant or loans. The report affirms that through the consolidation of purchases, competition among suppliers, prices and administrative costs are kept down. Furthermore, delays in ordering and receiving vaccines are minimized due to the constant availability of funds.

Over the years, agencies such as UNICEF, the World Bank, the Inter-American Development Bank and Rotary International have used the Fund as part of their operations and technical cooperation to provide vaccines and supplies to countries targeted for assistance.

Vaccine	Doses per Vial	Prices per Dose FOB US\$ / 2000	Prices per Dose FOB US\$ / 2001
BCG	10	0.093	0.0984
DPT	10	0.073	0.0822
	20	0.0575	0.0740
DT (Adult)	10	0.042	0.0431
	20	0.032	0.0343
DT (Pediatric)	10	0.045	0.0463
Polio (Glass vial)	10	0.080	0.0888
	20	0.072	0.0766
Polio (Plastic vial)	10	0.081	0.0943
	20	0.072	0.0821
	25	0.072	0.0960
TT	10	0.0345	0.0330
HEP B DNA 20 MCG Recombinant	10	0.580	0.3480
	1	0.900	0.7480
HIB - Liquid	10	3.11	2.5000
HIB - Lyophilized	1	3.00	2.6500
DTP. HEP B/Hib (Pentavalent)	1	3.50	3.5000
Measles (Edmonston)	1	0.68	0.6800
	10	0.102	0.1040
MMR (URABE mumps strain)	1	0.92	1.1900
MMR (RIT4385 mumps strain)	1	2.00	n/a
MMR (URABE mumps strain)	10	0.69	0.7955
MMR (RIT4385 mumps strain)	10	1.30	1.5000
Yellow Fever	20	n/a	0.6500

The *EPI Newsletter* is published every two months, in Spanish and English by the Division of Vaccines and Immunization (HVP) 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.



Pan American Health Organization
Pan American Sanitary Bureau
Regional Office of the
World Health Organization

Division of Vaccines and Immunization
525 Twenty-third Street, N.W.
Washington, D.C. 20037
U.S.A.
<http://www.paho.org> (Search: EPI Newsletter)

Editor: Ciro de Quadros
Associate Editor: Monica Brana

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