

# Immunization Newsletter

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- 1 Update on Measles Outbreaks
- 1 Update on Influenza Vaccination
- 3 Pneumonia Hospitalization in Children in Uruguay
- 5 Vaccination Week in the Americas
- 5 Revolving Fund Vaccine Prices, 2007
- 6 Rubella Elimination in the Americas
- 7 AFP and Measles/Rubella Indicators, 2006

## Update on Measles Outbreaks in the Americas

Endemic transmission of indigenous measles virus was interrupted in the Americas in November 2002. However, sporadic cases and outbreaks associated with importations continue to occur. [1] In this article, we describe recent measles outbreaks in the post-elimination era in Brazil and Venezuela.

### Brazil, August-November 2006

Brazil interrupted indigenous measles transmission in 2000. Between 2001 and 2004, only 4 measles cases were reported, all imported from Europe and Japan. In 2005, a six-case outbreak occurred following an importation from the Maldives Islands. [2]

In November 2006, Bahia State reported a measles outbreak of 55 confirmed cases. The first cases had rash onset in late August (Epidemiological Week/EW 35) and the last case occurred in EW 49, 2006 (Figure 1). Cases occurred in five rural municipalities: João Dourado (18 cases), Filadélfia (33), Irecê (1), Senhor do Bonfim (2), and Pindobaçu (1). João Dourado and Irecê are contiguous municipalities, as are Filadélfia and Senhor do Bonfim. João Dourado and Filadélfia accounted for 93% of the cases. The majority of cases were men: 55% in João Dourado and 79% in Filadélfia. The age of the cases ranged from 7 months to 37 years (Figure 2). None of the cases had a history of being vaccinated. Seven cases were hospitalized. No deaths were reported. The measles genotype identified in João Dourado was D4, genetically related to the measles virus that was imported to Canada in 2006. D4 has been isolated in Europe, Africa, and Asia.

The outbreaks in João Dourado/Irecê and Filadélfia/Senhor do Bonfim took place simultaneously. Cases in Filadélfia/Senhor do Bonfim were identified and reported late. In João Dourado/Irecê, cases occurred among

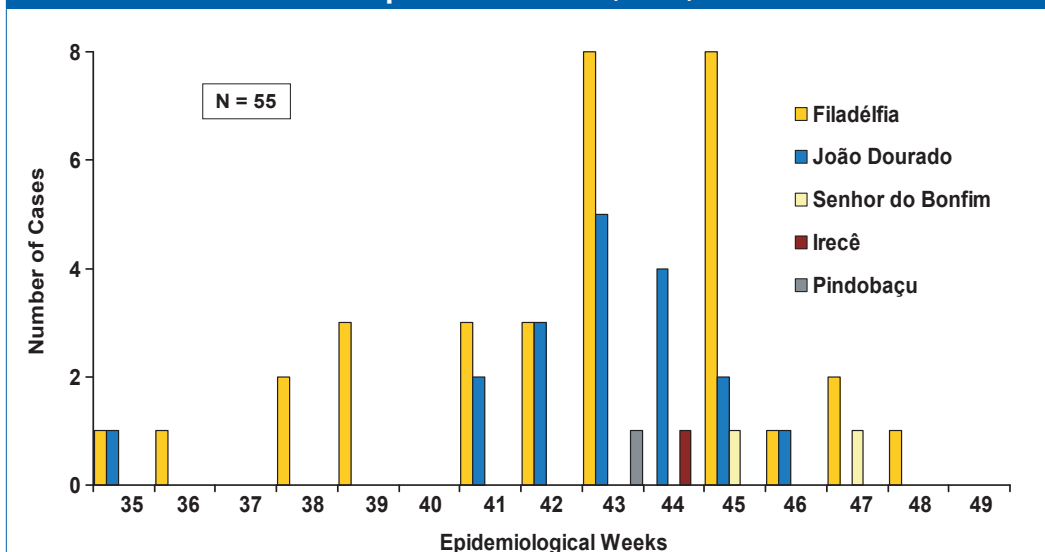
## Update on Influenza Vaccination in the Americas

Influenza is a viral disease that strikes millions of people worldwide and causes approximately one million deaths every year. However, many of these cases and deaths can be avoided through the use of safe, highly effective vaccines. The 56<sup>th</sup> World Health Assembly, held in May 2003, urged Member States to increase influenza vaccination coverage in all high-risk groups, and to achieve 50% coverage in people aged >65 years by 2005 and 75% coverage in this population by 2010. In 2006, the Pan American Health Organization (PAHO)'s Technical Advisory Group (TAG) on Vaccine-preventable Diseases recommended yearly seasonal influenza vaccination for children aged 6-23 months, health care workers, chronically ill individuals, and elderly adults. Furthermore, it recommended to strengthen surveillance, generate coverage data, and document lessons learned, which will be useful in the event of a pandemic.

To determine the current status of influenza vaccination in the Region, PAHO asked immunization program managers in the Americas to respond to two surveys – one created by PAHO and one from the World Health Organization (WHO) – on seasonal influenza vaccination and future plans for a pandemic.

Forty-five countries and territories responded to either one or both surveys: 19 from Latin America, 22 from the non-Spanish-speaking Carib-

Figure 1. Confirmed Measles Cases by Epidemiological Week of Rash Onset, Municipalities of Bahia State, Brazil, 2006

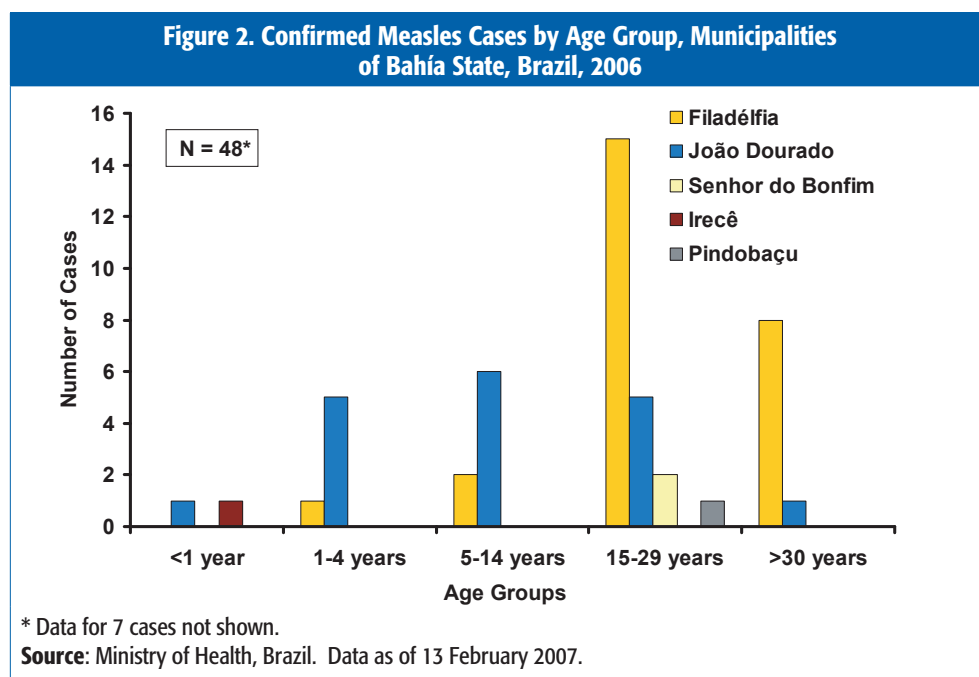


Source: Ministry of Health, Brazil. Data as of 13 February 2007.

persons living on the same street. Most cases were among persons aged <15 years (Figure 2). In contrast, in Filadélfia/Senhor do Bonfim, most cases were men aged >15 years. The source of the virus and the epidemiological link between cases in João Dourado/Irecê and Filadélfia/Senhor do Bonfim have not yet been identified. The affected areas in Bahia are heavily traveled due to the extensive trading of agricultural products and migration of agricultural and mine workers.

All suspect cases were investigated by home visits, exhaustive contact follow-up, and collection of blood for serology testing and nasopharyngeal specimens for virus isolation. Difficulties in ensuring timely specimen collection and laboratory kit stock-outs resulted in delayed laboratory confirmation of some of the cases and the inability to isolate the virus from Filadélfia. Extensive vaccination was targeted to reach susceptible persons living in the outbreak locale. Routine vaccination was strengthened. Active case-searches were conducted in health care facilities and the community, including schools, businesses, and commercial areas. Approximately 30,000 persons were vaccinated. A measles alert and technical information were disseminated nationwide.

Due to the increased vaccine demand following this outbreak and rubella outbreaks in Minas Gerais and Rio de Janeiro, Brazil has purchased 1 million measles-mumps-rubella (MMR) vaccine doses and 4.2 million measles-rubella (MR) vaccine doses through PAHO's Revolving Fund. The country has requested an additional five million MR and MMR vaccine doses from the Revolving Fund, as it is planning to conduct measles/rubella



bell vaccination activities in susceptible groups in 2007.

### Venezuela, November 2006 – February 2007

From February to June 2006, Venezuela reported a measles outbreak of 81 confirmed cases (45 in the capital city Caracas, 29 in Carabobo State, 4 in Nueva Esparta State, and 3 in Zulia State) (Figure 3). The index case-patient traveled to Spain during the period of exposure. The virus isolated from this outbreak was B3, the same genotype circulating in Spain. Venezuela had not reported cases since 2002. [3]

After epidemiological silence, Venezuela reported another cluster of 12 confirmed cases in November 2006. All cases were residents of the Camaguán municipality in Guárico State. Genotyping is pending.

In December 2006, the country reported another measles outbreak in Puerto Ayacucho, in Amazonas State. A total of 25 cases were confirmed. The rash onset of the last case was on 15 February 2007. Twenty three of the confirmed cases are children aged <5 years; 14 cases are infants aged <1 year. Coverage levels in Amazonas State have historically been low. Active measles case searches are being conducted in Puerto Ayacucho and will be extended to the rest of the country. Of all 118 confirmed cases reported since February 2006, only 4 had a history of being vaccinated.

### Conclusion

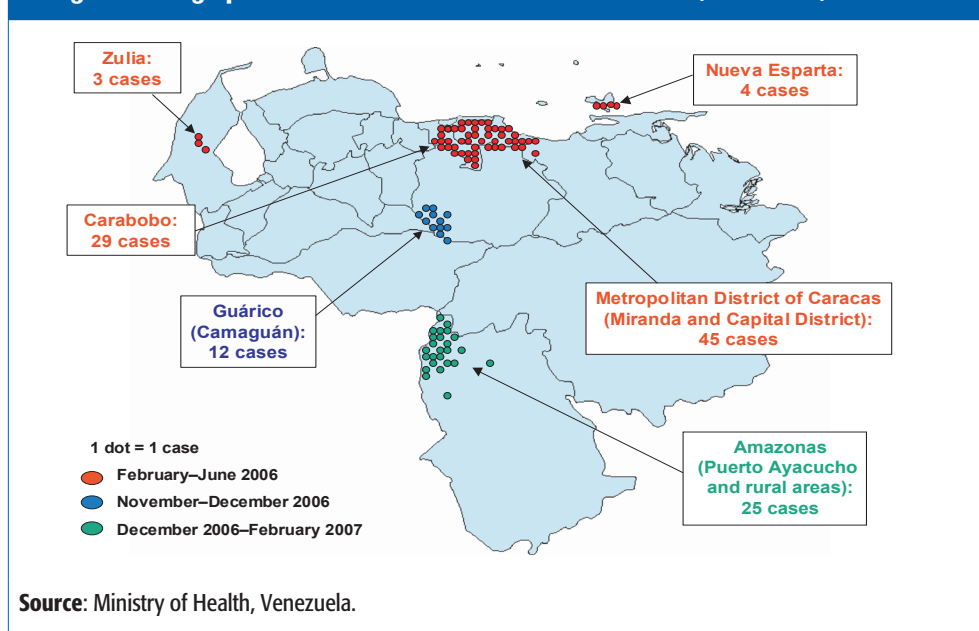
Best practices for outbreak response include intensifying epidemiological surveillance, quality case investigation, and follow-up of contacts.

Vaccination activities aim to get ahead of virus transmission. They should target contacts and persons in places of possible transmission and/or possible exposure, and in places commonly frequented by the case. ■

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3. Pan American Health Organization. Measles Outbreak in Venezuela. *Immunization Newsletter* 2006;28(2).

**Figure 3. Geographic Distribution of Confirmed Measles Cases, Venezuela, 2006-2007**



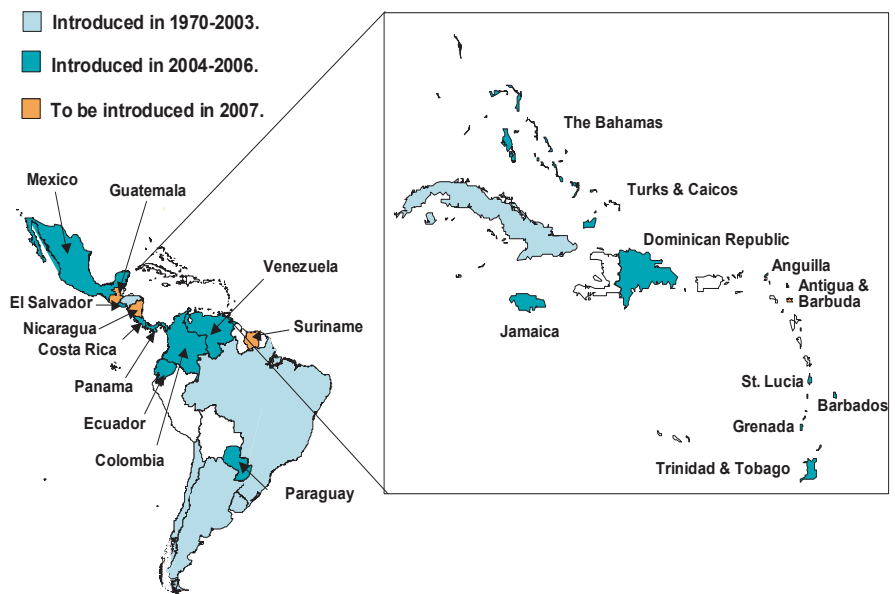
**INFLUENZA** from page 1

bean, Canada, and the United States. As of 2006, influenza vaccination has been introduced in the public sector in 30 (67%) of the 45 countries or territories. Nine of the 30 countries have introduced the vaccine in 2006. Another four countries are planning introduction in 2007 (Figure 1). Two countries (Haiti and Peru) are planning introduction in 2008. Only nine countries or territories (22%) do not have immediate plans for vaccination introduction in the public sector.

The formulation used and the time of the year when the vaccine is administered vary with the country's geographical location. Fifteen of the 30 countries (50%) that have introduced influenza vaccination in the public sector are planning to extend vaccination into additional coverage groups or add influenza vaccine into their immunization schedules. The target groups vary among countries; however, most countries target the very young and the elderly. Ten countries or territories of those with public vaccination (33%) currently immunize or plan to immunize populations in close contact with birds. Brazil has also included the vaccination of additional at-risk groups, including indigenous and incarcerated populations. Twenty-seven (90%) countries vaccinate their health workers against influenza. Among the countries surveyed under PAHO's questionnaire (39), 33 (85%) have sentinel site surveillance systems for influenza. Most countries or territories show an improvement in surveillance since the last survey was conducted (2004). However, the gap still remains for lack of information in tropical areas.

Countries purchase influenza vaccines from different suppliers. In 2006, 22 (73%) countries

**Figure 1. Introduction of Seasonal Influenza Vaccine in Latin America and the Caribbean, 1970-2007**



**Source:** EPI Managers Survey 2004-2006; WHO Influenza Survey 2006. French Guiana not included.

with public influenza vaccination purchased influenza vaccines through the PAHO Revolving Fund. There is a high demand for influenza vaccine as countries introduce it in their immunization schedules, and a vaccine shortage, especially for countries using the Northern Hemisphere formulation, has been experienced. Brazil and Mexico have technology transfer agreements to produce influenza vaccine in the Region.

Prior to 2004, influenza vaccination has gradually been introduced in the Region. Since 2004, its introduction has been accelerated dramatically, as supported by PAHO's 2004 TAG recommendations. It will be important to continue

establishing public policies for vaccine introduction in the public sector to reduce morbidity and mortality due to influenza in high-risk groups. Hopefully, the demand increase will generate a surge in vaccine production. High quality surveillance is critical for determining the formulation and proper time for administering the vaccine in each sub-region, especially tropical areas where more information is needed to understand patterns of viral transmission. PAHO is currently working with the U.S. Centers for Disease Control and Prevention to strengthen surveillance in Latin America. ■

## Pneumonia Hospitalization in Children in Uruguay and Influenza and Pneumococcal Vaccination

### Background

Immunization is one of the most effective interventions to fight child mortality. Yet, missed vaccination opportunities continue to occur in children and life-saving vaccines are still underutilized. This article presents data on pneumonia cases in children in Uruguay and discusses current immunization recommendations.

### Methodology

With support from the Pan American Health Organization, a population-based pneumonia study

was conducted in Uruguay among children aged 0-14 years hospitalized in public hospitals in the Western Departments of Paysandú and Salto, and the national reference hospital for children in Montevideo during the period June 2001 to May 2004.[1] A total of 5,346 pneumonia hospitalizations were analyzed.

### Results

Of the 2,651 children aged 0-14 years hospitalized in Paysandú and Salto, 40.5% were aged 6-23 months. In Paysandú and Salto, 32.6% of the

patients aged >23 months had co-morbidity and 38.2% had been previously hospitalized.

In Montevideo's national reference hospital, 1,489 children aged >23 months were hospitalized. *Streptococcus pneumoniae* was isolated from the blood or pleural fluid of 259 of them.

### Discussion

Since 2004, Uruguay has offered free influenza vaccination for children aged 6-23 months (in addition to vaccinating older adults). However, coverage rates were not adequate during the first year (15%), and even less during the second year, when 127,494 fewer vaccine doses were administered.[2] In the study, children aged 6-23 months represented the highest proportion of children hospitalized due to pneumonia. Since

this age group was eligible for influenza vaccine, a proportion of those pneumonia cases might have been avoided with influenza vaccination. Child vaccination (2 doses) should be completed before the influenza season. In Uruguay, circulation begins at the end of April or beginning of May, according to data from the National Reference Center for Influenza.

Uruguay has not yet introduced a conjugated pneumococcal vaccine. However, the existent 23-valent polysaccharide vaccine can be offered to persons aged >2 years at risk. Thanks to twelve years of invasive pneumococcal disease surveillance, Uruguay has documented the absence of significant changes in the most prevalent invasive serotypes circulating in children and adults, supporting the relevance of the polysaccharide vaccine's formulation.[3] The high proportion of children with co-morbidities who were hospitalized during the study period reemphasizes the importance to consider pneumococcal vaccination in this high-risk group in Uruguay.

## Editorial Note

Pneumococcus pneumonia and influenza are among the main causes of hospitalizations and deaths in children worldwide. It is estimated that pneumococcal disease causes around 1.6 millions deaths per year, of which 800,000 occur in children aged <5 years. Regarding influenza, literature from the United States indicates that 30% of children are infected each year with influenza viruses. Disease duration and viral excretion are more prolonged in children, which contributes to children being the main source of virus transmission in the community.[4] The average excess hospitalization associated with influenza ranges from 40 per 100,000 in school-aged children to 1,000 per 100,000 in infants aged <6 months. Furthermore, influenza infection can lead to severe pneumococcal pneumonia.[5]

The most commonly used influenza vaccine is a trivalent, inactivated influenza vaccine, containing the two A subtypes H3N2 and H1N1 and

one type B virus. Influenza vaccine should not be given to children aged <6 months, and children aged 6–36 months should receive half the adult vaccine dose. To provide protection, two injections given at least one month apart, should be administered to children aged <9 years who have never received the vaccine before. Vaccination is recommended annually, as the vaccine is reformulated each year according to data on circulating influenza strains. The main purpose of seasonal influenza vaccination is to avoid severe influenza and its complications.

PAHO's Technical Advisory Group on Vaccine-preventable Diseases (TAG) recommends influenza vaccination for children aged 6-23 months, in addition to vaccinating health care workers, chronically ill individuals, and elderly adults. [6] By the end of 2006, vaccinating children aged 6-23 months had been recommended by 13 countries/territories in the Americas. Three additional countries were vaccinating children aged <5 years with high risk conditions. However, where monitored, coverage levels are significantly lower than for other routine childhood vaccines.

Polysaccharide-protein conjugate pneumococcal vaccines are effective in children aged <2 years, when the rates of pneumococcal invasive disease are higher. Data from the Regional PAHO/SIREVA surveillance network indicate that serotype 14 is most often isolated in the majority of countries. The existing 7-valent vaccine would cover 65% of serotypes, a 9-valent 77%, and an 11-valent 83%. Conjugate pneumococcal vaccines can be easily integrated into routine immunization schedules. Routine immunization with these vaccines should be initiated before 6 months of age and may start as early as 6 weeks of age. Conjugate pneumococcal vaccines may be administered at the same time, although at a different anatomical site, with other vaccines in the infant immunization programs (DTP, Hib, Hepatitis B, polio). The high costs of conjugated pneumococcal vaccines, together with the scarcity of local data regarding circulating serotypes, have limited the introduction of these vaccines

in the Americas. The 23-valent polysaccharide pneumococcal vaccine can be administered any time of the year, to persons aged >2 years. It contains purified capsular polysaccharides of twenty-three of the most common pneumococcus serotypes. Vaccination is usually prescribed to persons with risk factors for pneumococcal disease and those aged 65 years or older. Revaccination after five years is only indicated for those persons at high risk.

WHO considers pneumococcal conjugate vaccine to be a priority for inclusion in national immunization programs and encourages countries to conduct surveillance for pneumococcal invasive disease. In 2006, TAG recommendations focused on strengthening standardized pneumococcal surveillance throughout the Region of the Americas. [6] Pneumonia and meningitis surveillance in children aged <5 years will allow assessing the burden of disease and its profile in the population, and evaluating the impact of vaccination once the vaccine is introduced in a country. ■

**Contributed by:** Dr. María Hortal and Dr. Inés Iraola. National Child Health Program, Ministry of Public Health, Uruguay.

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6. Pan American Health Organization. Technical Advisory Group on Vaccine-preventable Diseases. Final report. 2006.



Illustration:  
Bola Oyeleye / PAHO

## VWA and World Cricket Cup Unit Efforts to Prevent Diseases

The 2007 VWA will take place during the closing week of the 2007 Cricket World Cup (CWC), and PAHO invites visitors to celebrate VWA's closing during the last CWC match on 28 April. CWC will be held in nine Caribbean countries and territories, starting in March. PAHO acknowledges the significance of this event for organizing and participating countries as many players and fans from other Regions will be traveling to the Caribbean, fueling the risk for disease importation. Therefore, as part of the VWA, the organization fully supports the efforts of Caribbean countries, prior and during CWC, to prevent such importations by raising awareness of disease prevention and surveillance. Activities will include increased epidemiological surveillance before, during, and after CWC, and intensification of immunization efforts in high-risk and vulnerable populations.

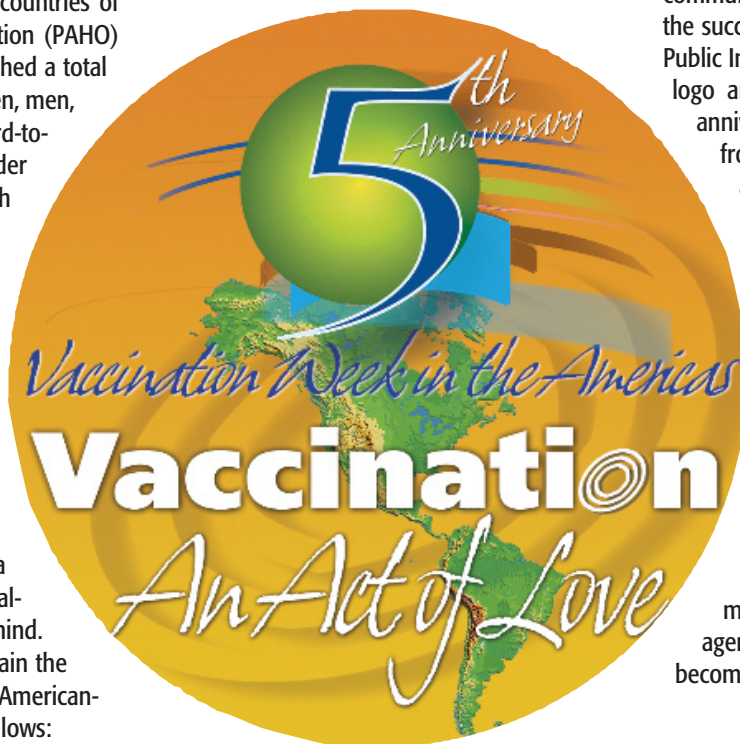
## Vaccination Week in the Americas: Fifth Anniversary

The 2007 Vaccination Week in the Americas (VWA) will take place on 21-28 April. This year, countries of the Region of the Americas will celebrate the fifth anniversary of VWA, an initiative endorsed by all member countries of the Pan American Health Organization (PAHO) in 2003. Since 2003, VWA has reached a total of about 147 million children, women, men, and older adults, focusing on hard-to-reach populations, isolated border communities, and other areas with low immunization coverage.

As the Americas prepare for this year's campaign, the status of immunization in the Region's has changed considerably over the last five years. Rubella is on the brink of elimination, and new vaccines are being introduced – such as those against rotavirus, pneumococcus, and human papillomavirus. Yet, inequities are still a reality, and the Americas face the challenge of reaching all those left behind. The 2007 VWA will therefore maintain the principles of equity, access, and Pan Americanism. This year's objectives are as follows:

- Increase and strengthen routine immunization coverage;
- Improve coverage in isolated and vulnerable populations;

- Continue to promote basic health care through integrated activities;
- Maintain immunization on the political agendas of Member States and engage them in a



celebration of health that highlights solidarity;

- Improve the awareness of the general population about diseases and vaccines, including new vaccines on the market; and
- Focus on the risk of importation of vaccine-preventable diseases such as measles, rubella, and polio.

In addition to the technical cooperation provided by PAHO's Immunization Unit, social communication support has been crucial for the success of VWA in previous years. PAHO's Public Information Office has designed a special logo and posters celebrating the VWA's fifth anniversary. They will be accessible soon from a webpage dedicated to VWA activities around the Region.<sup>1</sup> Public service and radio announcements are being produced, with a special focus on Caribbean countries and priority countries in the Americas.

Building on the example of the Americas, the European countries will be conducting their first Immunization Week in April also, a week prior to VWA. In view of the other Regions' growing interest in sustaining immunization achievements, improving coverage in underserved populations, and maintaining immunization on the political agenda, Vaccination Week might some day become a global initiative. ■

<sup>1</sup> [www.paho.org/English/DD/PIN/vw\\_2007.htm](http://www.paho.org/English/DD/PIN/vw_2007.htm)

## PAHO Revolving Fund Vaccine and Syringe Prices for 2007

Table 1 shows 2007 prices for vaccines being offered through the PAHO Revolving Fund for Vaccine Purchases. In summary, the weighted average of price increase for 2007 compared to 2006 was 2.5%. In some cases the average vaccine price has decreased, such as for hepatitis B pediatric (-9%) and Pentavalent (-2%). This was facilitated by new supply sources and more efficient working relationships between Member States, PAHO, and the suppliers to manage changes in demand forecasting and production processes during 2006. Price increases, however,

also occurred in 2007, most notably for DPT 10 (+32%), influenza (11%) and MMR (+8%), as a consequence of limited supply, low accuracy in demand forecasting, and market behavior.

Overall the number of vaccine presentations continues to grow in 2007 with the inclusion of liquid Pentavalent and OPV glass. Not shown in Table 1 is influenza Northern Hemisphere, both adult and pediatric. It is anticipated that suppliers will be in a better position to comply with PAHO's requirements for pediatric presentation of seasonal influenza vaccine later this year.

Also, the initial supply of rotavirus is expected to be available in June 2007 following WHO prequalification in January 2007.

In anticipation of possible supply shortages in 2007 for MMR, polio, influenza, and Pentavalent, the Revolving Fund will continue to strengthen its working relationships with countries and suppliers to manage modifications of demand and supply and ensure a smooth and constant flow of vaccines and avoid stock outs.

Finally, 2007 prices for syringes are available at the following link: <https://intranet.paho.org/AM/PRO/PRO.asp>. It is important to mention that, in 2006, PAHO initiated a quality control system for syringes based on ISO standards and intended to guarantee the quality and safety of syringes.

**Table 1. Prices for Vaccines Purchased Through the PAHO Revolving Fund, 2007 (Prices shown in U.S. Dollars)**

Vaccine		Doses per Vial	Average Cost	Vaccine		Doses per Vial	Average Cost
BCG		10	\$0.1036	Polio	Glass	20	\$0.1478
DPT		10	\$0.1580		Plastic	20	\$0.1500
dT (Adult)		10	\$0.0750	Polio (Plastic)		25	\$0.1550
DT (Pediatric)		10	\$0.0891	Polio Inactivated (with syringe)		1	\$3.3000
DTaP Triple Acellular		1	\$8.1250	Rabies Vaccine Human Use/ Inactivated Purified Cell Culture	French Origin	1	\$10.5000
DPT-Hib		1	\$3.4000		German Origin	1	\$11.5000
		10	\$3.1500	TT		10	\$0.0645
DPT-Hepatitis B-Hib	Lyophilized	1	\$3.9200	Yellow Fever		5	\$0.6500
	Liquid	1	\$3.9500	Influenza Adult Southern Hemisphere	with prefilled syringe	1	\$3.6500
Hib	Lyophilized	1	\$3.1500		with syringe	1	\$3.6500
	Liquid	1	\$3.2500	Influenza Adult Southern Hemisphere		10	\$2.6600
Hepatitis B Recombinant Pediatric		1	\$0.2343	Influenza Pediatric Southern Hemisphere (with syringe)		1	\$3.2000
Hepatitis B Recombinant Adult		1	\$0.4270	Influenza Pediatric Southern Hemisphere		20	\$1.3300
		10	\$0.2300	23-Valent polysaccharide pneumococcal (with syringe)		1	\$9.2000
Measles/Rubella		10	\$0.4688	Hepatitis A Pediatric	with pre-filled syringe	1	\$7.9500
Measles/Mumps (Leningrad Strain)/Rubella		1	\$1.5000		with syringe	1	\$7.6000
		10	\$0.9000	Hepatitis A Pediatric		1	\$7.9500
Measles/Mumps (Urabe Strain)/Rubella		1	\$2.5000	Varicella		1	\$10.4000
		10	\$1.4000	Meningococcal A+C		1	\$2.2750
Polio	Glass	10	\$0.1600				
	Plastic	10	\$0.1700				

## Rubella Elimination in the Americas: Last Countries to Conduct Vaccination Campaigns

The Region has demonstrated remarkable progress in the implementation of strategies for the effective interruption of endemic rubella transmission through the vaccination of adolescent and adult populations. In 2007, six countries will finalize high-quality mass rubella elimination campaigns: Cuba, Bolivia (2<sup>nd</sup> stage), Guatemala, Haiti, Mexico (2<sup>nd</sup> stage), and Venezuela (2<sup>nd</sup> stage). In addition, El Salvador and Uruguay will conduct follow-up campaigns to decrease susceptible populations to measles and rubella in their respective countries (see

Table 1 on page 8).

High quality campaigns are a critical. Important factors to consider include:

1. The age group to be vaccinated should be determined based on the epidemiology of rubella in the country, an assessment of the susceptible population, the year of vaccine introduction, subsequent rubella vaccination campaigns, and the need to protect women of childbearing age.
2. Social communication should be emphasized during campaign planning.

3. Quality campaigns require vaccinating both female and male populations, including susceptible adults, and reaching coverage levels close to 100% of the targeted population.
4. The highest political commitment and participation should be ensured.
5. Full participation of the population, scientific societies, social sectors, and media requires intensive social mobilization efforts and local micro-planning activities.
6. Information systems should be practical and useful.
7. The capacity should exist to detect and rapidly respond to safety concerns and other emerging issues during campaigns.

See **RUBELLA** page 8

# Annual Summary of AFP and Measles/Rubella Indicators, 2006\*

## Acute Flaccid Paralysis (AFP) Surveillance Indicators (Period Between Epidemiological Weeks 01 to 52, 2006)

Country	Number of Cases	AFP Rate per 100,000 <15 Years Old	% Cases Investigated <48 hours	% with 1 Sample Taken Within 14 Days of Onset	% Sites Reporting
Argentina	143	1.40	87	78	74
Bolivia	40	1.10	95	78	52
Brazil	369	0.68	97	72	90
Canada	30	0.53	...	...	...
CAREC	17	0.84	96	57	100
Chile	76	1.77	83	84	96
Colombia	220	1.73	57	81	91
Costa Rica	7	0.57	86	29	...
Cuba	25	1.15	100	96	100
Dominican Republic	17	0.54	59	94	82
Ecuador	32	0.75	97	75	73
El Salvador	79	3.38	95	87	90
Guatemala	97	2.13	91	74	...
Haiti	15	0.37	93	27	73
Honduras	76	2.57	96	93	93
Mexico	447	1.42	98	81	96
Nicaragua	27	1.26	100	93	100
Panama	9	0.92	78	78	93
Paraguay	14	0.70	93	86	92
Peru	77	0.91	92	60	100
Uruguay	8	0.98	100	88	75
USA	...	...	...	...	...
Venezuela	68	0.82	94	85	85
Total *	1893	1.10	90	78	89

... Not reporting

\* Excluding Canada and USA

## Measles/Rubella Surveillance Indicators (Period Between Epidemiological Weeks 01 to 52, 2006)

Country	% Sites Reporting Weekly	% Cases with Adequate Investigation	% Cases With Adequate Sample	% Lab. Received ≤5 Days	% Lab. Result ≤4 Days	% Cases Discarded by Lab.
Argentina	85	11	92	74	82	99
Bolivia	52	96	99	82	77	99
Brazil	86	75 <sup>a</sup>	77	44	82	97
Canada	...	...	...	...	...	...
CAREC	99	81	97	28	91	99
Chile	96	26	91	79	93	97
Colombia	92	60	96	79	84	97
Costa Rica	...	...	...	...	...	...
Cuba	95	96 <sup>a</sup>	100	65	100	96
Dominican Republic	81	72	98	59	64	97
Ecuador	67	60	99	87	81	99
El Salvador	88	80	99	96	93	99
French Guiana	...	...	...	...	...	...
Guadeloupe	...	...	...	...	...	...
Guatemala	49	91	96	77	92	98
Haiti	73	88	83	21	32	90
Honduras	94	94	98	81	89	97
Martinique	...	...	...	...	...	...
Mexico	92	99	97	89	76	99
Nicaragua	100	82	99	57	94	99
Panama	93	73	99	68	95	97
Paraguay	92	70	99	87	100	100
Peru	98	81	88	74	54	89
Puerto Rico	...	...	...	...	...	...
Uruguay	59	20	80	100	44	100
USA	...	...	...	...	...	...
Venezuela	72	87	98	66	79	99
Total/Average	86	78	85	59	80	97

<sup>a</sup> Also includes information on active case-searches.

... Not reporting

Source: PESS, MESS, and country reports to Immunization Unit, PAHO.

\* Data as of 28 February 2007.

RUBELLA from page 6

**Table 1. Countries of the Region of the Americas Conducting Rubella Vaccination Campaigns in 2007**

Country	Target Population	Age Group	Date of Implementation	Comments
<b>Cuba*</b>	2.1 million men and women	12-24 years	February-May 2007	Vaccination is based on a susceptibility study and response to a mumps outbreak.
<b>Guatemala</b>	7.8 million men and women	9-39 years	13 April 2007	An alliance of partners has mobilized resources for campaign efforts.
<b>Haiti</b>	4.7 million men and women	1-19 years	October 2007	The MMR vaccine will be introduced in the regular program for children aged 1 year.
<b>Bolivia (2<sup>nd</sup> stage)</b>	3.5 million children	1-15 years	September 2007	A follow-up campaign is included to strengthen measles and rubella elimination efforts.
<b>Venezuela (2<sup>nd</sup> stage)</b>	9.6 million men and women	18-39 years	October 2007	The second stage will finalize rubella and measles elimination.
<b>Mexico** (2<sup>nd</sup> stage)</b>	20.3 million men and women	17-29 years	November 2007	Rubella vaccination will be implemented throughout the remaining 34 states.
<b>El Salvador</b>	800,000 children	1-4 years	June 2007	A follow-up campaign is included to strengthen rubella and measles elimination.
<b>Uruguay</b>	200,000 children	1-4 years and susceptible population	October 2007	A follow-up campaign is included to strengthen rubella and measles elimination. A campaign in adolescent and adult populations will depend on susceptible cohorts.

\* Uses MMR vaccine.

\*\* To be confirmed

Note: Argentina, Brazil, and Chile are determining susceptible adolescent and adult cohorts to complete their campaign for the elimination of rubella and congenital rubella syndrome and the strengthening of measles elimination.

Source: Immunization Unit, PAHO.

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