

# Immunization in the Americas

## 2009 Summary

Comprehensive Family Immunization  
Family and Community Health



**Pan American  
Health  
Organization**



*Regional Office of the*  
World Health Organization



# preface

In 1980, the World Health Assembly endorsed the certification of smallpox eradication. The last smallpox case in the Americas occurred in 1971 and the last naturally occurring case of indigenous smallpox in the world occurred in Somalia in 1977. Following this achievement, and the establishment of the Expanded Program on Immunization (EPI) in 1977, much has been accomplished in the battle against vaccine-preventable diseases (VPDs) in the Americas. Polio was eliminated from the Western Hemisphere in 1991. Neonatal tetanus is no longer a public health problem in all PAHO Member States but one. Measles deaths have been reduced from an estimated 52,000 in 1990 to 0 after endemic measles transmission was interrupted in the Region in November 2002. No indigenous rubella cases have been reported since January 2009. Other VPDs such as diphtheria, meningitis, and other invasive bacterial diseases due to *Haemophilus influenzae* type b (Hib) and tetanus have been largely controlled. From the basic six antigens of the EPI, the program has expanded to include at least five more in most countries (rubella, mumps, Hib, hepatitis B, and seasonal influenza). Finally, new vaccines against varied pathogens, such as rotavirus, pneumococcus, and human papillomavirus, are widening the spectrum of diseases that can be prevented, controlled, or eliminated by vaccination.

Thirty years ago, PAHO published the first issue of the *EPI Newsletter*, now the *Immunization Newsletter*. The publication was presented as a forum for countries of the Americas to exchange skills, knowledge, and information relevant to the EPI. The *Immunization Newsletter* has been published bimonthly in English and Spanish since 1979 (and since 2001 also in French). With a readership of 7,500 worldwide, the *Immunization Newsletter* has become a tool used by immunization programs to share lessons learned and disseminate technical expertise. To celebrate the *Immunization Newsletter's* 30th anniversary, PAHO is publishing the following:

- One compendium on measles;
- One compendium on rubella; and
- One commemorative book and e-book entitled "*Thirty years of Immunization Newsletter: The History of the EPI in the Americas*".

This annual brochure, *Immunization in the Americas*, has become a benchmark publication that catalyzes the sharing of important data for monitoring immunization and VPD surveillance indicators. The fifth issue presents critical information to guide vaccination strategies and target underserved populations. In this year of commemoration, we trust that you will find the data presented in *Immunization in the Americas* useful to continue celebrating the achievements and documenting the challenges that immunization programs in the Americas continue to face.



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For this publication:

- Latin America is composed of Mexico, Central American Isthmus, Latin Caribbean, Andean Area, Brazil, and Southern Cone.
- Latin America & Caribbean is composed of Latin America and Non-Latin Caribbean.
- Because of their population size, Brazil and Mexico are shown separately.

# demographic and socioeconomic data

	1	2	3	4		5	6		7	8	9		10
	total population (thousands)	crude birth rate (1,000 pop)	annual births average (thousands)	infant mortality rate or number of deaths (N) (1,000 lb)		women of childbearing age (WCBA) (thousands)	gross national income (US\$ per capita)			population below int'l poverty line (%) (latest available)	national health expenditure as a % of GDP		
	2008	2008	2008	rate	(N <sup>c</sup> ) year	2008	current value	ppp value		2007	public expenditure	private expenditure	
<b>The Americas</b>	921,065	14.9	15,598.0	14.8		246,792	21,393	23,178			...	...	
<b>North America</b>	344,992	12.2	4,753.0	6.6		86,278	45,424	44,843			...	...	
Bermuda	67	12.0	1.0	NA	3 2006	...	...	...			3.7 <sup>h,e</sup>	4.4 <sup>n</sup>	
Canada	33,259	10.6	353.1	5.0	2006	8,443	39,650	35,500			7.5	1.4 <sup>o</sup>	
United States of America	311,666	14.1	4,398.9	6.7	2006	77,835	46,040	45,840			7.8	4.5 <sup>o</sup>	
<b>Latin America &amp; the Caribbean</b>	576,073	17.7	10,845.0	18.7		160,513	6,009	9,787			...	...	
<b>Latin America</b>	569,057	19.5	10,723.3	18.7		158,627	6,035	9,829			...	...	
<b>Mexico</b>	108,555	18.9	2,048.6	15.7	2007	30,973	9,400	13,910		2.0 <sup>a</sup>	4.9 <sup>k,l</sup>	2.6 <sup>p</sup>	
<b>Central American Isthmus</b>	41,025	23.9	1,071.4	22.4		11,029	2,753	5,419			...	...	
Belize	301	24.7	7.4	17.2	2007	82	3,760	6,080			1.9 <sup>e</sup>	1.4 <sup>o</sup>	
Costa Rica	4,519	16.7	75.4	10.0	2007	1,273	5,520	10,510		2.4 <sup>b</sup>	5.2	3.2 <sup>p</sup>	
El Salvador	6,134	20.2	124.3	21.5	2007	1,735	2,850	5,640		11.0 <sup>b</sup>	2.9 <sup>k,h</sup>	4.0 <sup>p</sup>	
Guatemala	13,686	33.0	452.7	...	...	3,493	2,450	4,520		11.7 <sup>a</sup>	2.1 <sup>m</sup>	4.8 <sup>p</sup>	
Honduras	7,319	27.5	201.5	23.0	2006	1,951	1,590	3,610		18.2 <sup>a</sup>	4.1 <sup>h</sup>	2.8 <sup>p</sup>	
Nicaragua	5,667	24.6	140.0	33.0	2006	1,573	990	2,510		15.8 <sup>b</sup>	5.0	4.1 <sup>q</sup>	
Panama	3,399	20.6	70.1	14.7	2007	922	5,500	10,610		9.5 <sup>a</sup>	4.3 <sup>a</sup>	2.0 <sup>p</sup>	
<b>Latin Caribbean</b>	36,086	17.9	684.2	34.2		9,758	...	...			...	...	
Cuba	11,205	10.5	117.5	4.7	2008	3,079	...	...			10.9 <sup>k,m</sup>	...	
Dominican Republic	9,953	22.5	224.2	29.6	2008	2,703	3,560	6,350		5.0 <sup>b</sup>	1.8	3.4 <sup>p</sup>	
French Guiana	220	25.0	5.5	12.1	2007	59	...	...			...	...	
Guadeloupe	464	14.3	6.6	6.1	2007	121	...	...			...	...	
Haiti	9,876	27.6	273.2	57.0	2006	2,672	520	1,050		54.9 <sup>c</sup>	2.7 <sup>e,m</sup>	2.8 <sup>p</sup>	
Martinique	403	12.6	5.1	8.8	2007	107	...	...			...	...	
Puerto Rico	3,965	13.1	52.1	8.4	2007	1,016	...	...			3.5 <sup>e</sup>	...	
<b>Andean Area</b>	125,145	22.1	2,669.6	17.3		34,543	4,391	8,481			...	...	
Bolivia	9,694	27.1	262.8	...	...	2,525	1,260	4,150		19.6 <sup>b</sup>	3.3	1.6 <sup>p</sup>	
Colombia	45,012	20.4	918.5	15.5	2006	12,727	4,100	8,260		16.0 <sup>a</sup>	3.5 <sup>b</sup>	2.5 <sup>p</sup>	
Ecuador	13,481	20.8	280.8	18.1	2007	3,604	3,110	7,110		4.7	2.3 <sup>k</sup>	4.0 <sup>p</sup>	
Peru	28,837	21.1	609.0	21.0	2004-06	7,947	3,410	7,200		7.9 <sup>a</sup>	2.0 <sup>h</sup>	1.8 <sup>q</sup>	
Venezuela	28,121	21.3	598.5	16.1	2007	7,740	7,550	12,290		3.5 <sup>a</sup>	2.8	2.3 <sup>p</sup>	
<b>Brazil</b>	191,972	16.2	3,104.9	20.0	2007	54,884	5,860	9,270		5.2	3.6 <sup>a,h</sup>	3.8 <sup>p</sup>	
<b>Southern Cone</b>	66,274	18.0	1,144.6	12.5		17,439	6,192	11,909			...	...	
Argentina	39,883	17.3	689.3	13.3	2007	10,313	6,040	12,970		4.5 <sup>b</sup>	4.6	3.3 <sup>p</sup>	
Chile	16,804	14.9	251.2	8.3	2007	4,644	8,190	12,330		2.0 <sup>a</sup>	4.0 <sup>a,l</sup>	2.1 <sup>p</sup>	
Paraguay	6,238	24.6	153.7	16.7	2007	1,646	1,710	4,520		6.5	2.3 <sup>a,l</sup>	3.2 <sup>p</sup>	
Uruguay	3,349	15.0	50.4	10.6	2008	837	6,390	11,020		2.0 <sup>a</sup>	9.0	2.8 <sup>q</sup>	
<b>Non-Latin Caribbean</b>	7,016	15.8	121.7	...		1,887	5,969	9,432			...	...	
Anguilla	14	13.0	0.2	...	...	...	...	...			4.2 <sup>e</sup>	2.6 <sup>o</sup>	
Antigua & Barbuda	85	17.0	1.2	17.5	2008	...	11,650 <sup>a</sup>	17,680 <sup>a</sup>			2.9 <sup>e</sup>	1.4 <sup>o</sup>	
Aruba	105	11.7	1.2	NA	3 2004	30	...	...			8.5 <sup>b,m</sup>	1.9 <sup>p</sup>	
Bahamas, The	338	16.7	5.6	17.6	2007	98	...	...			3.0 <sup>e</sup>	3.1 <sup>o</sup>	
Barbados	255	11.2	2.9	14.2	2005	70	...	...			4.4 <sup>e</sup>	1.9 <sup>o</sup>	
Cayman Islands	48	12.0	1.0	NA	1 2008	...	...	...			3.5 <sup>e</sup>	...	
Dominica	73	16.0	1.0	NA	9 2008	...	4,030 <sup>a</sup>	6,930 <sup>a</sup>			3.8 <sup>k,m</sup>	2.4 <sup>o</sup>	
Grenada	104	19.4	2.0	NA	13 2008	29	3,920	5,480			3.2 <sup>e</sup>	3.9 <sup>o</sup>	
Guyana	763	17.9	13.6	22.0	2005	199	1,250	2,580		7.7 <sup>d</sup>	5.6 <sup>e</sup>	1.9 <sup>n</sup>	
Jamaica	2,708	19.4	52.4	21.1	2006	751	3,330	5,300		2.0 <sup>e</sup>	2.6 <sup>k</sup>	2.7 <sup>p</sup>	
Montserrat	5	12.0	0.2	...	2008	...	...	...			7.1 <sup>e</sup>	0.8 <sup>o</sup>	
Netherlands Antilles	195	13.3	2.6	...	...	54	...	...			11.5 <sup>e</sup>	0.7 <sup>o</sup>	
Saint Kitts & Nevis	40	18.0	1.0	NA	10 2008	...	9,990	13,680			2.1 <sup>e</sup>	2.4 <sup>o</sup>	
Saint Lucia	170	17.8	3.0	15.0	2005	51	5,520	9,240		20.9 <sup>f</sup>	2.2 <sup>k,m</sup>	3.3 <sup>p</sup>	
Saint Vincent & the Grenadines	109	17.6	1.9	26.2	2006	30	4,210	7,170			3.6 <sup>e</sup>	0.7 <sup>o</sup>	
Suriname	515	19.0	9.8	19.8	2007	140	4,730	7,640		15.5 <sup>g</sup>	3.8 <sup>e</sup>	0.8 <sup>o</sup>	
Trinidad & Tobago	1,333	14.8	19.8	16.5	2004	407	14,480	22,420			2.4 <sup>e</sup>	1.9 <sup>p</sup>	
Turks & Caicos Islands	22	21.0	0.5	NA	1 2008	...	...	...			4.8 <sup>e</sup>	...	
Virgin Islands (UK)	24	15.0	0.3	NA	7 2008	...	...	...			2.3 <sup>e</sup>	...	
Virgin Islands (US)	110	13.4	1.5	NA	9 2006	27	...	...			3.0 <sup>e</sup>	...	

(a) value 2006; (b) value 2005; (c) value 2001; (d) value 1998; (e) value 2004; (f) value 1995; (g) value 1999; (h) institutional expenditure; (k) value 2008;

(l) includes 'Obras Sociales' (ARG), ISAPRES and FONASA (CHL), IMSS and 'Seguro Popular' (MEX), IAMC (URY); (m) expenditure by activities or budgetary program; (n) personal care and health;

(o) medical care and expense; (p) health; (q) health care and health conservation.

# immunization coverage

	11	12	13	14	15	16	17	18	19	20	21	22	
	percentage of coverage										percentage of municipalities with coverage level $\geq$ 95%		total number of districts/municipalities
	< 1 year of age					1 year of age					DTP3	MMR	
	BCG	polio3	DTP1	DTP3 + Hib3	Hep B3	DTP4	Yellow Fever	MMR1	MMR2 <sup>g</sup>	2008	2008	2008	
<b>The Americas</b>	97	93	96	93	85	49		94		57	57		
<b>North America</b>	NA	92	99	95	87	78		92					
Bermuda	NA	95	97	95	78	...	NA	89	53	...	...	1 <sup>l</sup>	
Canada <sup>b</sup>	NA	80	...	80	17	...	NA	93	...	67 <sup>k</sup>	...	13 <sup>m</sup>	
United States of America <sup>b</sup>	NA	93	99	96	93	85	NA	92	...	...	8 <sup>k</sup>	51 <sup>n</sup>	
<b>Latin America &amp; the Caribbean</b>	97	93	95	91	85	37	50	94	...	57	57	15,100	
<b>Latin America</b>	97	93	95	91	85	37	50	95	...	57	57	14,925	
<b>Mexico</b>	100	96	98	96	71	...	...	95	94	67	84	2,438	
<b>Central American Isthmus</b>	99	94	98	94	94	32	...	95	...	56	61	1,208	
Belize	98	94	98	94	94	78	NA	96	90	50	83	6	
Costa Rica	86	89	91	89	88	...	NA	89	89	25	26	81	
El Salvador	99	98	94	98	98	89	NA	95	79	64	53	262	
Guatemala	99	96	100	96	96	...	NA	96	NA	70	70	332	
Honduras	100 <sup>a</sup>	93	96	93	93	89	NA	95 <sup>d</sup>	NA	47	54	298	
Nicaragua	100 <sup>a</sup>	97	100 <sup>a</sup>	97	97	...	NA	100	99	55	65	153	
Panama	100	82	93	82	83	64	27 <sup>f</sup>	85	60	34	99	76	
<b>Latin Caribbean</b>	80	72	70	72	48	47	...	78	...	45	44	457	
Cuba	99	100 <sup>a</sup>	100 <sup>a</sup>	100 <sup>a</sup>	100 <sup>a</sup>	100 <sup>a</sup>	NA	100 <sup>a</sup>	100 <sup>a</sup>	89	93	169	
Dominican Republic	92	81	83	81	81	78	NA	95	...	21	27	155	
French Guiana	...	...	...	...	...	...	...	...	...	...	...	...	
Guadeloupe	...	...	...	...	...	...	NA	...	...	...	...	...	
Haiti	61	52	59	53	...	NA	54 <sup>ch</sup>	NA	...	18	0	133	
Martinique	...	...	...	...	...	...	NA	...	...	...	...	...	
Puerto Rico	...	...	...	...	...	...	NA	...	...	...	...	...	
<b>Andean Area</b>	94	90	91	84	84	24	82	92	...	45	39	3,856	
Bolivia	87	82	87	83	83	NA	77	87	NA	22	28	327	
Colombia	93	92	90	92	92	...	81	92	69	32	34	1,119	
Ecuador	100 <sup>a</sup>	99	100 <sup>a</sup>	99	100 <sup>a</sup>	25	100 <sup>a,f</sup>	98	NA	45	47	210	
Peru	100 <sup>a</sup>	98	100 <sup>a</sup>	99	99	38	82	90	NA	56	44	1,833	
Venezuela	90	76	79	50	50	56	77	93	NA	9 <sup>c</sup>	11 <sup>c</sup>	367	
<b>Brazil</b>	100 <sup>a</sup>	100	99	98	96	74	98	99	69	62	60	5,565	
<b>Southern Cone</b>	97	92	94	91	89	28	...	95	...	52	47	1,401	
Argentina	100 <sup>a</sup>	94	97	92	89	...	...	98	86	48 <sup>c</sup>	45 <sup>c</sup>	547	
Chile	100	97	98	98	98	92	NA	96	89	59	55	346	
Paraguay	76	76	76	76	76	59	67	77	70	13	15	233	
Uruguay	99	95	98	95	95	...	NA	95	...	88	93	275	
<b>Non-Latin Caribbean</b>	90	88	89	88	89	45	...	87	...	52	54	175	
Anguilla	100	100	...	100	100	...	NA	100	95	100	...	3	
Antigua & Barbuda	NA	100	100 <sup>a</sup>	100 <sup>a</sup>	100 <sup>a</sup>	100 <sup>a</sup>	NA	100 <sup>a</sup>	83	...	...	27	
Aruba	...	...	...	...	...	...	...	...	...	...	...	...	
Bahamas, The	NA	93	100	93	90	...	NA	90	...	...	...	31	
Barbados	NA	85	85	85	85	...	NA	94	97	...	...	8	
Cayman Islands	80	89	...	89	81	...	NA	86	...	...	...	6	
Dominica	98	95	100 <sup>a</sup>	96	96	...	NA	100	100 <sup>d</sup>	...	...	7	
Grenada	NA	100	100	100	100	86	NA	100	86	71	86	7	
Guyana	96	93	94	93	93	...	97	95	84	69	81	13	
Jamaica	87	83	84	84	86	73	NA	79	80	0	0	13	
Montserrat	100	100	100	100	100	100	NA	100	...	...	...	1	
Netherlands Antilles <sup>d</sup>	...	90	...	90	90	...	NA	100	75	...	...	...	
Saint Kitts & Nevis	95	98	93	99	98	96	NA	99	94	71	82	17	
Saint Lucia	100	96	99	96	96	81	NA	100	...	63	63	9	
Saint Vincent & the Grenadines	100 <sup>a</sup>	100 <sup>a</sup>	100 <sup>a</sup>	100 <sup>a</sup>	100 <sup>a</sup>	100 <sup>a</sup>	NA	100	94	89	89	9	
Suriname	NA	85	95	84	84	69	NA	86	...	20	10	10	
Trinidad & Tobago	NA	91	91	90	90	...	87	91	81	56	44	9	
Turks & Caicos Islands	100 <sup>a</sup>	100 <sup>a</sup>	100 <sup>a</sup>	100 <sup>a</sup>	100 <sup>a</sup>	...	NA	94	...	100	80	5	
Virgin Islands (UK)	89	80	91	81	81	...	NA	77	98	0	0	...	
Virgin Islands (US)	...	...	...	...	...	...	...	...	...	...	...	...	

(a) reported coverage > 100%; (b) < 2 years of age; (c) value 2007; (d) St. Maarten only; (e) no data but in schedule; (f) only at subnational level; (g) target age groups vary by country; (h) coverage report for measles vaccine in children < 1 year of age; (k) value 2004; (l) value 2005; (m) reports number of provinces and territories; (n) reports number of states.

# morbidity data

	23	24	25	26	27	28	29	30	31	32	33	34
	confirmed cases				number of reported cases <sup>d</sup>							
	wild polio	measles	rubella	CRS	neonatal tetanus	tetanus (non-neonatal)			pertussis	diphtheria	Hib meningitis	mumps
	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008
<b>The Americas</b>	0	207	4,348	36	35	466	131	618	25,580	102	272	42,169
<b>North America</b>	0	201	23	0	0	0	1	20	7,983	4	73	1202
Bermuda	0	0	1	0	0	0	0	0	0	0	0	0
Canada	0	62 <sup>a</sup>	5	0	0	0	1	1	1,961	4	43	748
United States of America <sup>b</sup>	0	140 <sup>a</sup>	17	2	0	...	...	19	6,022	0	30 <sup>e</sup>	454
<b>Latin America &amp; the Caribbean</b>	0	5	4,325	34	35	466	130	598	17,597	98	199	40,967
<b>Latin America</b>	0	3	4,325	34	35	463	128	592	17,597	98	199	40,893
<b>Mexico</b>	0	0	46	0	1	19	7	26	99	0	0	7,296
<b>Central American Isthmus</b>	0	0	0	0	2	14	9	24	8,448	0	3	1,267
Belize	0	0	0	0	0	1	0	1	2	0	0	0
Costa Rica	0	0	0	0	0	0	0	1	8,024	0	0	0
El Salvador	0	0	0	0	0	1	0	1	5	0	1	313
Guatemala	0	0	0	0	1	1	1	2	60	0	2	627
Honduras	0	0	0	0	1	6	6	12	224	0	0	219
Nicaragua	0	0	0	0	0	0	2	2	25	0	0	108
Panama	0	0	0	0	0	5	0	5	108	0	0	0
<b>Latin Caribbean</b>	0	0	1	0	18	63	22	85	707	13	11	49
Cuba	0	0	0	0	0	3	0	3	0	0	8	11
Dominican Republic	0	0	0	0	2	53	13	66	11	3	3	0
French Guiana	0	0	1	0	...	...	...	...	...	...	...	...
Guadeloupe	0	...	...	...	...	...	...	...	...	...	...	...
Haiti	0	0	0	0	16	7	9	16	696	10	0	38
Martinique	0	...	...	...	...	...	...	...	...	...	...	...
Puerto Rico	0	...	...	...	...	...	...	...	...	...	...	...
<b>Andean Area</b>	0	2	0	0	7	77	23	100	592	0	40	18,129
Bolivia	0	0	0	0	0	10	3	13	0	0	4	10,566
Colombia	0	0	0	0	3	30	15	45	408	0	36	5,930
Ecuador	0	1 <sup>a</sup>	0	0	2	0	0	0	125	0	0	626
Peru	0	1 <sup>a</sup>	0	0	2	37	5	42	59	0	0	...
Venezuela	0	0	0	0	0	0	0	0	0	0	0	1,007
<b>Brazil</b>	0	0	2,138 <sup>c</sup>	30	6	272	61	333	3,562	85	107	...
<b>Southern Cone</b>	0	1	2,140	4	1	18	6	24	4,189	0	38	14,152
Argentina	0	1 <sup>a</sup>	2,126 <sup>c</sup>	1	0	0	0	0	3,085	0	28	12,198
Chile	0	0	14	3	0	6	2	8	969	0	4	1,243
Paraguay	0	0	0	0	1	10	4	14	7	0	6	70
Uruguay	0	0	0	0	0	2	0	2	128	0	0	641
<b>Non-Latin Caribbean</b>	0	2	0	0	0	3	2	6	0	0	0	74
Anguilla	0	0	0	0	0	0	0	0	0	0	0	0
Antigua & Barbuda	0	0	0	0	0	0	0	0	0	0	0	0
Aruba	0	...	...	...	...	...	...	...	...	...	...	...
Bahamas, The	0	0	0	0	0	0	0	0	0	0	0	0
Barbados	0	0	0	0	0	2	0	2	0	0	0	0
Cayman Islands	0	0	0	0	0	0	0	0	0	0	0	0
Dominica	0	0	0	0	0	0	0	0	0	0	0	0
Grenada	0	0	0	0	0	1	1	2	0	0	0	0
Guyana	0	0	0	0	0	0	0	0	0	0	0	0
Jamaica	0	2 <sup>a</sup>	0	0	0	0	0	1	0	0	0	0
Montserrat	0	0	0	0	0	0	0	0	0	0	0	1
Netherlands Antilles	0	0	0	0	0	0	0	0	0	0	0	0
Saint Kitts & Nevis	0	0	0	0	0	0	0	0	0	0	0	0
Saint Lucia	0	0	0	0	0	0	0	0	0	0	0	73
Saint Vincent & the Grenadines	0	0	0	0	0	0	0	0	0	0	0	0
Suriname	0	0	0	0	0	1	1	1	0	0	0	0
Trinidad & Tobago	0	0	0	0	0	0	0	0	0	0	0	0
Turks & Caicos Islands	0	0	0	0	0	0	0	0	0	0	0	0
Virgin Islands (UK)	0	0	0	0	0	0	0	0	0	0	...	0
Virgin Islands (US)	0	0	...	...	...	...	...	...	...	...	...	...

(a) cases related to importation; (b) Morbidity and Mortality Weekly Report (MMWR), September 11, 2009/Vol 58/No.35; (c) provisional data; (d) data as of 17 September 2009; (e) invasive disease (age <5 years).

# program management and financing

	35	36	37	38	39	40	41	42	43	44
	school-based immunization	last follow-up MR campaigns	number of NCIIP meetings	number of districts with at least 1 supervisory visit	plan for immunization injection safety	national system to monitor ESAVIs	spending on routine immunization financed using gov't funds (%)	spending on vaccine purchases financed using gov't funds (%)	budget line for vaccine purchases	vaccine purchased through RF
	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008
<b>The Americas</b>										
<b>North America</b>										
Bermuda	yes	...	2	...	yes	yes	...	...	...	yes
Canada	...	...	...	...	...	...	...	...	...	no
United States of America	...	...	3	...	...	...	...	...	...	no
<b>Latin America &amp; the Caribbean</b>										
<b>Latin America</b>										
Mexico	yes	2006	14	...	yes	yes	100	100	yes	no
<b>Central American Isthmus</b>										
Belize	no	2005	no NCIIP	4	yes	yes	100	100	yes	yes
Costa Rica	yes	2002	10	...	yes	yes	100	100	no	yes
El Salvador	yes	2008	12	85	yes	yes	75	100	...	yes
Guatemala	no	2008	0	...	no	yes	100	99	yes <sup>b</sup>	yes
Honduras	yes	2008	3	298	yes	yes	100	100	yes	yes
Nicaragua	yes	2008	0	...	yes	yes	74	65	yes	yes
Panama	yes	2008	13	50	no	yes	100	100	yes	yes
<b>Latin Caribbean</b>										
Cuba	yes	2007	3	169	yes	yes	98	99	yes	yes
Dominican Republic	yes	...	no NCIIP	...	...	yes	90	90	...	yes
French Guiana	...	...	...	...	...	...	...	...	...	no
Guadeloupe	...	...	...	...	...	...	...	...	...	no
Haiti	no	...	5	133	...	...	0	0	no	no
Martinique	...	...	...	...	...	...	...	...	...	no
Puerto Rico	...	...	...	...	...	...	...	...	...	no
<b>Andean Area</b>										
Bolivia	no	2007	4	327	yes	yes	85	100	yes	yes
Colombia	no	2006	1	...	yes	yes	100	100	yes	yes
Ecuador	yes	2008	3	...	yes	yes	100	100	yes	yes
Peru	yes	2006	48	1056	yes	yes	100	100	yes	yes
Venezuela	yes	2006	...	...	...	...	...	...	...	
Brazil	no	2004	4	...	yes	yes	100	100	yes	yes
<b>Southern Cone</b>										
Argentina	yes	2005	2	...	yes	yes	...	...	...	yes
Chile	yes	2005	...	...	no	no	100	100	...	no
Paraguay	yes	2003	1	88	no	yes	100	100	yes	yes
Uruguay	no	2003	9	275	yes	yes	100	100	yes	yes
<b>Non-Latin Caribbean</b>										
Anguilla	...	2000	...	3	...	...	100	100	yes	...
Antigua & Barbuda	yes	2000	no NCIIP	...	...	yes	100	100	yes	yes
Aruba	...	...	...	...	...	...	...	...	...	...
Bahamas, The	yes	2001	no NCIIP	20	yes	yes	100	100	yes	yes
Barbados	yes	2000	0	...	no	yes	100	0	...	yes
Cayman Islands	yes	1991	1	...	...	yes	100	100	yes	yes
Dominica	yes	2000	1	...	yes	yes	100	100	yes <sup>c</sup>	yes
Grenada	yes	2000	no NCIIP	36	...	yes	100	100	yes	no
Guyana	yes	2000	no NCIIP	13	...	yes	76	97	yes	yes
Jamaica	no	2004	no NCIIP	13	yes	yes	100	100	yes	yes
Montserrat	yes	2000	...	...	...	...	...	...	yes	yes
Netherlands Antilles	yes	...	1	0	yes	no	89	100	yes	yes
Saint Kitts & Nevis	yes	2000	no NCIIP	17	yes	yes	100	100	yes <sup>c</sup>	yes
Saint Lucia	yes	2000	no NCIIP	9	yes	yes	100	100	yes	no
Saint Vincent & the Grenadines	yes	2000	no NCIIP	9	yes	yes	...	100	yes	yes
Suriname	yes	2005	no NCIIP	10	yes	no	100	100	yes	yes
Trinidad & Tobago	yes	2001	no NCIIP	0	yes	yes	...	100	...	yes
Turks & Caicos Islands	yes	2008	no NCIIP	5	yes	yes	100	100	yes	yes
Virgin Islands (UK)	...	...	no NCIIP	6	yes	yes	100	100	yes	yes
Virgin Islands (US)	...	...	...	...	...	...	...	...	...	no

(a) created in 2007; (b) budget line is for medications and vaccines.

# surveillance indicators

## Acute Flaccid Paralysis (AFP), 2008

Country	Number of AFP cases	AFP rate per 100,000 <15 years old	% of cases investigated <48 hours	% with 1 sample taken within 14 days of onset	Total number of sites (n)	Sites reporting weekly %
Argentina	145	1.42	78	74	24	95
Bolivia	30	0.82	97	87	2,753	76
Brazil	581	1.17	98	72	3,521	94
Canada	27	0.48	...	...	...	...
CAREC	11	0.54	93	50	501	100
Chile	86	2.20	77	76	346	99
Colombia	179	1.41	90	83	5,014	78
Costa Rica	4	0.33	75	50	...	...
Cuba	20	0.92	95	80	25	100
Dominican Republic	28	0.88	50	79	251	75
Ecuador	46	1.07	96	78	1,090	84
El Salvador	64	2.74	98	86	35	86
Guatemala	66	1.45	88	74	...	...
Haiti	4	0.10	100	75	40	84
Honduras	67	2.21	99	97	254	94
Mexico	478	1.51	98	83	17,380	93
Nicaragua	17	0.83	82	71	135	100
Panama	17	1.70	94	94	266	92
Paraguay	21	1.05	76	81	499	89
Peru	94	1.11	89	73	4,694	93
Uruguay	8	0.98	25	75	11	80
USA	...	...	...	...	...	...
Venezuela	56	0.67	100	80	9,501	89
<b>TOTAL/AVERAGE</b>	<b>2,049</b>	<b>1.23</b>	<b>93</b>	<b>78</b>	<b>46,340</b>	<b>90</b>

## Measles/Rubella, 2008

Country	Number of suspect cases	% of cases with adequate investigation	% of cases with adequate samples	% of samples received in lab ≤5 days	% of lab samples results ≤4 days	% of cases discarded by lab	Total number of sites (n)	Sites reporting weekly %
Argentina	3,194	80	100	90	95	100	11	80
Bolivia	459	99	100	81	75	100	2,749	76
Brazil	24,366	71	80	...	...	97	10,726	80
Canada	...	...	...	...	...	...	...	...
CAREC	849	72	98	57	98	98	715	99
Chile	344	15	83	65	83	92	549	99
Colombia	1,745	60	91	80	89	93	4,964	79
Costa Rica	26	54	65	85	30	67	...	49
Cuba	815	100	100	95	100	99	444	100
Dominican Republic	128	65	99	59	57	95	251	74
Ecuador	599	54	99	88	88	99	1,342	75
El Salvador	130	45	99	94	95	100	33	86
French Guiana	...	...	...	...	...	...	...	...
Guadeloupe	...	...	...	...	...	...	...	...
Guatemala	313	83	100	77	88	95	...	...
Haiti	8	88	100	0	0	88	40	84
Honduras	247	94	95	70	89	97	263	94
Martinique	...	...	...	...	...	...	...	...
Mexico	6,552	98	98	87	82	100	14,517	91
Nicaragua	131	85	95	86	85	99	174	100
Panama	111	76	99	75	94	99	265	92
Paraguay	274	72	100	88	100	100	499	89
Peru	1,288	94	98	62	86	94	5,771	93
Puerto Rico	...	...	...	...	...	...	...	...
Uruguay	4	33	75	100	100	100	11	74
USA	...	...	...	...	...	...	...	...
Venezuela	1,439	58	96	77	83	98	6,417	88
<b>TOTAL/AVERAGE</b>	<b>43,002</b>	<b>75</b>	<b>87</b>	<b>82</b>	<b>87</b>	<b>98</b>	<b>49,741</b>	<b>86</b>

Source: Polio Eradication Surveillance System (PESS), Measles Elimination Surveillance System (MESS), and country reports, FCH-IM, PAHO.

## Main Data Sources

**Demographic data:** United Nations Population Division. World Population Prospects: The 2008 Revision. New York; 2009. U.S. Bureau of the Census. International Database for countries/territories with populations under 100,000 inhabitants. Last accessed on 20 July 2009 at <http://www.census.gov/ipc/www/idb/informationGateway.php>.

**Infant mortality rate (1,000 lb) or number of deaths (N):** Reported or estimated by countries. Data are presented when the relative standard error is less than 23%; otherwise, the number of deaths is shown. An increase in infant mortality rate may reflect an improvement in data coverage and quality.

**Socioeconomic indicators:** The World Bank. 2008 World Development Indicators. Washington DC; 2008. For national health expenditure data, visit [www.paho.org/Spanish/DPM/SHD/HPnhexp-metodos.htm](http://www.paho.org/Spanish/DPM/SHD/HPnhexp-metodos.htm).

**Immunization coverage, immunization program management, and financing information:** Annual country reports to Comprehensive Family Immunization (IM)/PAHO via EPI tables PAHO-WHO/UNICEF Joint Reporting Form (JRF); 2009.

**Morbidity:** Annual country reports to IM/PAHO via JRF, vaccine-preventable disease specific surveillance reports for measles/rubella and polio; 2008–2009.

**Surveillance indicators:** Vaccine-preventable disease specific surveillance reports for measles/rubella and acute flaccid paralysis/polio to IM/PAHO; 2008–2009.

## Symbols and Abbreviations

(...) not available; **(pop)** population; **(lb)** live births; **(ppp)** purchase power parity; **(GDP)** gross domestic product; **(int'l)** international; **(BCG)** bacille Calmette-Guérin (anti-tuberculosis vaccine); **(NA)** not applicable; **(Polio3)** third dose of polio vaccine (oral polio vaccine or inactivated polio vaccine); **(DTP1)** first dose of diphtheria-tetanus-pertussis vaccine (as DTP or combination vaccine); **(DTP3-Hib3)** third dose of DTP- *Haemophilus influenzae* type b (Hib) vaccine (as DTP-Hib or other combination vaccine); **(Hep B3)** third dose of hepatitis B vaccine (as monovalent hepatitis B or combination vaccine); **(DTP4)** first booster dose after the primary series consisting of three doses of DTP vaccine (as DTP or combination vaccine); **(MMR)** measles, mumps, rubella vaccine; **(MMR2)** second dose of MMR vaccine (when offered in the routine program); **(CRS)** congenital rubella syndrome; **(NNT)** neonatal tetanus; **(Hib)** *Haemophilus influenzae* type b; **(NCIP)** national committee on immunization practices; **(ESAVI)** event supposedly

attributable to vaccination or immunization; **(gov't)** government; **(RF)** PAHO's Revolving Fund for Vaccine Procurement; **(m)** months; **(y)** years.

## Technical Notes

For detailed information on demographic data and socioeconomic indicators, please visit: <http://www.paho.org/English/dd/ais/coredata.htm>.

**Immunization coverage:** Proportion of children aged <1 year vaccinated with one dose of BCG vaccine, the third dose of polio vaccine (oral polio vaccine or inactivated polio vaccine), the first dose of DTP, the third dose of DTP and Hib, and the third dose of hepatitis B vaccine, respectively. Proportion of children aged 1 year vaccinated with the fourth dose of DTP, one dose of yellow fever vaccine in enzootic countries, and MMR vaccine, respectively. Proportion of children vaccinated with a second dose of MMR vaccine, as targeted in countries routinely offering a second MMR dose. Coverage rates are expressed as a percentage of the corresponding mid-year population, as reported by the country. Reported coverage rates  $\geq 100\%$  are presented as 100% with a footnote. Subregional aggregated data express average values weighted by population aged <1 year, when a figure is available.

**Municipalities reaching coverage  $\geq 95\%$  for DTP3 and MMR:** Proportion of municipalities reporting coverage levels equal to or greater than 95% for DTP3 and MMR1 vaccines, respectively, expressed as a percentage. Municipalities are defined as the third administrative level (country level being first), unless otherwise stated.

**Morbidity:** Number of confirmed cases of wild polio, measles, rubella, and CRS and number of reported cases of NNT, non-NNT, pertussis, diphtheria, Hib meningitis, and mumps. Subregional aggregated data is the sum of the totals. These are not rates; hence, inter-country comparisons may not be appropriate.

### Immunization program management and financing:

- Last follow-up MR campaigns: Year of the last campaign administering measles-rubella vaccine to children irrespective of their vaccination history. These campaigns are intended to reach unvaccinated children and those who did not respond to the first dose.
- NCIP meetings: NCIPs provide recommendations on immunization practices, including advice on vaccines to be included into the national immunization schedule.
- Number of districts with at least one supervisory visit: immunization supervision including all or most aspects of the program to the local level, generally by regional, departmental, state, or national level.

## Selected Information Products of the Comprehensive Family Immunization Project

- **Immunization Newsletter:** A bi-monthly publication that includes information on all aspects of program implementation, from scientific articles on vaccine-preventable diseases and vaccines to practical matters related to the day-to-day running of an immunization program.
- **Rubella Watch:** Supplement to the Immunization Newsletter providing the most up-to-date information on all aspects of the rubella and CRS elimination initiative being implemented in the Americas.
- **Measles/Rubella and Polio Bulletins:** Weekly epidemiological surveillance bulletins.
- **Immunization Field Guides:** Nine practical field guides presenting the most recent techniques, coupled with useful illustrations, to help health workers in their efforts to control, eliminate, or eradicate poliomyelitis, measles, rubella, yellow fever, neonatal tetanus, diphtheria, tetanus, pertussis, *Haemophilus influenzae* type b, hepatitis B, and rotavirus; implement surveillance of bacterial pneumonia and meningitis; and introduce and use new vaccines.
- **Safe Vaccination Training Modules:** Designed to give health workers the information they need to guarantee the use of quality vaccines, safe injections, and the monitoring of ESAVIs and to address public concerns regarding the potential risks of vaccines and adverse events following vaccination.
- **Compendium of Measles Articles, Compendium of Rubella and Congenital Rubella Syndrome (CRS) Articles, and Images that Inspire: The Mobilization of the Americas to Eliminate Measles and Rubella** aim to document the Regional experience and share with PAHO Member States and other regions of the world the lessons learned and best practices developed through the elimination initiatives.





- Plan for immunization injection safety: existence of a plan to ensure injection safety, including training, supervision, proper use of safety boxes. This plan may be part of the annual immunization plan of action.
- National system to monitor ESAVIs: System in place for the reporting and follow-up of ESAVIs.
- Spending on routine immunization financed using government funds: Percentage of all of recurrent immunization-specific spending financed using government funds (for all recurrent inputs, including vaccines, injection supplies, salaries and per-diems of health staff working full-time on immunization, transport, vehicles and cold chain maintenance, training, social mobilization, monitoring, and surveillance). This excludes any external financing from donors, but may include loans.
- Spending on vaccine purchases financed using government funds: Percentage of all vaccine spending financed using government funds. This excludes any external financing from donors, but may include loans.

- Budget line for vaccine purchase: Specific line in the national budget for the purchase of vaccines.
- Vaccine purchased through the RF: Countries that, in 2008, purchased some or all their vaccines using PAHO's Revolving Fund as intermediary agent.

**Surveillance indicators:** For measles/rubella definitions refer to PAHO. Measles Elimination: Field Guide. (Scientific and Technical Publication No. 605). Washington DC: PAHO, 2005. For acute flaccid paralysis definitions refer to PAHO. Poliomyelitis Eradication: Field Guide. (Scientific and Technical Publication No. 607). Washington DC: PAHO, 2005. Available at:

[http://www.paho.org/english/ad/fch/im/FieldGuide\\_Index.htm](http://www.paho.org/english/ad/fch/im/FieldGuide_Index.htm).

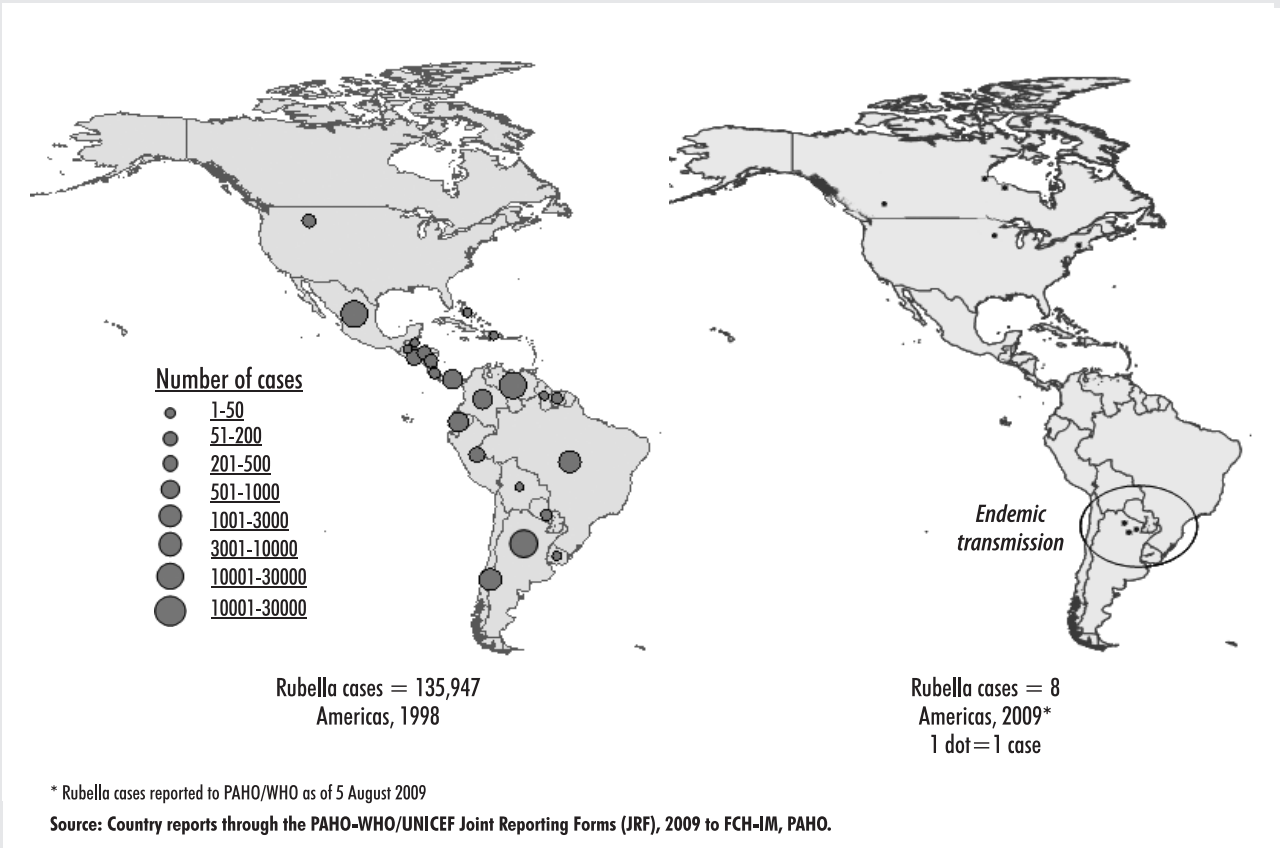
*This brochure is published in collaboration with Health Information and Analysis, Pan American Health Organization.*

## Seasonal Influenza Vaccine Use in the Americas, 2008

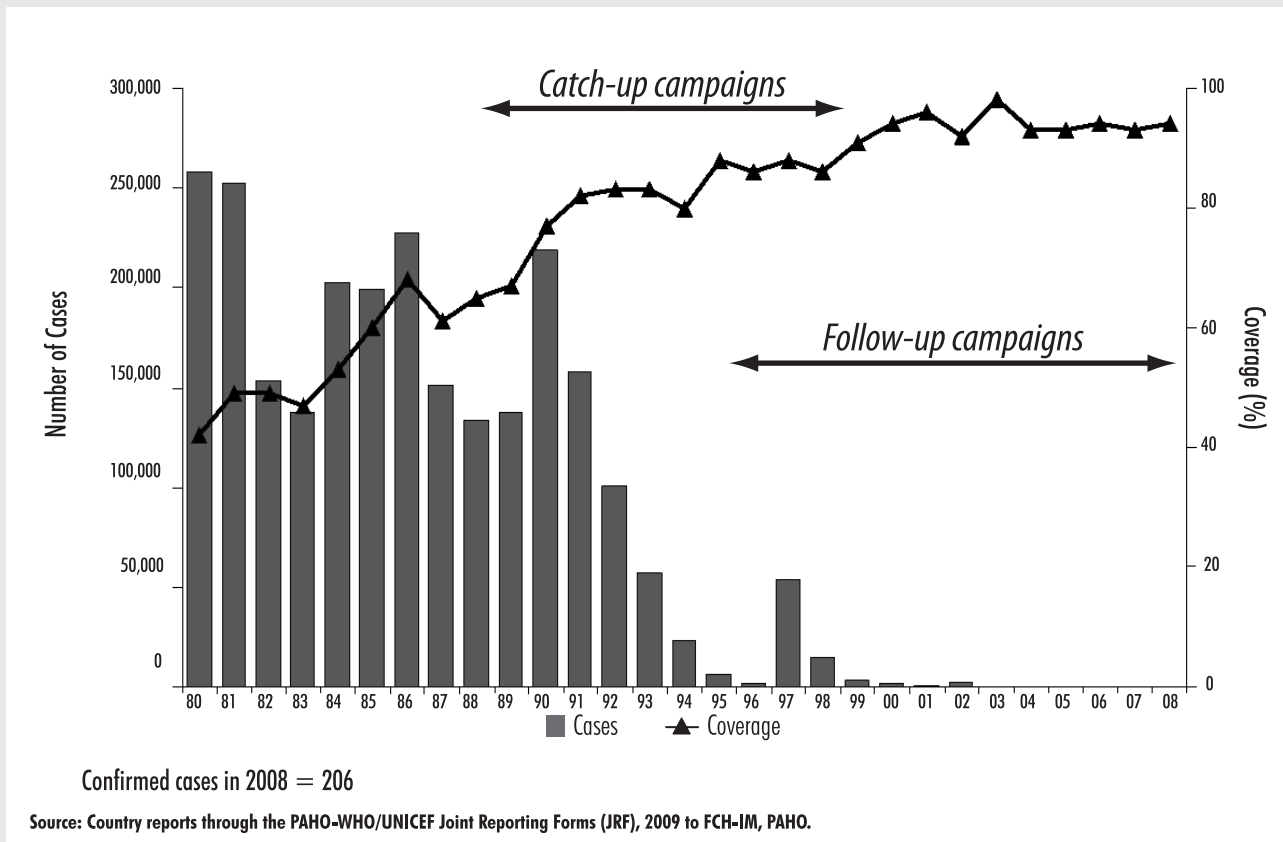
Country	Children	Older Adults	Other Risk Groups			
			Chronic Diseases	Pregnant Women	Poultry Workers	Other
Anguilla		✓ with chronic disease				
Antigua and Barbuda	6-35m	≥60y				
Argentina	6-23m with chronic disease	≥65y	✓	✓	✓	✓ <sup>A</sup>
Aruba						
Bahamas	6m-5y	≥65y	✓	✓		
Barbados		✓ <sup>B</sup>				✓ <sup>C</sup>
Belize	6m-23m	≥65y	✓			
Bermuda	6m-18y	≥60y	✓	✓		✓ <sup>D</sup>
Bolivia						
Brazil		≥60y	✓			✓ <sup>E</sup>
British Virgin Islands	>3y	≥65y	✓			✓ <sup>F</sup>
Canada	6-23m	≥65y	✓	✓	✓	✓ <sup>G</sup>
Cayman Islands	6-23m	≥50y	✓	✓		✓ <sup>H</sup>
Chile	6-23m	≥60y	✓	✓	✓	✓ <sup>I</sup>
Colombia	6-23m	≥65y	✓			
Costa Rica	6m-8y with chronic disease	≥65y	✓			
Cuba	<24y with chronic disease	≥65y	✓		✓	
Dominica						
Dominican Republic	6-23m	≥50y	✓		✓	✓ <sup>J</sup>
Ecuador	6-23m	≥65y				
El Salvador	6-23m	≥60y	✓			
Grenada	6m-5y	≥60y			✓	
Guatemala		≥60y <sup>K</sup>				
Guyana						
Haiti						
Honduras	>6m with chronic disease	≥60y <sup>L</sup>	✓		✓	
Jamaica	6m-5y with chronic disease	≥60y with chronic disease	✓			
Mexico	6-35m, 3-9y with chronic disease	≥60y	✓			
Montserrat	<9y		✓			✓ <sup>M</sup>
Netherlands Antilles (Bonaire)	✓ with chronic disease	≥65y				
Nicaragua	6-23m with chronic disease	≥65y with chronic disease				
Panama	6-23m	≥60y	✓		✓	
Paraguay	6-23m	≥60y	✓		✓	
Peru			✓			
St. Kitts						
St. Lucia		≥65y	✓			
St. Vincent						
Suriname						
Trinidad and Tobago	6-23m	≥60y	✓		✓	✓ <sup>N</sup>
Turks and Caicos	6m-5y	≥60y	✓			
USA	6m-18y	≥50y	✓	✓		✓ <sup>O</sup>
Uruguay	6-23m, >23m with chronic disease	≥65y	✓		✓	
Venezuela	6-23m	≥60y	✓			

A. Essential services, security forces and educators; B. The elderly in institutions; C. Military and front line staff; D. Others include children on aspirin therapy, essential workers, travelers, close contacts or caregivers of individuals with chronic disease and individuals living in crowded conditions; E. Indigenous population including population >6m and incarcerated populations; F. Residents of nursing homes; G. Residents of nursing homes, those in contact with populations at high risk for influenza complications, those who provide essential community services, anyone else aged 2-64y should be encouraged to get vaccinated; H. Police and fire, children >6m who are at high risk for complications, individuals caring for babies <6m; I. Egg producers; J. Public safety workers; K. In institutions; L. ≥60y in 2008, ≥65y in 2006 and 2007; M. High risk workers; N. National security; O. People in contact with those at high risk and all persons who want to reduce the risk of becoming ill with influenza or of transmitting it to others.

## Impact of Rubella Elimination Strategies The Americas, 1998–2009\*

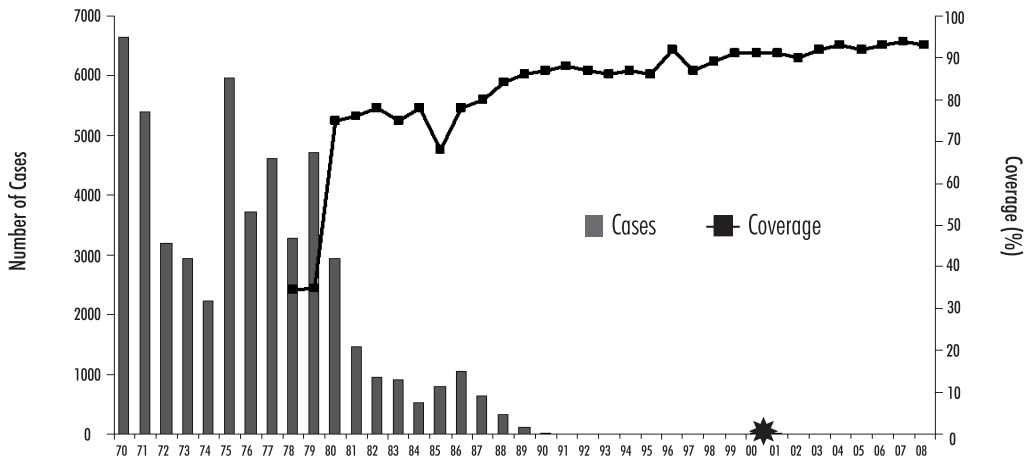


## Measles Elimination



# Umbrella of Protection in the Americas

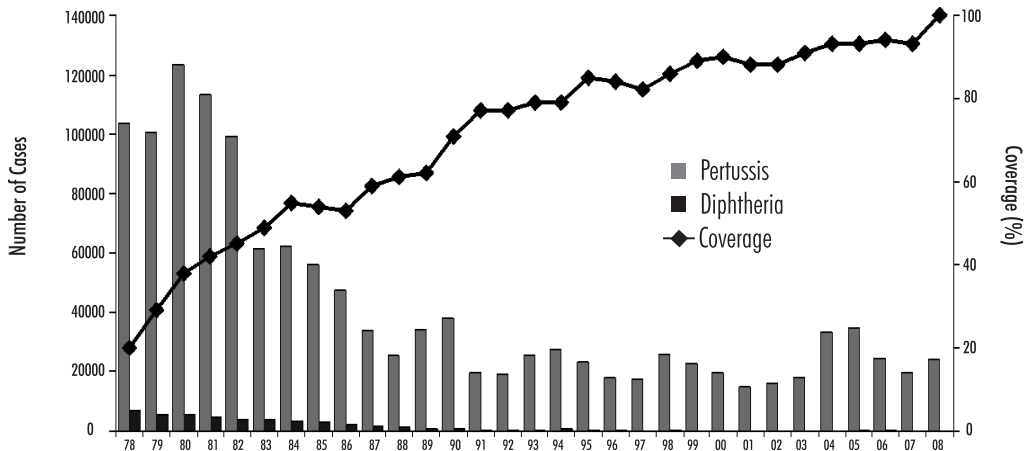
## Poliomyelitis Eradication



\* Type 1 vaccine-derived virus in La Hispaniola in 2000 and 2001: 21 cases.

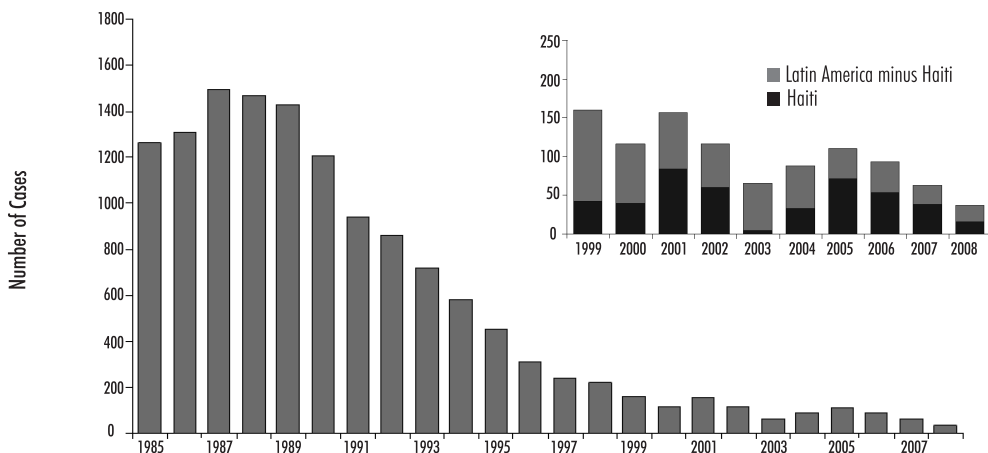
Source: Country reports through the PAHO-WHO/UNICEF Joint Reporting Forms (JRF), 2009 to FCH-IM, PAHO.

## Diphtheria and Pertussis



Source: Country reports through the PAHO-WHO/UNICEF Joint Reporting Forms (JRF), 2009 to FCH-IM, PAHO.

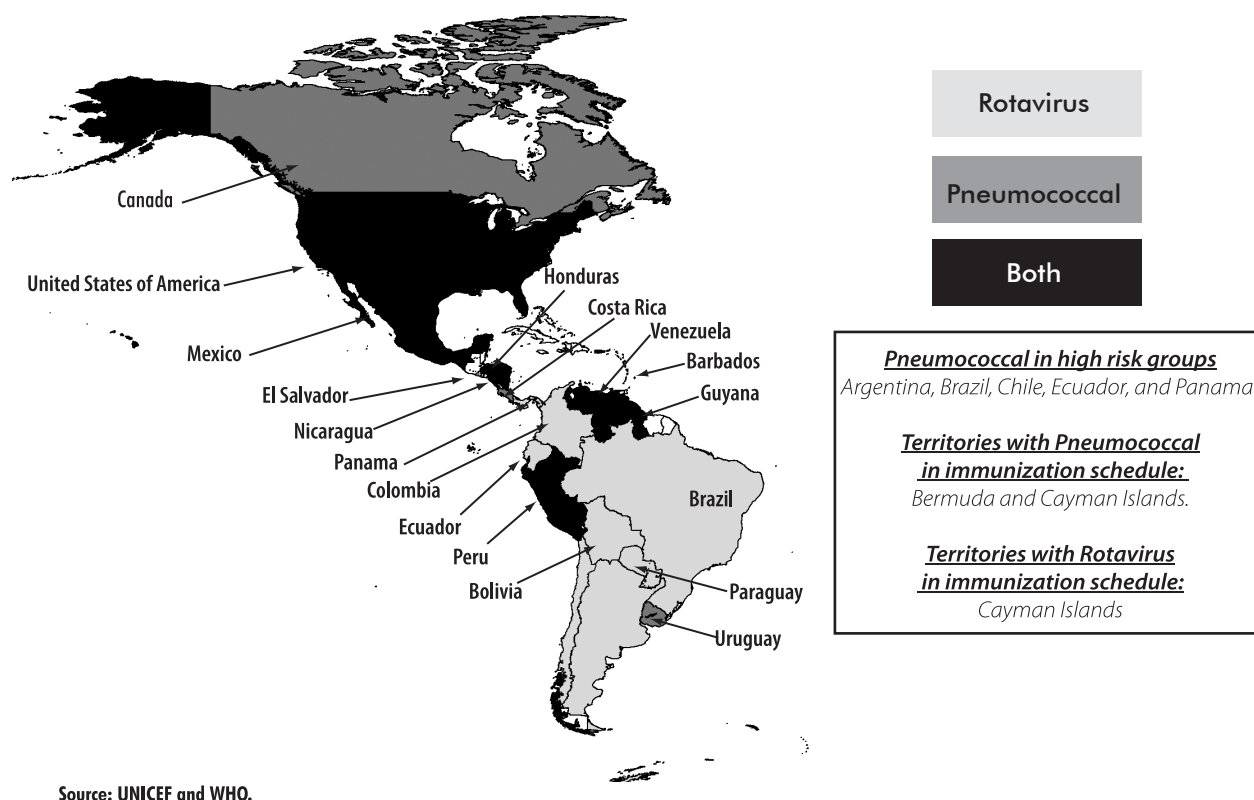
## Neonatal Tetanus Elimination



Source: Country reports

Countries with cases in the last 3 years: Argentina, Bolivia, Brazil, Colombia, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru and Venezuela.

## Rotavirus and Pneumococcal Vaccine in Immunization Schedule, The Americas, 2009



## Data and Indicators of Rotavirus Sentinel Hospital-based Surveillance in Reporting Countries, The Americas, 2008

Data and Indicators	Number of hospitalizations in children aged <5 years		Number of hospitalizations due to diarrhea in children aged <5 years		Number of children aged <5 years that meet the case definition		Number of children with complete form and stool sample collected		Number of cases with result positive for rotavirus	
	n		n	%	n	%	n	%	n	%
Bolivia	11,807		2,213	19	1,830	83	1,501	82	720	48
Chile	20,702		1,831	9	1,082	59	1,082	100	297	27
Ecuador <sup>(a)</sup>	17,809		3,908	22	460	12	427	93	138	32
El Salvador	28,185		4,159	15	1,935	47	1,853	96	201	11
Guatemala <sup>(b)</sup>	17,046		2,945	17	1,381	47	1,190	86	389	33
Honduras	45,251		4,255	9	4,090	96	1,907	47	689	36
Nicaragua	14,946		2,788	19	1,637	59	1,638	100	272	17
Panama	10,584		1,185	11	1,185	100	567	48	46	8
Paraguay	5,479		434	8	288	66	263	91	42	16

(a) Months reported from June to October.

(b) Months reported from January to November.

Source: Country Reports to Rotavirus Database, FCH-IM, PAHO.