IMMUNIZE AND PROTECT YOUR FAMILY

Immunization Newsletter

Pan American Health Organization

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XVIII Meeting on Vaccine-preventable Diseases of the Central American Region, Mexico, and the Latin Caribbean

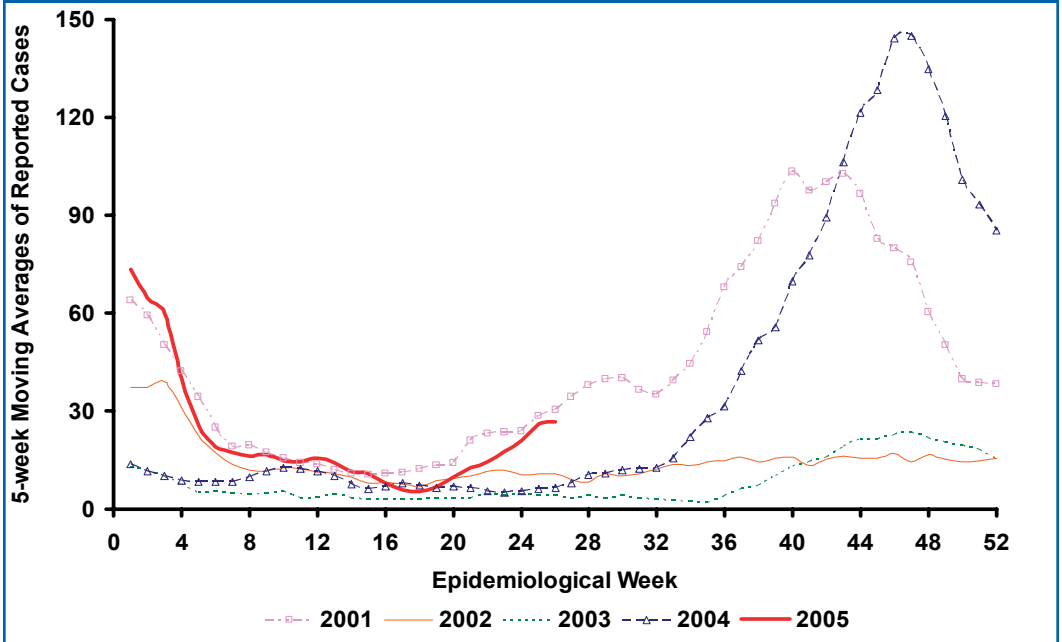
The XVIII Meeting on Vaccine-preventable Diseases of the Central American Region, Mexico and the Latin Caribbean was held in Antigua Guatemala, Guatemala, on 6-7 June 2005. The meeting's main objectives were as follows:

- To review the current situation of each country and progress toward eliminating measles, rubella, and congenital rubella syndrome (CRS);
- To discuss the surveillance of acute flaccid paralysis (AFP), pertussis, diphtheria, and neonatal tetanus (NNT); and
- To analyze the status and prospects for introducing the influenza vaccine and new vaccines.

Measles, Rubella, and CRS

In 2003 and 2004, approximately 100 measles cases were reported each year in the Americas, most of them directly or indirectly linked to importations. Mexico's recent experience with measles virus transmission should serve as an incentive to all the countries in the Sub-region to improve vaccination coverage and surveillance as the best way of protecting against imported infections. High level measles vaccine coverage, reliable detection, and aggressive follow-up of suspected cases will limit the

Figure 1. Rubella Cases in Select Countries without Adult Rubella Immunization Campaigns, South America, 2001-2005*



* Includes cases entered in the Measles Elimination Surveillance System (MESS) up to week 31 2004; select countries are Argentina, Bolivia, Colombia, Peru, and Venezuela

Source: *Country reports*

Diarrheal Illness in Central America January to March 2005

Between January and March 2005, reports of epidemics of diarrhea associated with deaths among children in several Central American countries prompted assessment of the trends of this disease in the Sub-region and drew media attention. The numbers of weekly consultations for diarrhea among children aged <5 years in five Central American countries (Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua) were reviewed. The etiologic agent was determined by testing of fecal samples collected from sick children. Finally, the pathogen was characterized in the regional reference laboratory at the Centers for Disease Control and Prevention (CDC-USA).

During the first quarter of 2005, increases in the weekly number of consultations for diarrhea among children were noted in several Central American countries (Figure 1, page 6). Most affected were El Salvador in February and Nicaragua in March, where the epidemic peaks were accompanied by increases in hospitalizations and deaths. Both countries declared health emergencies and conducted outbreak investigations. A total of 63,275 cases, 8,360 hospital admissions and 22 deaths among

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consequences of measles virus importations.

The incidence of rubella has decreased by 98%, dropping from 135,000 reported cases in 1998 to 3,103 cases in 2004. All countries are strengthening the integration of measles and rubella surveillance. Improvements must be made in the adequate investigation of suspected cases. Three quarters (9/12) of the countries in the Sub-region are reporting suspected CRS cases every week. CRS surveillance remains needs to be urgently strengthened.

Surveillance of AFP, Pertussis, Diphtheria, and NNT

Countries continue to be free of indigenous wild poliovirus circulation and continue to monitor AFP. All participating countries, except for Costa Rica, Cuba, the Dominican Republic, and Haiti, are meeting the requirement of reporting at least one AFP case per every 100,000 children aged <15 years (Weeks 22/2004 to 21/2005). All of them, except for the Dominican Republic, Guatemala, Haiti, and Mexico, are meeting the requirement of collecting at least one adequate stool sample from each AFP case (Weeks 22/2004 to 21/2005). Fulfillment of these requirements is especially important as experience has shown that countries with pockets of low OPV coverage are at risk of outbreaks caused by the vaccine-derived polioviruses (VDPV). Globally the risk of importations of the wild virus has also been increasing, spreading from endemic areas to countries that were previously polio-free.

The number of pertussis cases reported in Latin America in recent years has been on the decline, dropping from 9,421 cases in 1999 to 3,883 in 2004. During these years DPT3 coverage in children aged <1 year was between 85% and 95%.

Dominican Republic and Haiti account for nearly 50% of the diphtheria cases reported in the last five years. Cases appear in densely populated, low-income areas, and in people who have not been properly immunized. Better epidemiological investigation of the cases is needed.

NNT has been eliminated as a public health problem in the Americas. Incidence higher than 1 case per 1,000 live births has only been reported in less than 1% of all the municipalities in the Hemisphere.

Influenza vaccine and new vaccines

WHO has developed technical guidelines for the organization of national plans in preparation for an impending influenza pandemic. Plans to combat a flu pandemic have been initiated but need urgent follow-up. Systematic immunization of at-risk groups against seasonal influenza is ongoing in the Region.

Surveillance and assessment of disease burden are critical when considering the introduction of new vaccines. Aspects of vaccine introduction are perception of risk, political will, cost-effectiveness, logistical issues, post-marketing surveillance, accurate demand forecasting, and partnerships. Countries should also determine what financial mechanisms will be necessary to ensure sustainability of vaccine introduction ■

Rubella and Congenital Rubella Syndrome Elimination Strategy: Contributing to Primary Health Care Renewal

Background

Following the success of the global smallpox eradication, the World Health Assembly resolved to introduce the Expanded Program on Immunization (EPI) in May 1974. Since the creation of the EPI, immunization coverage rates have steadily increased. New vaccines have been added in response to the availability of appropriate technology and the priorities dictated by the health situation.

The development of the EPI in turn spearheaded several initiatives and achievements in the Americas. These include:

- Poliomyelitis eradication, with 6,653 cases reported in 1970 and no wild polio cases reported since August 1991;
- The elimination of indigenous measles transmission, with approximately 250,000 cases reported in 1990 and the last confirmed indigenous case, due to the D9 genotype, reported in November 2002; and
- The elimination of neonatal tetanus (NNT) as a public health problem (defined as less than 1 case per 1,000 live births), a reachable goal since Haiti is currently the only country in the Region where NNT remains endemic.

Today, the Region faces a new challenge: the elimination of rubella and congenital rubella syndrome (CRS) by the year 2010 (1).

EPI and Primary Health Care

In the last thirty years, notable political, economic, and social changes have contributed to health sector reform. The objectives of health sector reform have been to redirect health care financing, to decentralize decision-making for project planning and implementation, and, more recently, to seek improved quality of care and increased equity in health. At the same time, the main objectives of the EPI have been to protect, sustain, and enhance the program's achievements. While initiatives for the eradication and elimination of vaccine-preventable diseases have made significant and rapid progress, concerns remain that a focused initiative might interfere with the general development of primary health care, the strengthening of health services, and the health sector reform process. Sustainability has also been a concern, as doubts have been raised that achievements can not be sustained after eradication or elimination to prevent the reintroduction and reestablishment of endemic transmission of a disease. However, the results achieved by national programs have provided the ministries of health and their partners with extraordinary confidence. They have assigned adequate resources to sustain immunization programs and implement new initiatives.

The Declaration of Alma-Ata in 1978, following the International Conference on Primary Health Care, called for *Health for All* and outlined the components of primary health care (PHC). The Declaration emphasized that it was not necessary to achieve all components simultaneously. Rather, a limited number of priorities should be set and articulated to serve as access points for other activities.

The results achieved by the EPI over the years through its initiatives for disease eradication and elimination are examples of effective collaboration between governments, non-governmental organizations, the private sector, and the community. Lessons learned from social mobilization have contributed to the strengthening of intersectorial and interagency cooperation, and have led to the involvement of multiple actors from the civil society.

Implementation of diverse immunization methods or strategies to reach coverage goals have brought health services closer to the community. The experiences gained from the immunization strategies are inputs for other health interventions and contribute to the development of the fundamental pillars of PHC: expanding health services coverage to reach individuals in their homes and communities, community participation, and intersectorial cooperation (2).

Rubella and CRS in the Americas

Rubella is a self-limited febrile rash illness with few complications. However, if a woman contracts the infection in the early stages of her pregnancy, the rubella virus has devastating consequences and may cause a syndrome known as CRS. The high probability of fetal infection (90% if the infection occurs before the 11th week of gestation) and the severity of its manifestations, among them miscarriage, stillbirth, mental retardation, and serious birth defects such as deafness, blindness, and congenital cardiopathy, highlight the importance of implementing effective strategies for prevention of this disease.

It has been estimated that, before vaccine introduction into national immunization schedules, more than 20,000 children were born with CRS each year in the Region. Rubella vaccination is 95% effective, and a single dose grants immunity for life. A study performed in the Caribbean determined that the cost of eliminating CRS is 7% of the total cost of health and rehabilitative services children with CRS would require without an elimination program (3). Accordingly, in 2003 PAHO's Directing Council adopted Resolution CD44/11 setting the goal of rubella and CRS elimination by the year 2010 (4).

The rubella elimination strategy relies on immunizing susceptible population, (through the routine immunization system and through mass campaigns) and conducting effective surveillance (5). To date, 74% of countries in the Americas have large cohorts of adults protected against rubella, with coverage >95%. Since 1998, close to 50 million rubella vaccine doses have been administered during campaigns, in addition to the routine program. In 2005, three countries (Colombia, Peru, and Venezuela) have launched immunization campaigns. Nicaragua will follow in October 2005. The remaining countries -Argentina, Bolivia, the Dominican Republic, Guatemala, Haiti, and Mexico- have programmed campaigns in 2006. Following vaccine introduction and immunization campaigns, rubella incidence in the Region has decreased from 135,000 cases reported in 1998 to 3,103 reported in 2004, and 1,169 cases reported as of week 32 of 2005. Eighty-three percent of the cases reported in 2005 are concentrated in three countries: Canada, Peru, and Venezuela. Countries that have not yet conducted campaigns still have epidemic patterns of disease (Figure 1, page 1).

Rubella Elimination Strategy

Basic Components of the Rubella Elimination Strategy:

- Achieving high coverage in the routine immunization program;
- Implementing a mass vaccination campaign against rubella, targeting men and women in all countries with endemic transmission;
- Integrating measles and rubella surveillance;
- Implementing CRS surveillance; and
- Strengthening the laboratory diagnostic of rubella and CRS, as well as viral isolation.

Rubella elimination requires that coverage rates >95% be reached. This prevents widespread transmission of imported viruses. Pockets of susceptibles can contribute to reestablishment of endemic transmission, which ultimately could have far-reaching consequences on health services.

Rubella elimination also requires the vaccination of adult populations. Given the complexity of the *catchment* strategies for these populations, several new vaccination approaches must be implemented to reach high coverage. Consequently, innovative communication strategies must be designed and implemented. Attention must be paid to special technical situations such as monitoring post-vaccine events during campaigns and planning for safe injections and disposal of waste. More importantly, supervision of health workers at different levels of the health care system must be strengthened. All these activities have the potential to also promote primary health care services.

To successfully implement a mass vaccination campaign against rubella, the following are essential activities: information-based decision-making, political commitment, participation of medical societies and professional associations during the campaign, intersectorial cooperation, involvement and commitment of health workers, capacity-building, enhancement of human resource performance, high community participation, innovative social mobilization strategies, and powerful and properly tailored communication messages.

Lessons learned from the social mobilization and participation can contribute to the promotion of health care and safe maternity practices. The rubella elimination initiative is an opportunity to put adults in contact with health care services on a more frequent basis. In particular, it promotes a culture of prevention in adult males who, in some communities, make decisions that often have an impact on women seeking care for themselves or their newborns. The promotion of

Lessons learned from the rubella elimination strategy have been described in previous issues of the Immunization Newsletter:

- Vol.XXVII, Number 1: Rubella Elimination in the Americas: The Beginning of the End (February 2005)
- Vol.XXVI, Number 5: Vaccination of Adults to Sustain the Interruption of Measles Transmission and to Eliminate Rubella and Congenital Rubella Syndrome in Ecuador (October 2004)
- Vol.XXVI, Number 2: Towards Elimination of Rubella and Congenital Rubella Syndrome (April 2004)
- Vol.XXVI, Number 1: Perspectives on Measles and Rubella Elimination Initiatives in the Region of the Americas (February 2004)
- Vol.XXV, Number 5: Sustaining Immunization Programs – Elimination of Rubella and Congenital Rubella Syndrome (October 2003)
- Vol.XXV, Number 2: The Use of Rapid Coverage Monitoring: The Vaccination Campaign against Measles and Rubella in Ecuador (April 2003)
- Vol.XXIV, Number 5: Accelerated Rubella Control and Prevention of CRS: Evolving Strategies (October 2002)
- Vol.XXIV, Number 4: Lessons Learned: First Two Years of Regional Rubella Surveillance (August 2002)
- Vol.XXIV, Number 2: Brazil Accelerates Control of Rubella and Prevention of Congenital Rubella Syndrome (April 2002)
- Vol.XXIV, Number 1: Cross-learning: Sharing Experience of a Rubella Campaign (February 2002)

See **RUBELLA** page 8

2005 Immunization Schedules for Selected Vaccines - The Caribbean, Canada, and The United States

	1 BCG	2 Polio								3 DPT or *DTaP*						4 DT		5 DPT-Hep B+Hib			6 DPT+Hib or *DTaP+Hib*				7 Hep B			8 Hib				9 MMR		10 TT/dT				11 Yellow Fever†		12 Influenza	13 Varicella	14 Pneumococcal			
	Number of Doses																																												
	1	1	2	3	4	5	6	7	8	1	2	3	4	5	6	1	2	1	2	3	1	2	3	4	1	2	3	1	2	3	4	1	2	1	2	3	4	1	2	1	1	1	2	3	4
ANG	NB-11m	3m	5m	7m	18m	4-5y	15y						18m	4-5y				3m	5m	7m													15m	4-5y							>65y;risk groups					
ANT	n/a	2m	4m	6m	5y											5y		2m	4m	6m					≥15y if not previously vaccinated							1y	5y	15y											
ARU	n/a	2m§	3.5m§	5m§	11-12m§	5y§	10y§			2m§	3.5m§	5m§	11-12m§			5y§	10y§								2m	3.5m	9.5-10m	2m§	3.5m§	5m§	11-12m§	13-15m	10y							>65y;risk groups					
BAH	n/a	2m	4m	6m	4-5y											4-5y		2m	4m	6m				15m								1y	4-5y	10-12y	every 10y; pregnant women					6m-5y; >65y; risk groups					
BAR	5-6y	3m	4.5m	6m	18m	4.5y	10-11y						18m			4-5y		3m	4.5m	6m												1y	3-5y	10-11y											
BLZ*	NB	2m	4m	6m	4y								4y					2m	4m	6m												1y	2y	7y+	pregnant women										
BER*		2m§	4m§	6m§	18m§	4-6y§				2m§	4m§	6m§	18m§	***4-6y§***											7m	8m	12m	2m§	4m§	6m§	18m§	15m	4-6y	15y					>65y; risk groups	12-24m	2m	4m	6m	15-18m
BON	n/a	2m	3.5m	5m	11m	4y	10y									4y					2m	3.5m	5m	11m								14m	10y	10y						risk groups					
BVI	NB-1m	2m	4m	6m	18m	3.5-5y	15+y						18m	3.5-5y				2m	4m	6m												1y	3.5-5y	15y						risk-groups					
CAY	6w	2m§	4m§	6m§	4-5y§					2m§	4m§	6m§	***4-5y§***										***15m***		NB	6w	9m	2m§	4m§	6m§		15m	4-5y	14-15y						6m-5y; >50y; risk groups	12m				
CUR	n/a	2m	3.5m	5m	11m	4y	10y									4y					2m	3.5m	5m	11m								14m	10y	10y						risk-groups					
DOM*	3m	3m	4m	6m	3y	12y				3m	4m	6m				3y									3 doses to at risk groups*							1y	18m	11-12y											
FGU	1m	2m§	3m§	4m§	16-18m§	6y§	11-13y§	16-18y	every 10y	2m§	3m§	4m§	16-18m§	***6y***	***11-13y***										2m	3m	8-15m	2m§	3m§	4m§	16-18m§	1y	3-6y	every 10y				1y	11y & every 10y						
GRE	n/a	6-8w	16-20w	24-28w	18m	4-5y							18m			4-5y		6-8w	16-20w	24-28w												1y	18m												
GUA*	1m*	2m§	3m§	4m§	16-18m§	6y§	11-13y§	16-18y	every 10y	2m§	3m§	4m§	16-18m§	***6y***	***11-13y***										2m	3m	8-15m	2m§	3m§	4m§	16-18m§	1y	3-6y	every 10y												
GUY	NB-2m	2m	4m	6m	18m	45m	15y						18m	45m				2m	4m	6m												1y	45m	15y+; pregnant women				1y							
JAM	NB-6w	6w	3m	5-6m	18m	4-6y							18m	4-6y				6w	3m	5-6m												1y	4-6y	pregnant women											
MAR*	1m*	2m§	3m§	4m§	16-18m§	6y§	11-13y§	16-18y	every 10y	2m§	3m§	4m§	16-18m§	***6y***	***11-13y***										2m	3m	8-15m	2m§	3m§	4m§	16-18m§	1y	3-6y	every 10y												
MON	2m	2m	4m	6m	18m	4.5-5y	14.5-15y						18m			4.5-5y		2m	4m	6m												15m	4.5-5y	14-15y											
SAB	n/a	3m§	4.5m§	6m§	12m§	4y§	9y§			3m§	4.5m§	6m§	12m§			4y§	9y§											3m§	4.5m§	6m§	12m§	14m	9-12y							risk-groups					
SEU	n/a	2m§	3m§	4m§	11m§	4y§	9-10y§			2m§	3m§	4m§	11m§			4y§	9-10y§											2m§	3m§	4m§	11m§	14m	9-10y							risk-groups					
SCN	NB-4w	2m	4m	6m	18m	4-5y	11y & 16y						18m	4.5-5y				2m	4m	6m												1y	4-5y	11y	16+	every 5y									
SMA	NB	2m§	3m§	4m§	11m§	4y§	9y§			2m§	3m§	4m§	11m§			4y§	9y§								2m	3m	11m	2m§	3m§	4m§	11m§	14m	9y							risk-groups					
STL*	6w	3m	5m	7m	19m	4-5y	11y						19m			4-5y		3m	5m	7m												1y	2y*	11y											
STV	NB	2m	4m	6m	18-24m	4-5y							18-24m			4-5y		2m	4m	6m												1y	4-5y	10-15y											
SUR*	n/a	2m	4m	6m	18m	4-6m							18m	4-6y				2m	4m	6m					NB							1y	4-5y	12y	pregnant women			1y*							
TRT	n/a	3m	4-5m	6m	1-2y	4-6y							1-2y	4-6y				3m	4-5m	6m												1y	4-6y	9-12y				1y	9-12y						
TUR	NB-12m	6w	12w	18w	18m	4-5y	10y						18m			4.5y		6w	12w	18w												1y	4-5y	10y	pregnant women										
CAN*	n/a	2m§	4m§	6m§	18m§	4-6y§				***2m§***	***4m§***	***6m§***	***18m§***	***4-6y§***											3 doses: infancy or pre-adolescence (9-13y)			2m	4m	6m	18m	1y	18m or 4-6y	14-16y						6-23m; ≥65y; risk groups	12-18m	2m	4m	6m	12-15m
USA*	n/a	2m	4m	6-18m	4-6y					***2m***	***4m***	***6m***	***15-18m***	***4-6y***											NB-2m	1-4m	6-18m	2m	4m	6m	12-15m	12-15m	4-6y	11-12y	13-18y						6-23m; ≥50y; risk groups	12-18m	2m	4m	6m	12-15m

NB: Newborn
n/a: non applicable
§: Used as a combination vaccine
†: Yellow fever vaccine administered to travellers to endemic countries is not included

* BLZ: dT at 7 years if necessary
* BER: BCG given upon request
* DOM: Hep B administered to health workers, infants of HIV+ mothers, and infants of Hep B+ mothers
* GUA: BCG given to communities at risk for TB
* MAR: BCG given to communities at risk for TB
* STL: Administers measles at 2 years; additional MR dose at 11-12 years
* SUR: Yellow fever vaccine used at subnational level; expected to be implemented at national level in 2005-2006
* CAN: For detailed schedule: http://www.phac-aspc.gc.ca/naci-ccni/is-si/recimmsche-icy_e.html
* USA: For detailed schedule: http://www.cdc.gov/nip/recs/child-schedule.pdf

Country Codes and Corresponding Names			
ANG	Anguilla	GUA	Guadeloupe
ANT	Antigua & Barbuda	GUY	Guyana
ARU	Aruba	JAM	Jamaica
BAH	Bahamas	MAR	Martinique
BAR	Barbados	MON	Montserrat
BLZ	Belize	SAB	Saba
BER	Bermuda	SEU	St. Eustatius
BON	Bonaire	SCN	St. Kitts & Nevis
BVI	British Virgin Islands	SMA	St. Maartens
CAY	Cayman Islands	STL	St. Lucia
CUR	Curaçao	STV	St. Vincent & the Grenadines
DOM	Dominica	SUR	Suriname
FGU	French Guiana	TRT	Trinidad & Tobago
GRE	Grenada	TUR	Turks & Caicos

Please advise the editors of the Immunization Newsletter of any discrepancies and/or changes in your national immunization schedule.

Immunization schedules for Latin American countries were published in the April issue.

Diarrheal From page 1

children aged <5 years were reported in El Salvador between 2 January and 26 February (weeks 1 to 10) 2005, while 44,170 cases and 53 deaths among children aged <5 years were reported in Nicaragua between 2 January and 25 March (weeks 1 to 12) 2005. Although the numbers of consultations for diarrhea reported weekly during this quarter were less than those reported during the same time period the previous year, the Ministry of Health of Guatemala reported 44,033 cases and 98 deaths occurring among children aged <5 years between 2 January and 25 March (weeks 1 to 12) 2005. In Honduras, 68,773 cases and 23 deaths were reported between January and May. Least affected was Costa Rica.

Rotavirus was suspected as the etiologic agent responsible for the increases in cases. In El Salvador, where a rotavirus surveillance system is in place, over 50% of fecal samples from children with acute diarrhea during January (weeks 1 to 4) 2005 tested positive for rotavirus by an enzyme immunoassay (EIA). In Nicaragua, a rotavirus researcher reported rotavirus detection in 80% of samples from children with gastroenteritis collected between 6 February and 12 March (weeks 6 to 10) 2005. In Guatemala, also conducting rotavirus surveillance, 85% of 518 fecal samples collected between 2 January and 5 March (weeks 1 to 9) 2005 were rotavirus positive by an EIA.

A number of rotavirus positive samples from each country were submitted to the CDC for characterization (Table 1). The predominant strain determined by genotyping in the Sub-region was a P[8] non-G1/G2/G3/G4 accounting for 54% of the 80 samples processed. However, in Nicaragua, the predominant strain was G4P[8], while in Costa Rica, G1P[8] strains were most frequently identified.

The large outbreaks of diarrhea described in several countries of Central America during the first quarter of 2005 were due to rotavirus. These outbreaks were particularly taxing on the limited health resources of the countries given their magnitude and associated costs. Costs include those associated with medical expenses (consultations and hospitalizations) and with loss of life. The predominant rotavirus strain involved was an uncommon one.

This event underscores the importance of rotavirus diagnostics, along with surveillance networks for diarrhea in general and for rotavirus in particular. Although no rotavirus-specific treatment is available and the high transmissibility of the virus makes interruption of community transmission difficult, ready availability of diagnostics and prompt administration of rehydration solutions effectively reduces mortality. Similar large winter seasonal outbreaks of childhood diarrhea have been noted during the past several years in other countries of the Sub-region and have challenged existing control measures. The absence of diagnostic facilities have made these seasonal outbreaks feared as epidemics of unknown etiology, leading to control measures that are often inappropriate. Two rotavirus vaccines being licensed in Latin America may prevent similar outbreaks of rotavirus gastroenteritis in the future. Rotavirus surveillance would allow for assessment of the effects of its use ■

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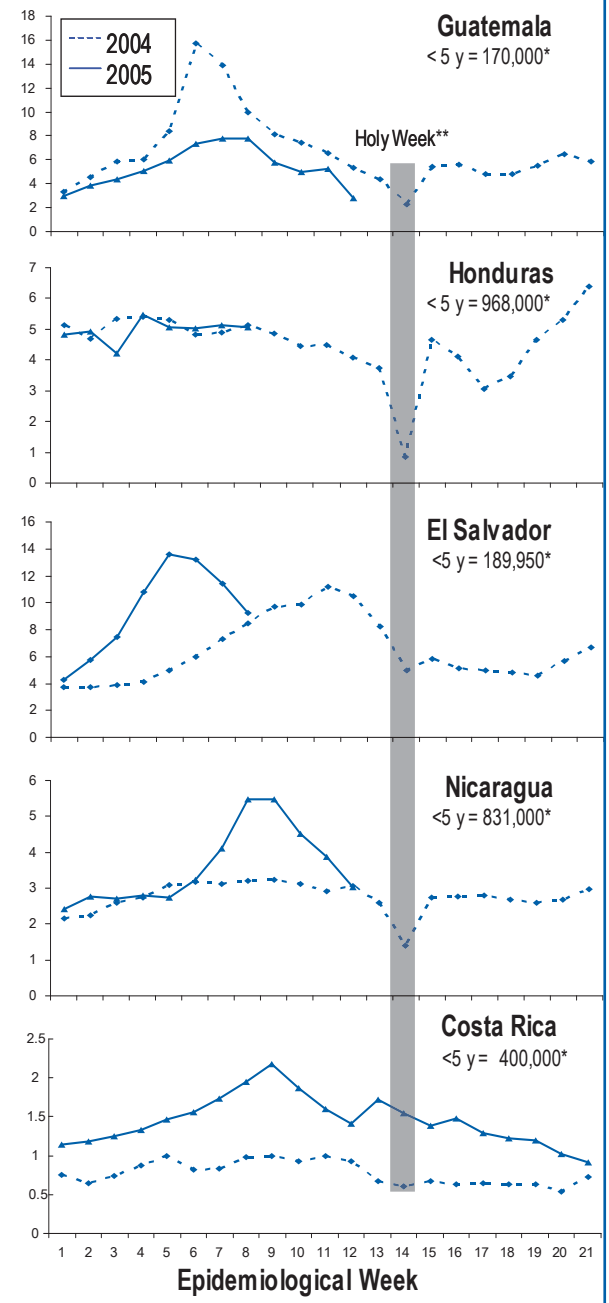
Figure 1. Consultations in children aged <5 years for diarrhea by week in 5 Central American countries. January-May 2004 and 2005



* Estimated population <5 years old
** Reporting was interrupted by Holy Week breaks.

Table 1. Summary of rotavirus characterization in samples from five Central American countries. January to March 2005

Country (# Samples Typed)	Strains by Genotypes (%)						
	G1	G2	G3	G4	Other G	P[8]	NT*
Guatemala (33)	3	0	0	0	97	64	36
Honduras (15)	0	0	20	0	80	87	13
El Salvador (15)	0	0	0	0	100	100	0
Nicaragua (27)	0	0	7	81	11	88	11
Costa Rica (20)	45	0	0	25	30	90	9
Total (110)	9	0	5	25	62	83	17

**NT: Non-typeable P Genotype*

Measles/Rubella Surveillance in the Americas: Final Data, 2004

Country	Total Suspected Measles/Rubella Cases Notified	Confirmed Measles			Confirmed Rubella			Total Confirmed Cases 2003	
		Clinical	Laboratory	Total	Clinical	Laboratory	Total	Measles	Rubella
Anguilla	0	0	0	0	0	0	0	0	0
Antigua & Barbuda	2	0	0	0	0	0	0	0	0
Argentina	487	0	0	0	2	4	6	0	8
Bahamas	1	0	0	0	0	0	0	0	0
Barbados	28	0	0	0	0	0	0	0	0
Belize	104	0	0	0	0	0	0	0	0
Bermuda	0	0	0	0	0	0	0	0	0
Bolivia	805	0	0	0	0	12	12	0	41
Brazil	17368	0	0	0	124	195	319	2*	563
British Virgin Islands	2	0	0	0	0	0	0	0	0
Canada	7	0	7	7*	…	…	…	15*	…
Cayman Islands	0	0	0	0	0	0	0	0	0
Chile	301	0	0	0	0	3	3	1*	2
Colombia	2308	0	0	0	5	40	45	0	47
Costa Rica	136	0	0	0	0	0	0	1*	0
Cuba	838	0	0	0	0	18	18	0	0
Dominica	1	0	0	0	0	0	0	0	0
Dominican Republic	239	0	0	0	0	7	7	0	4
Ecuador	665	0	0	0	22	57	79	0	94
El Salvador	174	0	0	0	0	1	1	0	3
French Guiana	56	0	0	0	…	…	…	0	0
Grenada	1	0	0	0	0	0	0	0	0
Guadeloupe	…	…	…	…	…	…	…	…	…
Guatemala	771	0	0	0	0	36	36	0	5
Guyana	10	0	0	0	0	0	0	0	0
Haiti	28	0	0	0	0	3	3	0	2
Honduras	255	0	0	0	0	1	1	0	1
Jamaica	122	0	0	0	0	0	0	0	0
Martinique	…	…	…	…	…	…	…	…	…
Mexico	7626	3	61	64	621	78	699	44*	35
Montserrat	0	0	0	0	0	0	0	0	0
Netherlands Antilles	…	…	…	…	…	…	…	…	…
Nicaragua	355	0	0	0	0	6	6	0	5
Panama	264	0	0	0	0	0	0	0	0
Paraguay	515	0	0	0	0	1	1	0	11
Peru	4039	0	0	0	11	1748	1759	0	328
Puerto Rico	0	0	0	0	0	0	0	0	0
St. Kitts & Nevis	2	0	0	0	0	0	0	0	0
St. Lucia	4	0	0	0	0	0	0	0	0
St. Vincent & Grenadines	1	0	0	0	0	0	0	0	0
Suriname	15	0	0	0	0	0	0	0	0
Trinidad & Tobago	21	0	0	0	0	0	0	0	0
Turks & Caicos	0	0	0	0	0	0	0	0	0
U.S. Virgin Islands	…	…	…	…	…	…	…	…	…
United States	49	0	37	37†	…	12	12	56††	7
Uruguay	13	0	0	0	0	0	0	0	0
Venezuela	1306	0	0	0	0	96	96	0	36
TOTAL	38919	3	105	108	785	2318	3103	119	1192

… No information provided
* Due to importation
† Of which 23 cases are imported
†† Of which 24 cases are imported

Source: MESS/FCH-IM except for Brazil, Canada, Costa Rica, Cuba, Mexico, and USA

Last Updated: 15 September 2005

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men's participation as companions and fathers is crucial to achieve their involvement and support.

Adult rubella vaccination will definitely help with accelerating other initiatives for adult vaccination, such as those for human papillomavirus and HIV control (6). Rubella elimination should also improve maternal and perinatal health.

CRS surveillance and perinatal information systems contribute to promoting wider detection of birth defects in infants, thereby strengthening perinatal care. To achieve high-quality CRS surveillance, perinatal services must provide comprehensive care, such as well-baby check-ups and/or dedicating consultation areas for newborns with congenital infections or at high risk. In monitoring and following-up infants with CRS, there is increased involvement with rehabilitation and special education services. This is an opportunity to improve the quality of child development services and broaden access to them.

Final Considerations

PAHO's Regional Immunization Unit is planning an inter-programmatic analysis to document the effect of the rubella elimination strategy on the basic components of PHC. These assessments will specifically attempt to demonstrate the effect of rubella elimination on the efficiency of the health system, costs, health outcomes, satisfaction among the users of the services, and equity and access to services.

A major challenge for maternal and perinatal care has been to guarantee universal access, given that services in high-risk communities, where the population is poor, are often insufficient. Since rubella immunization aims to reach 100% of the population, it contributes to the reduction of inequities based on gender, race or ethnicity, social status, and geographical location.

In summary, preliminary experience indicates that rubella elimination contributes to the basic components of PHC (equity, community participation, prevention, intersectorial participation, adequate technology, sustainability, and quality). It also promotes the strengthening of health services in areas such as the information system, management, development of human resources, logistics, and research. Ultimately, rubella elimination should contribute to the Millennium Development Goals (MDGs) of reducing child mortality (MDG 4) and improving maternal health (MDG 5) ■

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