



Comprehensive Family Immunization
Family and Community Health Area



TWENTY-EIGHTH MEETING OF THE CARIBBEAN EPI MANAGERS

DRAFT FINAL REPORT

Bridgetown, Barbados
27 February - 2 March 2012

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TWENTY-EIGHTH CARIBBEAN EPI MANAGERS' MEETING

I. Introduction

The 28th Caribbean EPI Managers' Meeting was held at the Accra Beach Hotel and Spa in Bridgetown, Barbados, 27 February – 2 March 2012. The meeting convened over 120 participants from 30 countries, as well as representatives from international agencies such as the Centers for Disease Control and Prevention (CDC) and the Canadian Public Health Agency (CPHA). Participants included representatives from the Ministries of Health, the Pan American Health Organization/World Health Organization (PAHO/WHO), and the Caribbean Epidemiology Centre (CAREC).

Dr. Elizabeth Ferdinand, the EPI manager of Barbados, opened the meeting stating that vaccines allow children to reach their full potential but reminded participants that in spite of the successes of the program they must remain vigilant to meet our goals. Susan Reef, representative from the CDC's Global Immunization Division, recognized the Caribbean countries as leaders in immunization. Dr. Rudolph Cummings from the Caribbean Community and Common Market (CARICOM) highlighted how immunization has strengthened the infrastructure and harnessed the commitment of the practitioners. He also recognized the invaluable contribution of the public health nurses that have made the EPI programmes. Dr. Andrea Vicari spoke on behalf of Dr. Ruiz Matus, Senior Advisor of Immunization at PAHO, and Dr. John Spika from CPHA highlighted the strong relationship his agency has with the Caribbean countries. Dr. Beryl Irons, Director of CAREC, urged participants to embrace new challenges and Mr. Oladimeji Oluow, representative from UNICEF, underscored the organization's collaboration with PAHO to provide immunization services to every child. Dr. Merle Lewis, PAHO/WHO Representative for Barbados and the Eastern Caribbean Countries stated that this 28th EPI management meeting marks a number of milestones, including the eradication of polio in the region and the heralding of the Caribbean Public Health Agency (CARPHA). She also reminded participants to be vigilant and advocate for immunization programmes in the health budgets.

The Honorable Donville Inniss, Minister of Health of Barbados, presented the keynote address stating that immunizations are recognized as one of the most cost effective health care initiatives in the world today and have played a significant role in decreasing worldwide morbidity and mortality. He thanked PAHO for the provisions they have made through the Revolving Fund so the all children can benefit from immunization and highlighted the importance of Vaccination Week in the Americas for ensuring that the entire family has access to vaccination services.

The opening ceremony ended with the participation of two pupils from Roland Edwards Primary School, Janelle Bovell and Reyna-Shantez Walton. The students recited poetry on the importance of immunization for ensuring the health of children and a call to action to adhere to the immunization schedule.

A. Objectives of the Meeting

The objectives of the 28th annual meeting of the Caribbean EPI Managers are as follows:

1. □To analyze the status of the EPI programme in each country and to identify areas that require strengthening, define targets, objectives and budget for 2012;
2. To update information on selective scientific topics of common interest to countries in relation to immunization, delivery service and surveillance of EPI diseases;

3. To set the targets and objectives of each country with respect to immunization coverage and reduction of morbidity and mortality from the EPI diseases for the year 2012;
4. To develop an action plan with a specific budget for each activity for each country to achieve the targets and objectives set for 2012.
5. To analyze and evaluate the status of measles, rubella and congenital rubella syndrome (CRS) and assess advances toward the implementation of PAHO Resolution CSP27.R2 to document and verify the elimination of endemic measles, rubella and CRS transmission in the Americas;
6. To sustain the eradication of wild poliovirus in each country;
7. To discuss status and advances made in the surveillance and management of adverse reactions to vaccines; and
8. To discuss the introduction of new and underutilized vaccines such as seasonal influenza, conjugate pneumococcal, rotavirus and HPV vaccines in the national immunization schedules, including strengthening of the pertinent surveillance/monitoring systems.

B. Summary of TAG Recommendations 2011

One of the key decisions from the Technical Advisory Group on Vaccine-preventable Disease in Argentina 2011 was the importance of maintaining two doses of MMR vaccine coverage >95% and ensuring that the region remains polio free. The WHO Strategic Advisory Group of Experts on Immunization (SAGE), which met in November 2011, established new working groups on vaccination in humanitarian emergencies, yellow fever, measles and rubella, vaccine hesitancy and varicella and herpes zoster. SAGE emphasized countries' accountability for all children within their borders having guaranteed and equitable access to vaccines and noted the potential of immunization programs for strengthening the overall health system, suggesting that good examples be documented and shared.

With respect to polio eradication SAGE noted the report of the Independent Monitoring Board (IMB) and agreed that the Global Polio Eradication Initiative (GPEI) was 'not on track to interrupt polio transmission by the end of 2012, ... unless fundamental problems can be addressed'. SAGE stated that the risk of failure to finish global polio eradication constitutes a programmatic emergency of global proportions for public health and is not acceptable under any circumstances. SAGE acknowledged the success in India with no wild poliovirus reported since January 2011 and China's rapid and comprehensive response to the importation of wild poliovirus. SAGE recommended that the IMB produce country reports which identify the root causes why some infected countries are failing to interrupt transmission and holding appropriate individuals, agencies and authorities responsible.

The UN Environmental Program Governing Council requested an Intergovernmental Negotiating Committee (INC) to prepare a global legally binding instrument on mercury. This has implications for the use of thimerosal in multi-dose vaccine vials. Immunization with thimerosal containing multi-dose vaccines currently protects at least 64% of all children against DPT and Hib, and thus averted 1.4 million child deaths in 2010. SAGE reaffirmed the importance of thimerosal-containing vaccines and stressed that no safety concerns in children have been noted. SAGE endorsed the proposal for a scientific meeting on alternatives to thimerosal and asked GACVS to review the safety of alternative preservatives.

SAGE reviewed evidence concerning the use of pneumococcal vaccine (PCV) and concluded that PCV introduction had resulted in overall reductions of invasive pneumococcal disease in children <5 years of age despite increases in the incidence of non-vaccine serotypes. Serotype replacement should not be an impediment to PCV introduction.

C. Update on the Caribbean Public Health Agency (CARPHA)

In 2007, the Heads of Government of the Caribbean Community approved the merger of the existing five Public Health Institutions (Caribbean Epidemiology Centre, Caribbean Food and Nutrition Institute, Caribbean Environmental Health Institute, Caribbean Health Research Council, Caribbean Regional Drug Testing Laboratory), and in July 2011 the Inter-governmental agreement of CARPHA was approved. Eight signatures brought the new entity into existence and in September 2011 the First Executive Board was appointed.

The Board agreed that implementation of the transition plan should commence and resource mobilization efforts to install the executive management should continue. The functions of CARPHA will be the following: Laboratory Services; Surveillance and Health Analysis; Leadership for Public Health Interventions; Information, Education and Communication; Research, Policy Development and Evaluation; Human Resource Development and Training; Emergency Preparedness and Response; Strategic Planning and Resource Mobilization; and Development of Regional Standards and Networks.

At its meeting in December 2011 the Executive Board agreed on the 2012 implementation work plan for building CARPHA systems and for working with the Government of Trinidad and Tobago on the new physical facilities at Coura. The work plan for the first six months of the year will be focused on preparation for the recruitment of existing staff, development of financial, administrative and legal system, and also the appointment and functioning of a financial sub-committee.

Resource mobilization efforts coordinated by CARICOM and PAHO have generated much interest. Unstinting support has been provided by PAHO, the Public Health Agency of Canada and the UK Department of Health. A statement of gratitude was made to Former Minister of Health of Guyana, Dr. Leslie Ramsammy, for his leadership in this process over the last 4 years.

RECOMMENDATIONS-GENERAL:

- It is recommended that CARPHA foster a discussion at the Ministry level to ensure the sustainability of EPI programmes.

II. Universal Vaccination Coverage

A. Update on Regional Immunization Vision and Strategy

The Americas has made significant progress towards ensuring high-coverage of routine vaccination. Regional trends in immunization coverage, using DTP3 as a proxy indicator, fell 3 points in 2009 to 90% and rose again to 93% in 2010. The countries and territories in the Region of the Americas continue to report significantly higher coverage rates than other WHO Regions. However, sub-national analysis of coverage trends reveals inequities in access to vaccination within countries. It is crucial to develop and employ innovative strategies to immunize populations in low-performing municipalities identified in several countries in the Region. Low-coverage rates reported at the sub-national level augment the risk for: reintroduction of eliminated diseases (i.e. polio, measles, rubella), rising burden of VPDs currently under control (i.e. diphtheria, pertussis, neonatal tetanus, hepatitis B and *haemophilus influenzae type b*) and muted adoption of new and underutilized vaccines. As the Region comes closer to closing the process of documentation and verification of the elimination of diseases, such as measles, rubella and CRS, countries and territories in the Americas must be dedicated to achieving and maintaining routine vaccination coverage rates of 95 percent or higher at the local level.

As of August 2011, rotavirus and pneumococcal conjugate vaccines had been introduced in 16 and 21 countries and territories in the Region, respectively. In comparison, only six countries have adopted HPV vaccines to protect against cervical cancer in women, including: Argentina, Canada, Mexico, Panama, Peru and USA. HPV vaccine uptake has been slower than the introduction of other new vaccines, however, 44% of girls aged 10 to 14 years live in countries that have incorporated HPV vaccines into national schedules. As the prices per dose of HPV vaccines has dropped in recent years, the vaccine has become more accessible to Latin America and the Caribbean. A growing body of evidence on HPV vaccines and decision-making tools made available through PAHO's ProVac Initiative will help countries tackle the challenge of making informed, evidence-based policies on the introduction of vaccines to protect against cervical cancer in women.

Reducing inequities between and within countries will remain a high-priority in the Region. PAHO's Revolving Fund ensures an equitable, sustainable and safe supply of vaccines for Latin America and the Caribbean. Mobilizing new partnership and leveraging existing ones to strengthen routine immunization in Haiti is essential to achieving goals of equity in the Region and reducing threats associated with the reintroduction of eliminated diseases and the resurgence of diseases currently under control.

B. Overview of EPI in the Caribbean

The immunization programme of the countries of the Caribbean Community has been one of the most successful and is used as a benchmark by which other programmes are measured. Strategic planning and implementation of activities, monitoring and evaluation, coupled with committed health professionals have contributed to this success. One of the main achievements in 2011 was the completion of activities related to the verification and documentation of elimination of measles, rubella and CRS in the Caribbean countries.

A central goal for the countries and territories of the Caribbean Community was the achievement of greater than 95% vaccination coverage for all administered antigens, which was accomplished by many countries. However, areas of low vaccination coverage still remain in some countries. Family immunization activities and the development and implementation of appropriate policy remain priorities in the Caribbean sub-region and countries continue to work towards this end. Most of the countries have already included adolescents, adults, elderly, and groups with special needs as part of the public immunization programme yet formalization is necessary. Countries also strive to introduce new and underutilized vaccines in the public sector immunization schedule, but funding remains a major barrier.

Six countries (Aruba, Barbados, Bermuda, Cayman Islands, Guyana and Trinidad and Tobago) have introduced pneumococcal vaccine into the public sector routine schedule and Jamaica included the vaccine for at-risk infants. HPV vaccines are available for adolescents on an optional basis in Bermuda, Cayman Islands and Guyana. Rotavirus vaccine was introduced in the Cayman Islands and in Guyana in 2009 and 2010, respectively.

In 2010, the average coverage for the Caribbean sub-region for primary immunizations (3 doses of DPT, OPV/IPV, Hib, hepatitis B vaccines and 1 dose of MMR and BCG) is DPT 94%, OPV/IPV 93%, Hib 93%, hepatitis B 93%, MMR-1 91%, and BCG 95% (Figure 1).

**Immunization Coverage (%) For Selected Antigens
CAREC Member Countries, 1997 - 2010**

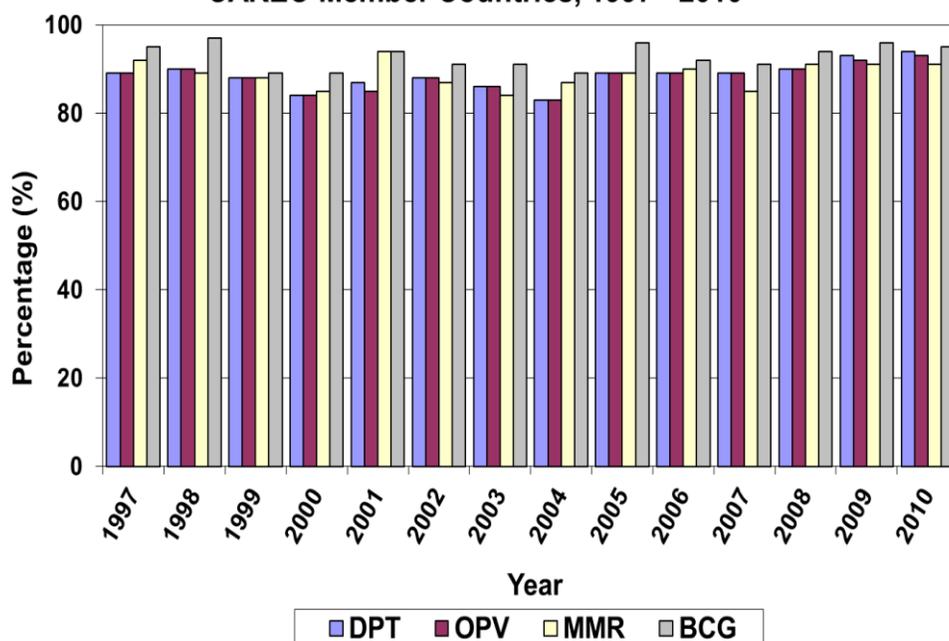


Figure 1

The vaccination coverage for administered vaccines for 2010 was similar to that of 2009. Fifteen countries had vaccination coverage for DPT-3 of $\geq 95\%$ while all countries had coverage $>80\%$ for all antigens (Table 1).

**Table 1. Distribution of Vaccination Coverage (%)
Caribbean Sub-region 2007 – 2009**

Coverage (%) 0-11 Months	DTP X 3			OPV X 3			MMR1 (12-23)		
	2008	2009	2010	2008	2009	2010	2008	2009	2010
< 50%	0	0	0	0	0	0	0	0	0
50-79	0	0	0	0	0	0	0	0	0
80-89	6	1	4	6	2	3	4	2	6
90-94	5	7	2	5	5	5	6	6	3
≥ 95	8	13	15	8	14	13	9	12	12
Sub-regional Coverage	90	93	95	90	92	93	91	91	91

On reviewing DPT-3 coverage in the four countries with the largest population in 2010, Jamaica had 8 of 14 parishes with coverage >95%, Trinidad and Tobago had 4 of 9 counties, Guyana had 2 of 10 regions with >95% coverage and Belize had 3 of 6 districts. Conducting the same analysis for MMR1 coverage demonstrated that Guyana achieved the goal of $\geq 95\%$ in 4 of its 10 regions, Jamaica achieved it in 4 of its 14 parishes, Trinidad and Tobago in 4 of 5 counties (including the island of Tobago) and in Belize, 3 of 6 districts reached $\geq 95\%$ for MMR1.

The vaccination coverage survey proposed for Trinidad and Tobago has not been conducted and Jamaica continues to implement the recommendations from the data quality assessment conducted in 2010.

General Disease Surveillance

A total of 728 sites throughout the countries achieved weekly reporting on vaccine-preventable diseases (VPD). The last cases of diphtheria and neonatal tetanus were reported in 1994 and 2006, respectively. Preliminary data from 2011 showed that 3 cases of non-neonatal tetanus were reported from 3 countries and 6 cases in 2010 from 4 countries. The cases were mainly in adult and elderly populations. In addition, in 2011 there were 2 reported cases of pertussis from 2 countries compared to 3 cases in 2010 from one country. Most countries continue to report cases of varicella and for 2011 there were 5152 cases from 16 countries while in 2010, there were 6896 cases. For 2010, three countries reported 39 cases of mumps (one country reported 92% of cases) and in 2011 there were 23 cases reported from 3 countries. These cases were not laboratory confirmed. From the data received, 9 cases of *Streptococcus meningitis* were reported in 2011 from 1 country. Concerning *Haemophilus Influenzae*, 2 cases of pneumonia were reported in 2010 while 4 cases of pneumonia and 2 cases of meningitis were reported in 2011.

RECOMMENDATIONS-UNIVERSAL VACCINATION:

- All countries should achieve and maintain vaccination coverage for all administered vaccines at 95% or higher at national and sub-national levels (districts, parishes, zones, regions, etc).
- Countries should use all available strategies, such as community outreach, house-to-house and mop-up campaigns to assist in achieving the goal of attaining 95% or higher coverage.
- Strategies should be developed to increase data collection from private sector physicians including: participation of private sector through paediatric associations; introduction of a web-based system for accessing and reporting information; and policy development/legislation for improving reporting capacity. One strategy may be the invitation of representatives of the Caribbean Paediatric Association to the EPI Managers Meeting.

III. Progress of Measles, Rubella and CRS Elimination

A. Overview of Status of Measles, Rubella, and CRS Elimination **in the Americas**

Since the interruption of the endemic transmission of measles in November 2002, measles cases have been limited to importations and import-related cases in selected countries. However, in 2011, large outbreaks in Africa and in Europe resulted in an 8-fold increase in the number of cases reported in the Americas compared to the previous annual average of 157 cases between 2003 and 2010, reaching a 1.4 rate per 1 million inhabitants.

Epidemiological investigation and genotyping have confirmed sporadic measles cases, or cases with limited secondary transmission, in 9 countries while 3 countries (Brazil, Canada and Ecuador) reported ongoing measles transmission in 2011. Genotypes identified from all outbreaks include B3, D4, D8, D9, G3 and H1. As of epidemiological week (EW) 7/2012, 55 measles cases were reported in Ecuador (n=31) and the United States (n=24) (Figure 2).

Confirmed measles cases in the Americas, 2011-2012*

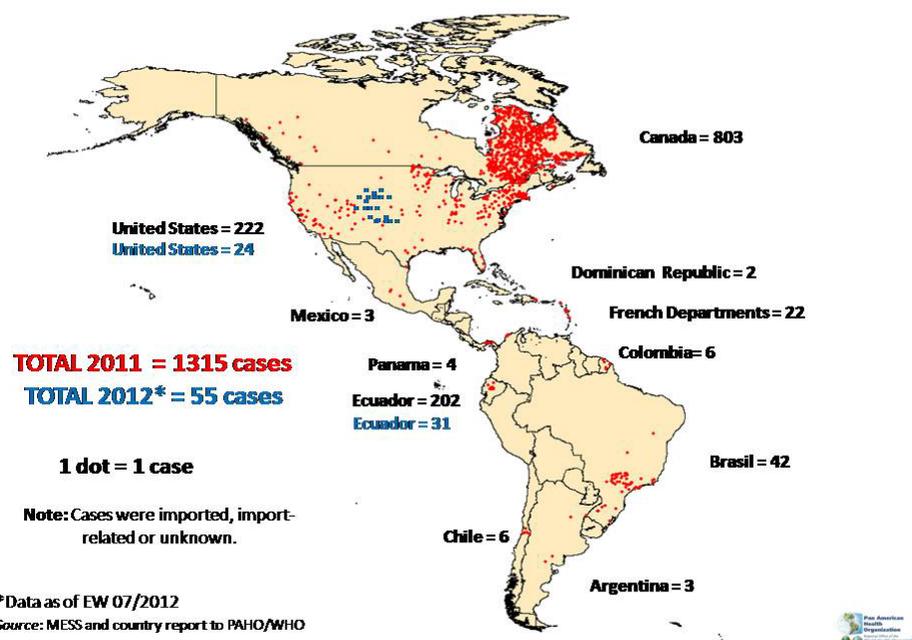


Figure 2

Consistent with overall decrease in disease incidence, occasional rubella outbreaks that have occurred since the introduction of routine MMR immunization programs have been smaller in size and less frequent over time. The number of confirmed rubella cases decreased by 98.3% between 1998 and 2006 (from 135,947 to 2,998 cases reported). Only 7 cases were reported in 2011 and no endemic rubella virus has been detected since 2009. However, in 2012 Colombia reported a confirmed rubella case in a 35-year old from Medellin (rash onset date of 4 September 2011). Given that viral specimens were not obtained from this isolated case, it is difficult to determine if the detected case is a part of an endemic chain of transmission or the result of an imported virus.

Recent measles activity following importations to the Region of the Americas during 2011 highlights the significant role of high-quality surveillance systems and **coordination with the private sector**, as well as the importance of collecting samples for viral isolation, to detect cases and identify the source of an outbreak. In 2011, all outbreaks originated from abroad, underscoring the continued risk of importations faced by the countries of the Americas as long as endemic viruses circulate in other parts of the world. Countries must be prepared to rapidly detect and respond to importations to limit secondary spread. Timely responses to import-related outbreaks require the extensive mobilization of human and financial resources and the investigation of a single imported measles case diverts significant resources from other activities.

In an effort to prepare for possible importations to the Region, PAHO works with countries to circulate technical alerts in anticipation of international events that will bring visitors from other regions to the countries of the Americas. In 2011 technical alerts were disseminated prior to the *Rock in Rio* concert in Brazil and the *World Youth Day* in Spain.

B. Review of Fever/Rash and CRS Surveillance in the Caribbean

In 1988, the Ministers of Health in the Caribbean Community resolved to eliminate endemic measles and in 1991, mass measles vaccination activities were implemented. As a result of the success of this initiative, in 1994 countries of the Region of the Americas set a goal of interrupting endemic measles transmission by the end of 2000 and a supporting Resolution (CSP24.R16) was adopted during the *XXIV Pan American Sanitary Conference*. The interruption of endemic measles virus was achieved in the Caribbean Community in 1991 (19 years ago) and in 2002 in the Region of the Americas.

Case Reporting

In 2011, a total of 728 sites reported suspected measles, rubella, and CRS cases in the Caribbean sub-region, 99% of which reported on a weekly basis. National reports include data from public and private health facilities. With the exception of few countries, private sector sites make up less than 10% of the total reporting sites in the Caribbean countries. Routine reporting of febrile rash illnesses continues in French Guiana (started in 2003) and the Dutch-speaking islands (collectively), which resumed reporting in 2007. Saint Maarten reports separately on a weekly since 2010, as does Martinique and Guadeloupe (including St. Martin).

Over nine thousand (n=9,264) fever and rash cases have been reported between 1991 and 2011. The reported annual cases ranged from 207 (in 2006) to 1024 (in 1997). The 1024 cases represented rubella outbreaks occurring in countries and other peaks related to dengue circulation in countries (Figure 3).

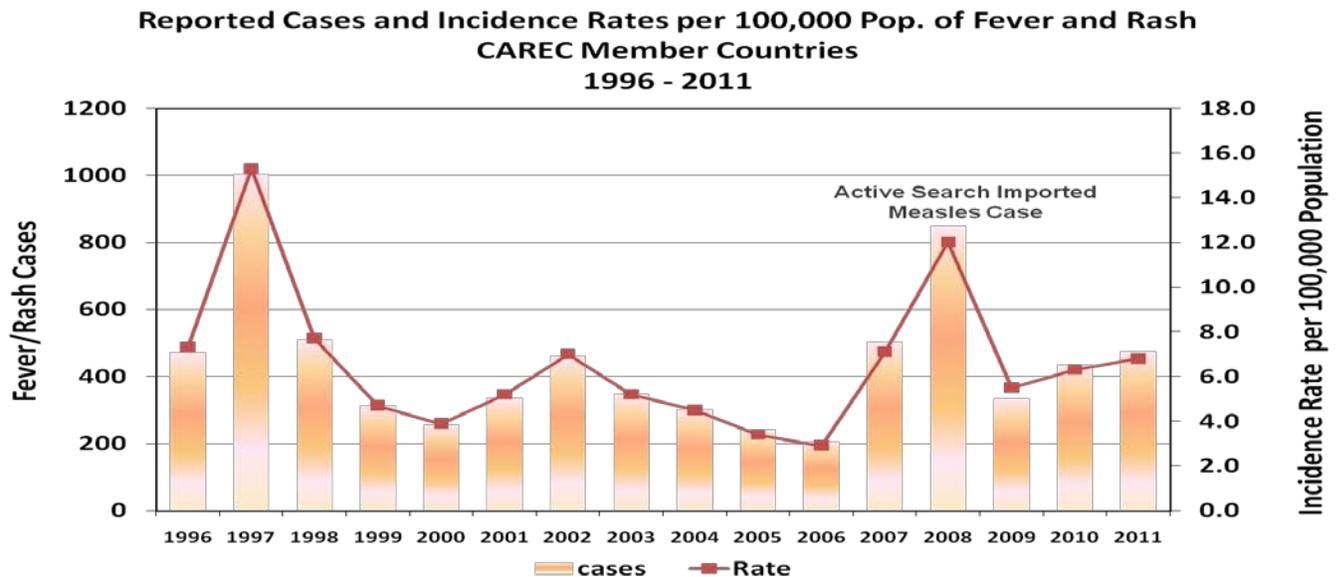


Figure 3

Eight confirmed measles cases (imported from Europe and North America) occurred during the period 1991 to 2011. In 2011, one laboratory confirmed measles case was reported in Jamaica. The case was an eight-year-old tourist from the United Kingdom. Prior to this case, the last 2 cases (classified as imported and import-related) were reported in Jamaica in 2008. Enhanced community surveillance activities were implemented in 2008 (Figure 3).

Four hundred and seventy-six (n=476) fever and rash cases were reported from 14 countries in 2011. Most cases were reported in Jamaica (55%), Belize (17%) and Guyana (14%). Of these

cases, one was a laboratory confirmed measles case and the others were discarded as neither measles nor rubella. Ninety-two (19%) of the discarded cases were tested for dengue and 10 tested positive. Jamaica reported 264 cases, 70 of which tested positive (in country) for dengue. Eighty-two (49%) cases from children aged less than 2 years were tested for HHV-6/Roseola and 15 were found to be positive.

The French Departments reported 21 cases in 2011, of which 5 cases were laboratory confirmed as measles and 3 as dengue. Whereas the Dutch-speaking Islands reported 355 suspected cases, none were confirmed as measles or rubella and many were clinically diagnosed as varicella.

All countries must ensure that 80% of the specimens are received at CAREC's laboratory less than 5 days post collection. Anguilla, Belize and St. Kitts/Nevis are the only countries that have met this criterion. Overall, 35% of specimens arrived at CAREC laboratory in less than 5 days post collection. Countries are strongly encouraged to ship specimens to CAREC as quickly as possible following specimen collection.

Surveillance Indicators

In 2011, almost all (99%) sites reported on a weekly basis; 99% of cases were investigated within 48 hours and 91% were investigated adequately; 96% of cases had adequate specimens collected; and 95% had received laboratory results in less than 4 days. Ninety-seven (97%) percent of specimens were discarded by laboratory testing (Figure 4).

**Status of Measles-Rubella Surveillance, 1995-2011
Caribbean Sub-Region**

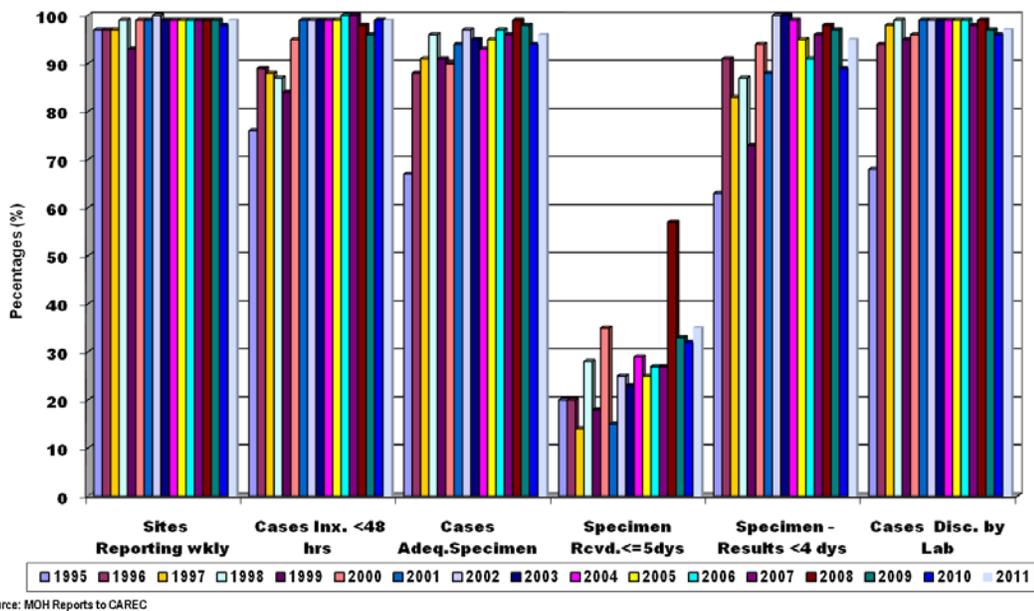


Figure 4

These results were similar when compared to 2010, where 99% of surveillance sites reported on a weekly basis; 99% of cases were investigated within 48 hours; 94% of cases had adequate samples taken; and 89% received laboratory results in less than 4 days. In 2010, 96% of cases were discarded on the basis of laboratory testing and 33% of specimens were received at CAREC less than 5 days after specimen collection.

Impact of the Rubella Vaccination Program

The last cases of endemic rubella were reported in 2001, where six cases were reported in one country. In 2008, an imported rubella case was reported from Bermuda and another from French Guiana. No case was reported between the period 2009 to 2011.

In 2004, the CRS surveillance system was enhanced with the implementation of TORCH¹ testing. A total of 336 specimens have been tested for rubella through TORCH testing between 2004 and 2011.

In 2011, one (1) suspected CRS case was referred for testing in addition to 18 cases (from 6 countries) referred for TORCH evaluation. All cases were discarded as negative for CRS as confirmed by laboratory testing. The last endemic CRS case in a CAREC member country was reported in 1999 (Figure 5).

**Reported Suspected and Confirmed Cases of CRS -TORCH Testing
Caribbean Sub-region, 1996 - 2011**

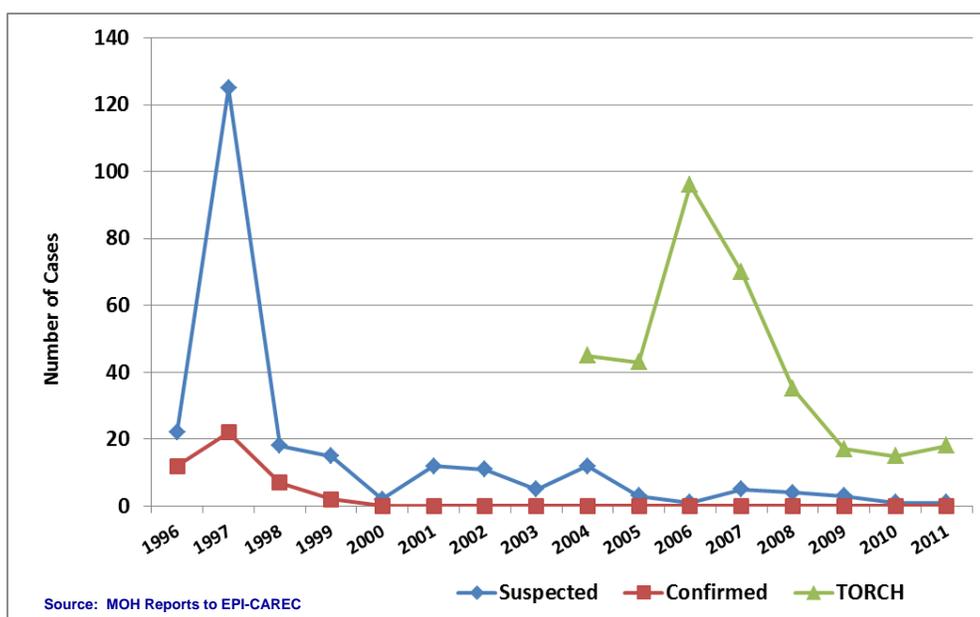


Figure 5

C. Caribbean Country Reports

1. Belize

Belize maintains vaccination coverage with MMR1 and MMR2 vaccines above 95% and has had no confirmed measles, rubella or CRS cases since 1991, 2001, and 1997, respectively. In 2011, in-country transportation of samples was improved by emphasizing referral of samples from the districts to Belize City within 24 hours of collection. There has been significant improvement in the indicator related to samples reaching CAREC within 5 days of collection. Fifteen percent of reporting sites are from the private sector. A real time alert system for VPDs under surveillance

¹ TORCH=toxoplasmosis, rubella, cytomegalovirus, and herpes

has been integrated into the electronic Belize Health Information System (BHIS) enabling immediate investigation of suspected.

2. French Departments

In 2011, the French Departments (FDAs) integrated the PAHO measles notification system and reported 22 confirmed measles cases, all of which were confirmed as imported or import-related from Metropolitan France.

The Sub-regional commission of the FDAs for the documentation and verification of measles and rubella elimination completed their report in January 2012, concluding that these diseases were eliminated from the FDAs.

The main recommendations of the commission were: 1) consider the specific situation of the FDAs in the national and regional policies to control measles and rubella; 2) improve the vaccine coverage of measles and rubella, and prepare in the short-term catch-up campaigns for adolescents and young adults; 3) update the rubella and CRS surveillance system; and 4) ensure more efficient Border Health Control, to limit the risk due to importation and exportation.

3. St. Maarten

Measles, rubella and CRS surveillance has indicated there were no confirmed endemic cases in the past 25 years in the country. The documentation and verification process has highlighted the need for continued strengthening of the EPI programme and the surveillance systems to maintain this status. This is especially important, as the risk for importation remains high and confirmed cases were reported in 2011 in French St. Martin, a country with a thriving tourism industry and an extremely migratory population.

Recommendations identified during the process included strengthening and improving of surveillance and vaccination activities, updating relevant legislation, covering cost for laboratory services, and the intermitted evaluation of participating sites to ensure for a sensitive surveillance system. Other recommendations include follow-up of IgG negative pregnant women, targeted vaccination campaigns, increased number of vaccination sites to improve access and the implementation of vaccine coverage surveys to validate vaccination coverage.

In addition, there is a need to foster continued and improved collaboration between St. Maarten and St. Martin and enhance partnerships and stakeholder collaboration to ensure that vaccination data and surveillance data are shared. This is important as response to communicable diseases may require coordinated efforts as the islands population moves freely across the borders for work, education, health care services, and leisure activities.

4. Jamaica

On 2 December 2011, Jamaica's National Surveillance Unit was notified of a highly suspicious case of measles in a 7-year old boy who had arrived from London, England, 10 days earlier. The child became symptomatic 8 days after arriving in Jamaica and presented with fever, cough, and generalized macular papular rash, which started in the face and then spread to the trunk and limbs. His immunization history revealed that had had not received the MMR vaccine. He was admitted to the hospital for isolation and discharged after one week. Serum samples taken were positive for measles IgM antibody (CAREC/CDC labs) and the genotype identified was B3. A team from the Ministry of Health and the relevant Parish Health Departments immediately commenced the investigation of this case, which included tracing of his direct and indirect contacts. Over 1000 contacts were identified in relation to this case. They were assessed for their MMR immunization status, vaccinated as necessary and placed under surveillance for 42 days. No secondary cases were reported. The investigation was facilitated by a strong team approach,

use of technology and recent surveillance training for VPDs using a measles case study. Sensitization of the public and private medical fraternity facilitated an enhanced surveillance for fever and rash.

D. Recent Measles and Rubella Surveillance in Canada

A recent outbreak in Canada has reported 764 cases primarily centered in a localized area in the province of Quebec. The last case associated with this outbreak was 22 November 2011; most cases were 10-19 years old and unimmunized, although 2-dose coverage in Quebec is estimated to be 89-92%. The province has initiated a school-based immunization campaign to reach an estimated 255,000 students that are not fully vaccinated. The campaign targeted specific children previously identified so as to lessen any impact on general immunization resistance. The post elimination outbreaks in Canada observed over the last 5 years underscore the challenges in maintaining a measles-free status when Canada receives over 30 million visitors a year from regions where measles is epidemic.

The last endemic rubella case in Canada was in 2005, and only 2 cases have been detected since 2006. Active surveillance for CRS occurs in Canada through the Canadian Paediatric Surveillance Program of sentinel paediatricians. The last CRS case with Canadian exposure occurred in 2000; cases of CRS were identified in 2009 and 2011 but both were born to women who had lived outside of Canada during their first two trimesters

E. Recent Measles and Rubella Surveillance in the USA

Measles elimination was documented and verified in the United States in 2000. During 2001-2011, 913 measles cases were reported, with a median of 63 cases annually (median incidence of 0.2 per million population). In 2011, 222 measles cases were reported, the highest number since 1996, but incidence remained low at 0.7 per million population. Age-specific incidence was highest among infants aged 6-15 months, who accounted for 20% of cases. Most cases (88%) were importations or import associated. Although there were increased importations in 2011, spread from these importations were limited.

Rubella and CRS elimination was documented and verified in the United States in 2004. During 2005-2011, 66 rubella cases (a median of 11 cases annually) and 4 CRS cases were reported. Incidence of rubella was less than 1 per 10 million and less than 1 per 5 million births for CRS. There were 2 rubella outbreaks, each with 3 cases. Approximately 39% of rubella cases and 3 of the 4 CRS cases were known importations.

The data indicate that the surveillance system is adequate to detect endemic measles, rubella, and CRS. Elimination status has been maintained in the United States, despite challenges that include ongoing risk of importations, lack of familiarity with these diseases, continued high level of public health response, and difficulty in maintaining high 2-dose coverage.

F. Measles in Europe

In 2011, a total of 30567 measles cases were reported to the European Centre for Disease Prevention and Control (ECDC) effectively the same number as for 2010 (30264 cases) but considerably more cases than in 2009 (7175 cases) and 2008 (7817 cases). France reported the most cases (15206) as well as the highest notification rate (23.4 per 100 000 population), and accounted for more than half of the cases. Other countries with a high number of cases were Italy, Romania, Spain and Germany. Together, these five countries accounted for more than 90% of all measles cases in the EU. Bulgaria, which experienced a large outbreak with more than 22000 cases in 2010, reported only 157 cases in 2011. However, the decrease in case numbers

in Bulgaria was offset by an increase in most of the other EU countries. Twenty-four countries reported more cases in 2011 than in 2010. Countries with marked increases in the number of cases include Belgium, Denmark, Finland, France, Italy, Norway, Romania, Slovenia, Spain, Sweden and the United Kingdom. The notification rate was higher or equal to one case per 100000 population in 14 of the 29 reporting countries. Only Cyprus and Iceland remained measles free during 2011. The highest incidence was among infants under one year-old (44.0 cases per 100000 population), followed by children aged between 1 and 4 years (24.3 cases per 100000 population).

Vaccination status was known for 83% (25488) of the reported cases. Of these, 82% (20902) were unvaccinated and 18% (4586) vaccinated. Among those vaccinated, 74% (3397) had received one dose of measles vaccine, 20% (920) had received two or more doses and 6% (269) had received an unknown number of doses. Among the cases with a known number of vaccinations, 96% were either unvaccinated or had received only one vaccine dose, while 4% had received two or more doses.

There is an ongoing measles outbreak in Ukraine with focus in the western part of the country bordering Hungary, Poland and Slovakia. More than 3000 cases have been reported so far in 2012. Ukraine will host the European Football Championship together with Poland in June 2012 and large numbers of visitors are expected. Unvaccinated participants and spectators will be at risk of measles infection.

The low vaccination coverage in some members states is due to problems related with vaccination providers, such as lack of recording/registry, lack of reminder system, resistance and complacency among doctors; and problems with vaccination recipients, such as vaccine sceptics on the one hand and vulnerable groups on the other hand. Vaccine sceptics in Europe are 1) anthroposophics, followers of Rudolf Steiner; there are hundreds anthroposophic schools in Europe; 2) orthodox reformed Christians refusing vaccination based on their belief in the providence of God with which they do not want to interfere; they live socio-geographically clustered in the "bible belt" in the Netherlands, thus escaping from herd immunity; 3) followers of naturopathy, homeopathy, natural medicine; 4) followers of conspiracy theories; and 5) refugees and Roma populations belonging to the underserved groups. It was estimated that in 2009 the accumulated pool of susceptibles, 4.8 mio, was nearly as big of a complete European birth cohort (5 mio).

WHO strategy aiming at adequate surveillance, including laboratory testing, vaccine coverage of >95% for two doses of MMR, will be applied by the member states. Circulation of wild type genotypes will be monitored to define chains of transmission (importation) and some countries monitor the susceptibility profile of the population by serosurveys.

Europe endorses the goal to eliminate measles by the year 2015.

RECOMMENDATIONS-MR AND CRS ELIMINATION:

- Countries should exert all efforts to incorporate the private health sector in the measles, rubella and CRS surveillance system to support the rapid detection of importations and response to outbreaks and to strengthen immunization activities, as well as have internal mechanisms for validating their surveillance system on a regular basis.
- Countries should ensure that appropriate mechanisms are in place for transportation of specimens within country and sending to CAREC in less than 5 days post collection.
- Countries should routinely maintain high, homogenous vaccination coverage (>95%) by municipality for the 1st and 2nd routine dose MMR, monitor the accumulation of susceptibles, and continue the implementation of high quality mop-up activities. Vaccination coverage surveys should be utilized to monitor and validate MMR2 coverage.

- Countries should achieve an adequate level of outbreak preparedness by developing national plans for preparation and rapid response to an importation and potential outbreaks, in light of the high-influx of tourists into the Caribbean region.
- Strengthen collaboration between EPI Manager, Surveillance Officer and Laboratory staff to discuss, review and reflect for standard improvements.
- Jamaica should document the costing of outbreak control interventions implemented recently in 2011, to generate strong evidence on the costly measures taken by PAHO Member States to limit the spread of measles imported virus.
- Consideration should be given to decentralize the testing for measles/rubella in a targeted way and with quality assurance in place.

IV. Documentation and Verification of Measles, Rubella, and CRS Elimination

A. Regional Overview of the Documentation and Verification of Measles, Rubella and CRS Elimination in the Americas

The progress made by PAHO's Member States toward the goal of documenting measles, rubella, and CRS elimination is notable. Thirty-four countries, the French departments, the Dutch-speaking islands, and the United Kingdom Overseas Territories in the Americas have established national or sub-regional commissions, while 15 countries and the 13 countries comprising the English-speaking Caribbean have completed their fieldwork and submitted their final country reports. The USA and Venezuela are committed to submitting reports before the end of February. The remaining countries are conducting outbreak control activities (i.e. Brazil, Colombia, Ecuador,) or the intensification of vaccination activities (i.e. Haiti) and will submit their reports upon finalization of these activities. All country elimination reports will be reviewed by PAHO and the Regional synthesis report will be submitted to the International Expert Committee (IEC) for comments prior to sending to respective Ministries of Health for revision and finalization.

The next steps for finalizing the documentation and verification of measles, rubella and CRS elimination will include the following activities:

- Finalization of the country reports and the Regional Report on measles, rubella and CRS elimination, which will be submitted for consideration of the IEC.
- Technical meeting to review the current epidemiological situation of measles, rubella and CRS in the Americas. The meeting will convene the presidents and members of the IEC and National Commissions of those countries that have experienced ongoing measles outbreaks during 2011 and/or have reported rubella cases. The meeting is scheduled for 30 March 30 2012.
- A second high-level meeting with the presidents and members of the National Commissions and the IEC is planned for August 2012. The purpose of the meeting is to review the final evidence that verifies the elimination of measles, rubella and CRS at the regional level.
- Field visits of IEC members are planned to take place during 2012 to 8 selected countries that:
 - Have reported the last endemic rubella and CRS cases: Argentina, and Colombia.
 - Have experienced recent and sustained measles outbreaks: Brazil, Canada, and

- Ecuador.
- Have implemented follow-up campaigns and surveillance activities as part of the documentation/verification process: Haiti
- Are in high-risk due to ongoing tourism activity: the Caribbean and Mexico.

B. Progress Report of Caribbean Sub-Regional Commission

The 27th Pan American Sanitary Conference adopted Resolution CSP27.R2 in 2007, which authorized the formation of an IEC responsible for documenting and verifying the interruption of endemic measles and rubella virus in the Region of the Americas. Technical Advisory Group on Vaccine-preventable Disease (TAG) recommended that countries prepare and implement a national plan of action for the verification of measles, rubella, and CRS elimination, with technical cooperation provided by PAHO and the members of the IEC.

The Working Group meeting, held in Barbados in July 2010, defined the activities required for documenting the elimination of measles, rubella and CRS, including instruments and or checklists. The working documents, such as a model country report, were sent to countries to guide the documentation and verification process. Countries were asked to form teams at national levels, develop plans for the in-country activities, and prepare a report. The support of the countries' Medical Associations and the Caribbean Paediatric Association were requested to conduct specific activities, including the completion of questionnaires and surveys. Each country formed a national team and conducted the activities according to the agreed guidelines and prescribed guidelines.

All countries submitted a draft report on the documentation and verification process to the Sub-regional Commission. The Secretariat (CAREC's immunization team), in collaboration with the Commission and teams (which at times included members of the Commission) supported and validated elimination in nine countries. Support was also given by the Secretariat in convening the meetings and logistics of the Commission and the preparation of the Sub-regional Report, which was submitted in December 2012.

C. Lessons Learned and Next Steps from the Documentation and Verification of Measles, Rubella and CRS Elimination in the Caribbean Sub-Region

1. Barbados

Several lessons learned were identified after carrying out the documentation and verification process in Barbados, including the importance of working with private sector practitioners and laboratories; the need for the accurate documentation of cases, events and final results; the importance of keeping records that can be easily retrieved; and the need for taking samples for laboratory testing and confirmation of suspected cases, which must be followed up. Other lessons were related to training needs, such as the continual training for doctors, nurses and records personnel in surveillance of these diseases and the updating of laboratory personnel in the latest techniques for testing and the importance of early diagnosis and case investigation. It was also identified, following review of admission logs for the last 40 years at the school for the blind and deaf, that there has been a dramatic decline in admissions over the last 5 to 7 years with no new admissions being recorded.

A few of the challenges encountered were incomplete documentation and lack of laboratory confirmation in old notes, lack of cooperation from some practitioners, time constraints, dependence on others to gather needed information, shortage of dedicated staff to conduct the investigations and the required work, and obtaining permission to enter and conduct information search in hospitals and private offices.

The next steps for the documentation and verification process include: renewal of the impetus to get the private sector and the clinics to submit samples of suspected cases for laboratory investigation, continue the training and update of all health care workers in surveillance, outbreak investigation, identification of the specific diseases and protocols for AFP and rash/fever, encourage health care workers to follow the procedures when such suspected cases are seen, continue to strive for 100% MMR coverage of both doses, continue to engage the private sector in the immunization drive, and strive to keep Barbados and the Caribbean free from imported cases and to prevent any spread locally should it occur.

2. Suriname

Suriname introduced the monovalent measles vaccine into the routine immunization program in 1984. Ten years later this was expanded to MMR. Since then several measles/rubella mop-up campaigns have been implemented.

For the period 2006 to 2010 there was a steady increase in MMR1 coverage. Data from the rash and fever surveillance shows that there were no laboratory confirmed cases for either rubella or measles in the last ten years. There have also been no confirmed CRS cases since 2000. According to medical specialists there have been no new hospital admissions for rubella-associated illnesses and the number of admissions to the institutions for the visually and/or hearing impaired has declined.

Recommendations for the documentation and verification process are to reach and maintain a coverage of >95% for MMR and to expand the implementation of the 2 MMR doses policy. Related strategies may include the sensitizing and training of healthcare workers and improving access to vaccines and follow-up of dropouts. Both the surveillance system and the laboratory services need to be strengthened and improved.

3. Trinidad/Tobago

Trinidad and Tobago began the process of documentation and verification of the interruption of endemic measles and rubella transmission in the America in November 2010. A retrospective study was conducted for the period 2006 to 2010. The country recorded measles outbreaks between the years 1981-1986. The highest incident of confirmed rubella cases was recorded in 1983 and 1984. There was also another significant increase of rubella incidence in 1996 and 1997 with confirmation of cases every year until 2001.

Over the past two decades, Trinidad and Tobago made extraordinary progress in providing children aged 0-5 years with an umbrella of protection against VPDs and several combined strategies were implemented to protect the population against measles, rubella and CRS. Three mass campaigns were implemented in the years 1991, 1996 and 1997 reaching coverage over 90%. With the introduction of measles-containing vaccine and the measles, mumps and rubella (MMR) vaccines, a number of achievements were attained. During the data collection, there were no documented cases of endemic measles, rubella and CRS.

The country prepared itself for the task by forming a National Team headed by the Chief Medical Officer. Sub-national teams were also formed to facilitate the process. Instruments were adopted and used including a survey with questionnaires incorporated that were distributed to over 100 physicians and specialists. Seventy-one (71%) percent of these questionnaires were returned completed. General practitioners and paediatricians were the primary groups to respond. Questionnaires continue to be sent to physicians to collect additional information.

The documentation and verification process provided specific information about the program in the country. Vaccination coverage for 1-year olds has been high for more than five years. Coverage between the years 2006 -2010 has been over 90%. All funding for the EPI programme is fully supported by the Government. Legislation remains in place, thereby supporting the strength of the programme.

During the research period, there were several challenges or limitations, which may have affected the timely analysis and completion of the report. Some limitation issues included the poor record keeping at both hospitals and health centres; the bureaucratic system prevented timely access to information; slow response and sometimes unco-operation by practitioners; and insufficient staff to assist in data collection.

The primary lessons learned included that the EPI is one of the more successful programmes of the Ministry of Health and systems should be put in place to protect the integrity of the programme, as well as that there is need for an efficient and effective surveillance system with the capacity to detect early occurrences of diseases and the ability to make timely intervention.

Trinidad and Tobago remains alert to all threats of communicable diseases and disease trends. The country awaits the outcome of the evaluation report from PAHO before going further.

D. Country Plans to Implement Recommendations from the Documentation and Verification of Measles, Rubella and CRS Elimination in the Caribbean Sub-Region

1. Bahamas

The Bahamas is an archipelagic nation where healthcare services are available through the private and public sector. Efforts for measles, rubella and CRS elimination began in 1991, with a target population of 153,180, and 64% coverage was achieved. Two subsequent MMR campaigns were conducted in 1997 and 2003.

A second MMR dose is administered at 4 years of age and antenatal screening for rubella titers is conducted post-delivery if a non-immune or equivocal MMR response is observed.

Ongoing activities to maintain measles, rubella, and CRS elimination are conducted through child health services, post natal ward and clinic, school health services, adult immunization clinics, community outreach, syndromic surveillance, training of all healthcare workers on components of the EPI program, investigation and follow-up of suspected cases, contact tracing of all contacts, and weekly reporting of fever/ rash and acute flaccid paralysis to CAREC.

Challenges to maintaining elimination include and illegal immigrant population with no vaccine history and the frequent movement of some residents to other islands.

2. Trinidad/Tobago

Trinidad and Tobago plans to implement some of the recommendations made by the National Team on maintaining the elimination of measles, rubella and CRS as identified through the documentation and verification process. It was identified that there is a need for training and re-training of staff at various levels, as well as to improve supervision so that staff competencies and skills may be enhanced. The creation of an EPI related web page was also recommended to provide easy access to information. The country waits for additional comments from PAHO regarding the country report that was submitted to determine if other activities will be implemented in the context of the documentation and verification process.

3. Turks/Caicos Islands

Following the EPI Managers meeting in November 2010, the National Committee for the Documentation and Verification of Measles, Rubella, and CRS Elimination was formed in February 2011. The Committee held a series of meetings, in collaboration with PAHO and CAREC, to discuss various aspects of the plan to document country findings.

Recommendations resulting from the process included: 1) staff (doctors and nurses) of the two hospitals should be sensitized on the fever/rash surveillance and the CRS surveillance systems; 2) because of the low MMR2 coverage for children born between 2002 to 2006, this data should be reviewed again by clinic staff to confirm coverage identified all defaulters should be vaccinated; 3) indiscriminate MR vaccination of persons aged 6-40 years old in the Haitian and Dominican Republic communities in Providenciales and Grand Turk before the end December 2011.

Some of the achievements resulting from these recommendations include: 1) discussions held with the Clinical Directorate of Interhealth in relation to EPI surveillance and surveillance in general as a part of Cholera preparedness efforts; 2) MMR2 vaccination continues in schools on all islands for those children aged 4 - 6 yrs (the process is mostly completed on the smaller islands but continues in schools on the larger islands of Grand Turk and Providenciales); and 3) vaccination coverage data is verified by searching primary and secondary school immunization records and reviewing available cards; special emphasis will focus on schools and irregular migrants during Vaccination Week 2012.

Some challenges identified in the process include insufficient nursing staff on the island of Providenciales with the largest population of irregular migrant's and due to the high numbers of undocumented children of irregular migrants, as well as to the downturn in the economy, many children are out of school. Strategies have to be identified to reach this population during Vaccination Week in the Americas 2012.

Turks and Caicos will continue vaccinating until all children aged 4 to 6 years and over is reached with vaccination activities and will ensure buy-in by the Interim government to procure adequate amounts of antigens included in the EPI program.

RECOMMENDATIONS-DOC/VERIF ELIMINATION PROCESS:

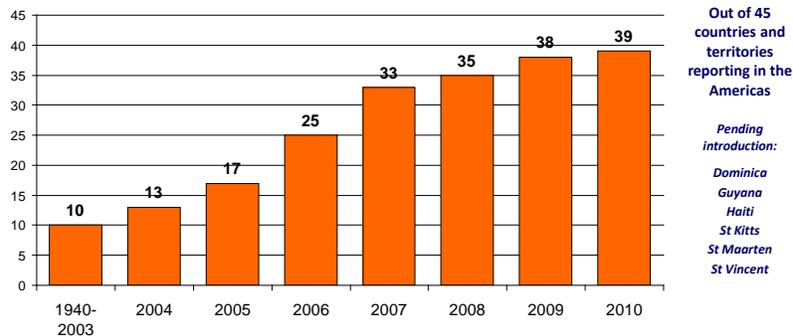
- Countries should incorporate strategies and concrete activities into their EPI Plans of Actions that will overcome the challenges identified by the Sub-Regional Commission for Documenting/Verifying Measles, Rubella and CRS elimination in the immunization and surveillance programs, with the purpose of protecting the gains obtained.
- Medical practitioners in hospitals (public and private), health centres, and other related facilities must be sensitized to the elimination initiative for measles, rubella, and CRS.

V. Influenza Surveillance Programme

A. Regional Perspective of Influenza Vaccination Programmes

Influenza vaccine has been introduced rapidly in the Americas over the last decade in light of increasing awareness of the high burden of disease from influenza and the escalating risk of a pandemic. As of December 2011, 39 out of 45 countries and territories in the Americas had introduced the seasonal influenza vaccination into their national schedules, as compared to 13 in 2004 (Figure 6).

Number of Countries and Territories in the Americas with Vaccination Policies for Seasonal Influenza



Source: Country Reports to PAHO, MOH web pages, PAHO/WHO Surveys
 Note: Data was not collected from the French Departments (French Guiana, Guadeloupe, Martinique)



Figure 6

In 2009-2010, more than 31 countries and territories also carried out pandemic vaccination campaigns in response to the Influenza A (H1N1) pandemic. Many lessons learned have come out of this experience and countries have continued to vaccinate their high-risk populations against seasonal influenza.

During the 2011 TAG meeting influenza recommendations were revised to reiterate previous recommendations that countries vaccinate older adults, pregnant women, children, those with underlying conditions, and healthcare workers.

B. Sub-Regional Status of Seasonal Influenza Surveillance

More than 90% of countries have introduced the vaccine in the public health systems. The influenza vaccination targets at-risk groups, such as healthcare workers, persons with underlying medical conditions and pregnant women. The Northern Hemisphere influenza vaccine has been the vaccine used by the countries.

The influenza surveillance system implemented in selected countries in the Caribbean in 2007 has continued. Reports of acute respiratory infection (ARI) are submitted weekly from all CAREC member countries and severe respiratory infection (SARI) from 6 countries, namely Barbados, Dominica, Jamaica, St. Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago.

In 2011, the incidence rate for ARI had a major peak in EW 8 and 12 and 37-40 for all ARI cases (primarily children aged less than 5 years and those older than 5 years). Concerning hospital admissions for SARI, most cases were in the age group less than 48 months with the highest rate being 4.8 per 100 hospital admissions. Laboratory testing showed that influenza A (H3N2), influenza A H1N1 2009 and seasonal influenza B were the main circulating virus type. Respiratory syncytial virus (RSV) was detected in 28% (147 of 531) of the positive specimens. Seventy-one (71%) of these positive specimens were from clusters of cases in a home for the elderly and also in children less than 5 years of age.

RECOMMENDATIONS-INFLUENZA:

- Increase vaccine uptake of pregnant women given their vulnerability to complications from influenza infection.
- Document influenza vaccination coverage in high-risk populations using the PAHO/WHO/UNICEF Joint Report Forms.
- Assess the impact of influenza in high-risk populations in the Caribbean countries.
- Countries should ensure that their sampling strategies are in place and implemented for the taking of specimens as a vital part of the surveillance system for Acute Respiratory Infections.
- The surveillance system for ARI and SARI should be enhanced and expanded to all countries.
- The EPI Managers should ensure that they are integrally involved in ARI/SARI surveillance and be catalytic for increased specimen collection.

VI. Sustaining the Gains

A. Vaccination Weeks in the Americas

1. Overview of Vaccination Week in the Americas 2011-2012

The ninth anniversary of Vaccination Week in the Americas (VWA) was celebrated from 23-30 April 2011 under the slogan, "Vaccinate your family, protect your community", to promote vaccination as a right of the entire family and as an essential tool in preventing many devastating diseases. Over the tenure of VWA in the Region, the initiative has become a key annual opportunity to advance equity and access to vaccination services, while providing a platform to highlight the essential work of national immunization programs in public forums. VWA is a flexible initiative and activities are chosen by countries according to current national health priorities. Many countries also use VWA as a platform for the integration of other preventative interventions with vaccination. Over the last 9 years, more than 365 million individuals across all age groups have been vaccinated through a diverse number of campaigns conducted under the VWA framework.

In 2011, VWA was celebrated by 43 PAHO Member States. Multiple VWA launching events and celebrations of different magnitudes occurred across the Region, including Regional launching events between Peru and Bolivia on 26 April in Kasaní, and in Manaus, Brazil on 30 April. Other VWA launching ceremonies took place between the United States (National Infant Immunization Week) and Mexico in Tucson, Arizona and in Panama, Guatemala, on the tri-national border between Colombia, Brazil and Peru, between Guatemala and Honduras, between Colombia and Ecuador, between Suriname and French Guyana, and in El Salvador, Costa Rica, Uruguay and in Cuba, among others. Approximately 41.6 million individuals were vaccinated as part of VWA 2011 through measles, rubella, polio and pandemic influenza (H1N1) campaigns, as well as campaigns to complete childhood schedules and target occupational risk groups, among others. In 2011, 12 countries also reported using VWA as an opportunity to integrate other health interventions with vaccination, such as the administration of Vitamin A and deworming treatments, a variety of health screenings, school health, dental care, and health education.

The success of VWA has served as a model for other Regions of the World Health Organization in the implementation of their own vaccination week initiatives. As of 2011, Europe (2005), the Eastern Mediterranean (2010), Africa (2011) and the Western Pacific (2011) have each established their own sister initiatives which are carried out simultaneously with VWA but are adapted to the needs of the respective Member States. The countries in the Region of South-East Asia (SEARO) have also committed to coming on board with their own initiative in 2012; with this addition, 2012 will mark the first ever celebration of World Immunization Week (WIW), ten years after VWA began in the Americas. In order to provide the political mandate for future initiatives, PAHO has advocated with Member States throughout the year, to bring forth a WIW resolution during the next World Health Assembly (WHA). In January 2012, Barbados played a leadership role and presented a WIW resolution during the WHO Executive Board meeting, which was endorsed by Member States (EB130.R12). The resolution will now be brought before the WHA in May 2012. The intent is that WIW will not replace the unique Regional initiatives, but instead serve as an overarching framework for all future Regional efforts.

To celebrate the 10th anniversary of VWA and the first WIW, plans are currently underway for several Regional launching events during VWA 2012. A proposal has been made for a Caribbean launching event to take place in Barbados on either 23 or 24 April. This event would serve to highlight the efforts of the Caribbean sub-region during VWA over the last decade and to recognize the important role played by Barbados in presenting the WIW resolution.

2. Country Presentations

In the Caribbean sub-region, many of the activities implemented in 2011 were similar to those of 2010, such as vaccination outreach sessions for target populations (i.e. farmers, workers in tourism sectors, carpenters and the elderly) with tetanus containing vaccine, hepatitis B and yellow fever vaccines. Catch-up vaccination sessions were done for adolescents for hepatitis B vaccine in one country. Some countries conducted health fairs, health education and exhibition sessions in communities and schools, school essay competition and award programmes for health workers. All countries utilize the media in their immunization awareness programmes.

VWA has also provided a platform to raise population awareness regarding the importance of immunization campaigns and to keep the topic on the forefront of political agendas in the Region.

While in 2010, regional celebration of VWA was at the border between Suriname and French Guiana (with the participation of Brazilian authorities had the Director, PAHO, Dr. Mirta Roses as the guest of honor) in 2011, countries had special activities focusing on social mobilization for immunization. Many countries continue to have vaccination outreach programmes integrated with screening for non-communicable diseases, health fairs and displays at schools and communities.

a. Barbados

PAHO will be marking its 10th Celebration of Vaccination Week in the Americas during the week of April 21-28, 2012. This year also will mark the 1st World Immunization Week where countries in all six (6) regions of WHO will participate.

This follows the successful passage of a Resolution at the Executive Board of the World Health Organization on Saturday, January 21, 2012. Barbados, with the assistance of PAHO/WHO initiated the process and had co-sponsors in Bahamas, Brazil, Canada, Guyana, Jamaica, Mexico, Suriname, and the USA.

As Immunization remains one of the cost effective interventions in public health, World Immunization Week will serve as an overarching framework to unify all ongoing efforts.

b. Dominica

In Dominica, the main objectives of VWA 2011 was to provide staff with updated information regarding ESAVIs, to strengthen the country's adverse event following immunization (AEFI) management system and to provide the public with information on vaccines, particularly seasonal influenza vaccine. Various methodologies were employed including group exercises, lecture discussions and role-play to inform 115 staff members during these workshops.

A pre test was given at the beginning to assess participants knowledge on ESAVIs and repeated at the end as an evaluation tool. Scores range from 0-7 out of 20 in the pre-test and 12-20 in the post-test (medium of 18). Staff acknowledged that their knowledge regarding the subject area was very limited and that after the training they felt better prepared to manage and identify adverse events should they occur. Specific topics covered included concepts and definition of terms, impact of AEFI on patient and immunization program, programmatic errors and how they can be prevented, differences between drugs and vaccines, types of AEFI and clusters, and methods for monitoring ESAVI.

Other activities included live call-in programs on national radio station, including public addresses provided by the Minister of Health to launch VWA 2011, pre-recorded radio programs on seasonal influenza vaccine, and public service announcements (PSA) and jingles related to vaccines. Clinic room health education sessions on vaccines combined with the provision of maternal and child health services were also provided.

Main achievements and lessons learned included that staff knowledge on AEFI increased, thus they are better equipped to identify and manage AEFI, AEFI reporting forms were updated and circulated to all staff involved in immunization, and more frequent in-service sessions on vaccines need to be organized.

c. St. Vincent/Grenadines

Planning for the ninth annual VWA 2011 began in January of 2011 and a planning committee, comprised of Senior Nursing officer/EPI Manager and nine Health Nursing Supervisors (Public health Nurses) was established. During the first planning meeting, the theme "Vaccinate your family protect your community," was discussed and main objectives and priorities were defined in order to target activities during VWA 2011. As a result week of activities was developed.

The objectives defined for VWA were: update immunization status of target population; continue to create awareness of the importance of immunization; continue to educate the general public on issues of immunization; and motivate health workers to promote immunization and to maintain excellent immunization coverage and standards in their respective health districts.

The week commenced with a message from the Minister of Health and the Environment, the Honorable Cecil Mckie, on 24 April 2011. Church services were held on 24 and 30th in all health districts. Health centers throughout St. Vincent and the Grenadines each dedicated one day to vaccination where community members were given the opportunity to visit the health centers to be vaccinated. Staff at all Health centers focused their efforts on informing the population about immunization through educational sessions.

Apart from vaccination activities, community nursing service took the opportunity to reach the population with other public health interventions. The second Annual immunization Health fair was staged in the Northern Grenadines Health District. Finally, health promotion efforts were focused on informing the population through daily educational programs on radio.

The Launching of National SVG New EPI manual and award ceremony were held on 16 May 2011. Trophies were presented to one (1) health centers in each of the 9 health districts for achieving best immunization coverage in 2010 (>95%). Twenty seven health personnel were

awarded for their outstanding contribution. A presentation was also made to Sr. Yvonne Labbay past EPI Manager who served for 18 years.

The primary lessons learned included to foster a strong public/private relationship, begin planning for VWA, and maintain a committed planning committee. It is recommended that a budget should be allocated by the Ministry of Health of Wellness and the Environment to provide financial support for VWA and that educational activities regarding immunization awareness should continue through the year.

B. Sustaining Polio Eradication

1. Progress towards Polio Eradication and Poliovirus Containment

The countries of the Caribbean are at risk for receiving an importation of wild poliovirus and circulating vaccine derived polio virus. Failing to rapidly detect an importation while having widespread circulation reflects the quality of surveillance and low population immunity.

In 2011, the number of cases due to wild poliovirus has been the lowest in the past 5 years with sixteen countries reporting over 600 cases. The past 3 years have seen countries in Africa, Europe and Asia experiencing importations from endemic countries with many secondary cases. With more than 140 million tourists arriving in the Americas, the risk of importation is extremely high and all countries are at risk. Therefore a well-structured and timely surveillance is crucial.

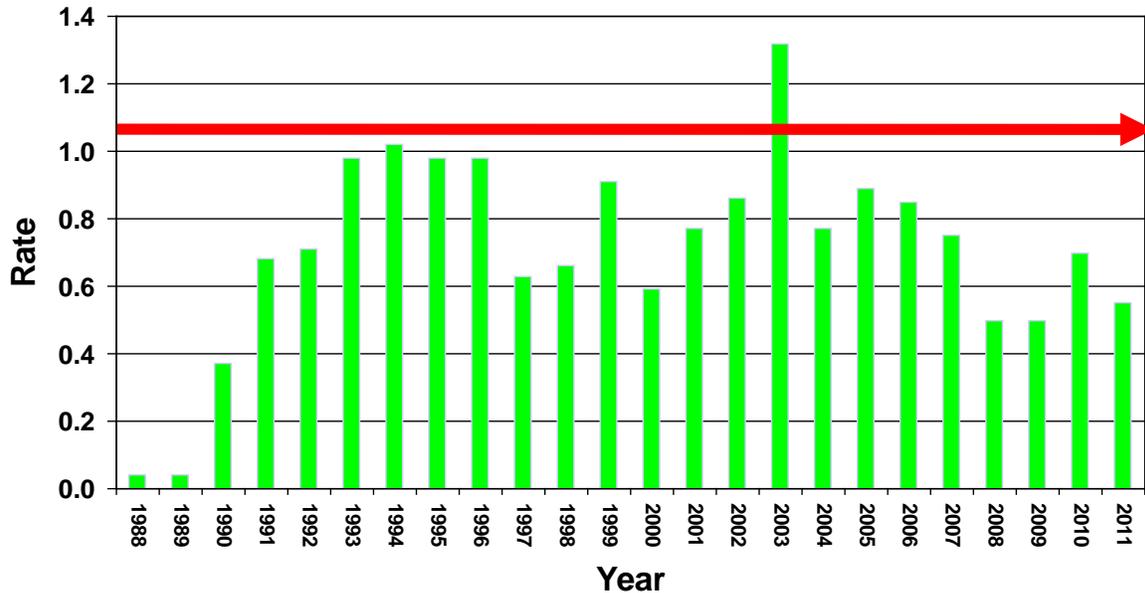
In the Caribbean the AFP rate per 100,000 population of children aged less than 15 years has been unacceptably low (0.55) in 2011 and only 18% of cases had adequate specimens collected. The basic surveillance indicators have to be attained by all countries in order for the surveillance system to be efficient and effective. Low population immunity, which reflects low vaccination coverage, inadequate sanitation, and ineffective surveillance system are ideal conditions to support polio outbreaks. Complacency is not an option for preventing an outbreak.

2. AFP Surveillance in the Caribbean Sub-Region

The global eradication of the wild poliovirus continues to require much effort for completion. The importance of maintaining adequate and timely surveillance, as well as high vaccination coverage cannot be overstated. The last cases of poliomyelitis due to wild poliovirus in the Caribbean occurred in 1982. The countries have strived to maintain high poliovirus vaccination coverage and effective AFP surveillance. AFP reporting continues from 507 sites and 99% of these sites reported on a weekly basis in 2011.

From 1994-2011, there were 301 AFP cases aged less than 15 years reported from 11 countries. Excluding 1994 and 2003 when the annual AFP rate was 1.0 or greater the annual AFP rates ranged from 0.50 to 1.32 per 100,000 population aged less than 15 years (Figure 7).

Acute Flaccid Paralysis Rate per 100,000 children <15 yrs of Age Caribbean Sub-region, 1988-2011



Source: Countries reports to CAREC

Figure 7

1

In 2011, 24 AFP cases with age range 23 months to 61 years were reported from 4 countries: Belize, Guyana, Jamaica, and Trinidad & Tobago. Eleven cases were less than 15 years of age. Stool specimens were collected from nine (82%) of the eleven cases. Only 2 of the 9 specimens were taken within 14 days of onset of paralysis. Nine (82%) cases were investigated within 48 hours. These AFP indicators need to be markedly improved and were less than that of 2010.

While in 2010, 26 AFP cases with age range 12 months to 74 years were reported from 6 countries: Barbados, Belize, Guyana, Jamaica, Suriname, and Trinidad and Tobago. Fourteen cases (54%) cases were aged less than 15 years, of which 12 cases had stool specimens collected and 9 of the 12 stool collected were within 14 days of onset of paralysis. All stool specimens that were collected were done within 30 days of onset of paralysis.

The annual rate of AFP cases per 100,000 population aged less than 15 years for 2011 is 0.55 below the recommended rate of 1.0. The indicators of adequate stool specimens and annual AFP rate are directly related to the probability of early detection of importations of wild polioviruses from the endemic regions of the world. These two indicators are less than expected levels (Figure 8).

AFP Surveillance Indicators 2005-2011 Caribbean Subregion

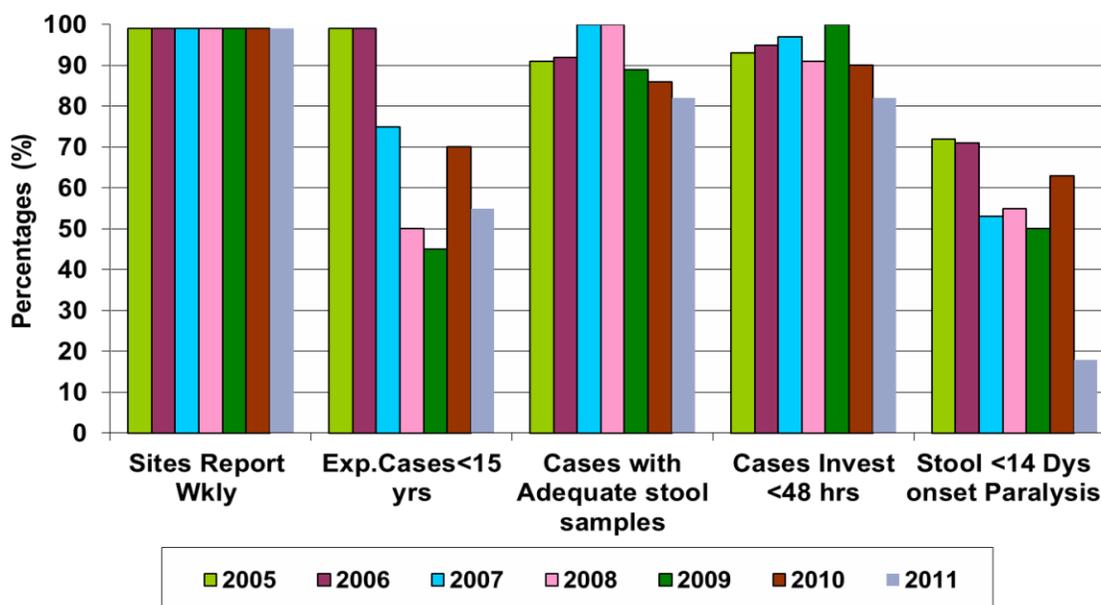


Figure 8

RECOMMENDATIONS-POLIO:

- All hospitals (both public and private) should be included in the surveillance for acute flaccid paralysis (AFP), and opportunities should be identified to maintain pediatricians informed.
- Countries are to make efforts for all stool specimens for AFP to be collected within 14 days of onset of paralysis and improve timeliness of delivery to CAREC.
- Countries must take measures to achieve vaccination coverage >95 % in every district, to conduct an active search for cases of AFP and to comply with the AFP surveillance indicators (rate > 1 x 100,000 for the population aged <15 years old and adequate stool specimens collected in >80 % of AFP cases).
- Conduct training on AFP surveillance with health workers in both the public and private sectors, emphasizing the importance of rapid reporting and the collection of adequate stool specimens. Instructional materials may also be prepared, such as posters about what to do if an AFP case is detected.

C. ESAVI Surveillance

1. Regional Perspective on ESAVI Surveillance

Vaccination against childhood diseases is one of the greatest medical success stories of the last half-century. From the perspective of the immunization programs, it is of utmost importance to

guarantee vaccination safety and to respond promptly to any concerns raised by the public, so as to maintain the public confidence in immunization.

To this end, it is important to define the areas of work related to immunization safety (Figure 9):

- *Production* - ensuring that the countries acquire vaccines that are subjected to rigorous quality control processes and produced by manufacturers using GMP.
- *Transportation and storage* – ensuring that the vaccine is perfectly maintained and stored from the time it leaves the manufacturer to the time of administration.
- *Administration* – ensuring that safe injection practices and standards are thoroughly followed.
- *ESAVI monitoring* – making sure that monitoring of events supposedly attributable to vaccination or immunization (ESAVI) is implemented and when they occur, that there is a rapid and efficient response and investigation, including the final classification of the case and;
- *Crisis prevention* – being prepared to prevent and manage a crisis, which can generate mistrust towards vaccines and the immunization program in the population. Ensuring alliances between the immunization programs and the news media and other trusted sources (for instance, scientific societies) are crucial for manage this component.

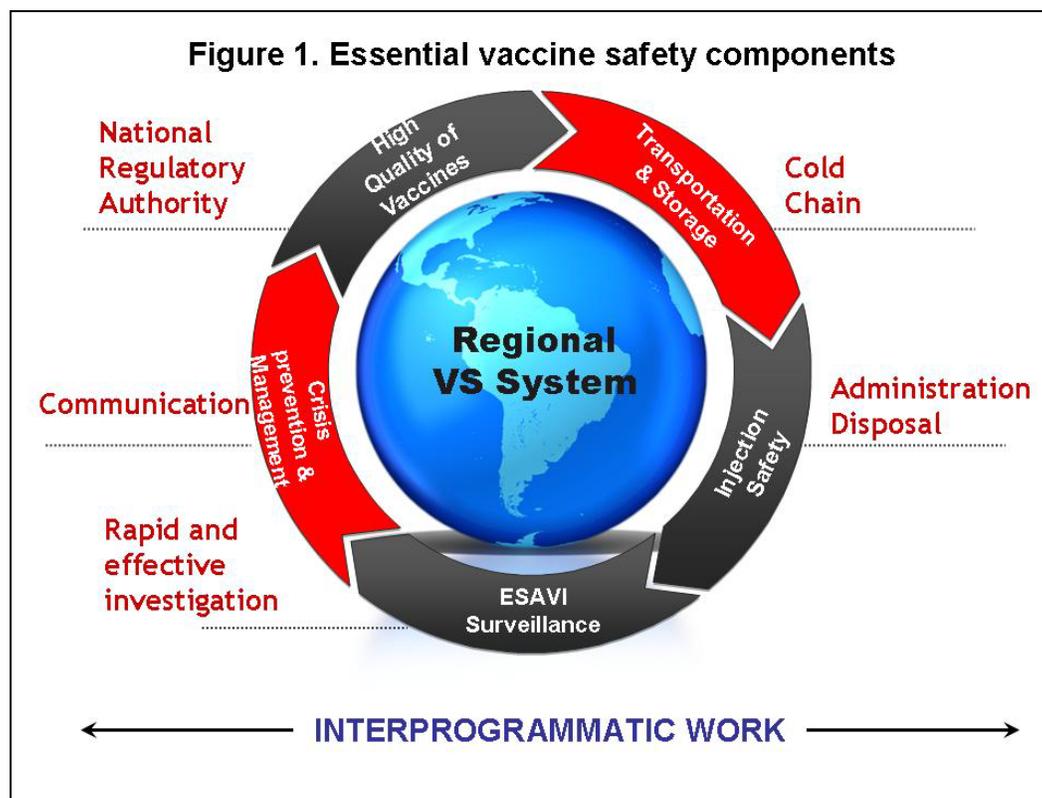


Figure 9

The English-speaking Caribbean Countries have a strong vaccination culture built over the course of more than 30 years. Nevertheless, the emergence of rumor, the manipulation of the information by the media, as well as the growing number of people using the Internet to obtain information on vaccines, may influence vaccination decisions by delivering information that alters the perceived personal risk of VPDs or vaccination side-effects.

Although countries already have surveillance mechanisms in place, strengthening is required as well as the development of crisis management plans. ESAVI/AEFI monitoring guidelines on vaccine risk communication were provided at the ESAVI workshop in 2010, and these should inform the crisis plan. The information and skills gained from the workshop were used for the in-country investigation.

Vaccine safety issues, including how to reduce programmatic errors, are being emphasized, since maintaining the public trust in the immunization programme is of paramount importance to the countries.

2. Strengthening ESAVI Surveillance in the Sub-region: ESAVI Country Reports

a. Bermuda

Bermuda established a rudimentary guide in 2003 for reporting adverse events following immunizations. There have been a total of 27 minor adverse events reported since 2003. The most common minor events include: sterile abscess/nodule, pain/swelling and fever. All events spontaneously resolved within 24 hours. There have been no clusters of events or single vaccines implicated. One programmatic change was made regarding the needle size used during administration of vaccines. Strengthening written policies and procedures for documenting reporting adverse events is planned for 2012 including the development of a checklist for assessing reported events.

b. St. Kitts/Nevis

Following the assessment in St Kitts and Nevis of the measles, rubella, and CRS process in 2010, a number of gaps were identified. These included inconsistencies among health care workers in the monitoring and management of ESAVI.

Consequently, in 2011, a series of training/re-sensitization activities were implemented with the aim towards capacity development of the surveillance system focusing on ESAVI. The target groups identified included new nursing staff members, nursing staff both in community and institution-based, medical doctors, environmental officers, epidemiologist and laboratory technicians.

The year culminated with a three -day workshop on ESAVI. The content for the workshop was adapted from the Regional ESAVI workshop hosted by PAHO in 2010, and was jointly facilitated by Dr. Elizabeth Ferdinand; Senior Medical Officer/EPI Manager Barbados and Eulynis Brown; EPI Manager, St Kitts and Nevis. Other presentations were assisted by Mr. William Turner; National Epidemiologist.

The outcomes of these activities reflected improvement in documentation and timely reporting of cases and the strengthening of active surveillance of institution-based sentinel sites. Additionally, lessons learned included continuous update in ESAVI management, communicating clearly defined roles of key stakeholders, and the importance of communicating accurate and timely information. However, some challenges were noted in the low attendance of doctors and staff of the A/E department. In conclusion, the way forward encompasses strategic interventions to address challenges identified and the monitoring of skills development post training.

c. Grenada

There is no official ESAVI monitoring committee in Grenada. No serious adverse events resulting in deaths or disability have occurred over the years. Mild events such as fever, pain and swelling

at the injection site are the common events that are reported, along with an occasional report of febrile convulsion. Report of events is made to the EPI Manager from the community and hospital.

Measures taken to prepare for and prevent ESAVI include ongoing education and sensitization of nursing staff. Emergency drugs are to be available during vaccination sessions, strict cold chain maintenance, recording of Vaccine Lot Numbers and monitoring of expiry dates, adherence of aseptic technique in vaccine administration, education of parents in recognizing and reporting ESAVIs, and close collaboration with pediatric consultant for discussion on vaccination issues.

The next steps are to incorporate ESAVI issues into the agenda of the EPI Committee, continue stimulated passive surveillance of health care workers to be vigilant, sensitize medical practitioners on ESAVI and the need to report, complete review of adverse reaction form and develop an ESAVI Communication Plan.

d. Jamaica: Lessons Learned from Management of Serious ESAVI Cases

In June 2011, a case of sudden death in an infant who had been vaccinated the day before with the MMR vaccine was reported in Jamaica. After a thorough investigation, including a post mortem and submission of tissue samples for immunohistochemistry testing at the CDC and a national pathology laboratory in Colombia, the case was finally classified as Sudden Infant Death Syndrome and not vaccine related. There were a number of factors, which facilitated the investigation, chief of which was the availability of an ESAVI Crisis Plan and support for external testing of post mortem tissue samples. However, there were some challenges related to the investigation including the issuance of a press release, which negatively impacted the investigation and the EPI programme for a short while. Many lessons were learned in investigating this case including the value of a coordinated team approach, the need for risk communication at all levels, adequate and complete documentation of the health status of children being vaccinated, as well as the need for investigation of serious ESAVIs by a team of persons independent of the programme managers and service providers.

RECOMMENDATIONS-ESAVI:

- Countries should develop risk communication plans as an integral component of risk management (outlining the strategies to prevent and manage crisis), taking into account political, societal, cultural and economical factors. The strategy of risk communication should be part of the national immunization annual plan of action in order to ensure adequate planning before the occurrence of a crisis.
- During a crisis, transparency should be guaranteed through prompt and frequent communication with the public of what it is known and not known, and what is being done, using simple messages appropriate for wide and diverse audiences.
- Countries should establish and institutionalize mechanisms for the coordination and participation of the different stakeholders (inside and outside of the health sector) involved in a rapid response to a crisis. Roles and responsibilities, as well the identification of an adequate flow of information and communication, should be clearly established before a crisis emerges.
- Countries should properly document the occurrence of ESAVIs through rigorous and timely investigation, with the purpose of generating strong scientific evidence to guarantee the safety profile of all vaccines used.

- The Sub-region should consider establishing a Caribbean Regional Advisory Committee on Immunization and ESAVI Management to review and evaluate serious AEFI.

VII. New and Under-utilized Vaccines

A. Pneumococcal and Rotavirus

1. Update and Regional Perspective on Pneumococcus and Rotavirus Vaccination and Surveillance Programme and Requirements for Introduction

Pneumococcal disease causes an estimated 1.3 million cases of acute otitis media, 327 thousand cases of pneumonia, 1,229 cases of sepsis and 4,000 cases of meningitis annually in children aged <5 years in LAC countries.

In Latin America and the Caribbean countries (LAC), an epidemiological surveillance network of bacterial pneumonia and meningitis in children aged <5 years in sentinel hospitals has been supported and has come to match the laboratory network of SIREVA II. The following 10 countries in the Region report their epidemiological surveillance data for bacterial pneumonias and meningitis to PAHO: Brazil (meningitis), Bolivia, Ecuador, El Salvador, Guatemala, Honduras, Panama, Peru, Paraguay, and Venezuela.

The WHO, in its last position paper on pneumococcal conjugate vaccine in 2007, considered the vaccine a priority for the vaccination schedules of the countries. Moreover during the 2006 and 2009 meetings, the TAG recommended that all countries of the Region implement surveillance systems in order to know the profile of the disease and monitor the impact of the introduction of the vaccine.

As of December 2011, the following 17 countries in the Region have introduced the PCV to their national immunization programs: The United States (2001); Canada (2002), Costa Rica (2007); Bermuda, Mexico, Uruguay (2008); Barbados, Peru (2009); Brazil, Ecuador, El Salvador, Panama, Nicaragua (2010); Chile, Colombia, Honduras, and Guyana (2011). Four territories have also introduced this vaccine: Aruba, the Cayman Islands, Curacao, and French Guiana.

With the recent introduction of this conjugate vaccine in the various national vaccination programs within LAC, knowledge gaps with regards to vaccine effectiveness in the different possible schedules and the interchangeability between vaccines with different components still remain.

Rotavirus is one of the most important causes of disease in children aged under 5 years in countries throughout the world. Rotavirus is responsible for approximately 600,000 deaths and 40% of hospitalizations due to diarrhea in children aged less than five years each year. According to available data, rotavirus causes approximately 75,000 hospitalizations and 15,000 deaths annually in the Region of the Americas.

Since 2006, several countries of the Region of the Americas have initiated the introduction of the rotavirus vaccine. This Region was the first to introduce this vaccine in its national immunization programs. As of December 2011, 16 countries and territories in the Region have introduced this vaccine; 13 countries use the monovalent vaccine (Brazil, Bolivia, Cayman Islands, Colombia, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Panama, Paraguay, Peru, and Venezuela), 2 use the pentavalent vaccine (Guyana and Nicaragua), and the United States uses both vaccines. In December 2009, the WHO recommended that all children receive the rotavirus vaccine as part of the regular immunization schedule.

Sixteen countries of the Region have implemented the sentinel hospital surveillance for diarrhea since 2005. There are 95 sentinel sites in the following countries Bolivia, Brazil, Chile, Colombia, El Salvador, Ecuador, Guyana, Guatemala, Honduras, Nicaragua, Panama, Paraguay, Peru, Suriname, St Vincent, and Venezuela.

Many studies of impact and effectiveness of the rotavirus vaccines have been done showing a great impact mortality and morbidity due to rotavirus diarrhea in children under 5 years old.

Some of the most important lessons learned regarding rotavirus and pneumococcal conjugate vaccine in the Region include:

- The experiences shared among early adopters have facilitated the vaccine introduction in other countries and the introduction of other new vaccines.
- Regional networks: surveillance, adverse events contribute to provide information in the knowledge and evidence for decision-making.
- Multi collaborative studies represent an important tool to evaluate effectiveness and safety of new vaccines in developing countries.
- Scientific studies stimulate professional from Ministries of Health.
- Introduce new vaccines should be at a universal level: this allows impact evaluation, reliable vaccination coverage and; equity with regards to vaccination access. The countries should be able to get information for decision-making: evidence-based vaccine introduction.
- Plan how to measure the impact of the intervention before the introduction of the vaccine.
- Cold chain storage at all levels should be ready before introduction of the new vaccines to avoid wastage of more expensive vaccine.

Invasive Bacterial Infection surveillance and Rotavirus Surveillance in the Caribbean Sub-region

The invasive bacterial infection surveillance (IBIS) initiated in 1998 was implemented in 5 countries of the sub-region. The focus of the surveillance was on invasive bacterial diseases, mainly pneumonia, meningitis, and septicemia. In 2000, the countries were required to report, weekly and annually, all cases of bacterial meningitis, Hib meningitis, Neisseria meningitides meningitis, non-specific meningitis, bacterial pneumonia, streptococcal pneumonia, and Hib pneumonia. In 2011, there were 9 cases of streptococcal meningitis reported from one country. There were 4 cases of Hib pneumonia (from 2 countries), and 2 cases of meningitis (from one country) reported in 2011.

The laboratory surveillance of pneumococcal diseases needs to be re-organized and enhanced. Training has been done in characterization for two laboratory staff one each from Jamaica and CAREC, Trinidad and Tobago. Countries need to be reminded to refer isolates from persons with invasive bacterial infection.

Rotavirus Surveillance in the Caribbean Sub-region

In 2004, sentinel surveillance for rotavirus infection started in selected Caribbean countries: Guyana, St. Vincent and the Grenadines, and Suriname (Trinidad and Tobago also participated for one year.) This surveillance system has focused on identifying 3 factors in each country: the burden of gastroenteritis among children less than 5 years; the burden of rotavirus infection in this same age group; and the rotavirus subtypes circulating in each country. The most common rotavirus subtypes found in the countries was G1P[8], which is also the most common subtype globally as well as the principal component of both rotavirus vaccines. Other non-vaccine subtypes, however, were the dominant subtypes at various times in the countries, raising concerns about the efficacy of the vaccine against these non-vaccine subtypes.

Over the past 5 years all countries have been encouraged to submit diarrheal stool specimens for testing for rotavirus and subtype characterization. In 2011, ten (10) countries reported 160 cases of which Jamaica reported 55% and most cases were in the 1st two months of the year. While for 2010, 5 countries reported 99 cases. Countries need to continue to send specimens or isolates from gastroenteritis cases for subtyping. Many of the cases were from the countries with the established surveillance system.

2. Lessons Learned from Introduction of Pneumococcal Vaccines in Trinidad/Tobago

Consultants in the Pediatric Department of Mt. Hope Hospital provided data (not properly documented) evidence relevant to incidence of invasive bacterial disease. Reports from National Surveillance Unit did not provide sufficient data.

After 1 year of the introduction of the pneumococcal vaccine for high-risk groups, the position was re-evaluated and vaccination policy was changed to include all newborns (in 2012). The estimated number of doses and cost for maintenance of Pneumococcal vaccine for new born and high-risk group in 2012 was 77,000 doses at USD \$1,025,280.

The protocols for the introduction of the vaccine was based on the recommendations by PAHO/WHO. The sensitization workshops and update for the GPs and the Pediatricians was provided through TTMA monthly meetings

There were no reported cases of ESAVIs of any significance.

3. Lessons Learned and Status of the Introduction of Rotavirus and Pneumococcal Vaccines in Guyana

Guyana introduced Rotavirus, *Rotateq*, in a phased approach in late October 2010. At the end of December 2011, 74% coverage was attained with the third dose. In January 2012, PCV 13 was introduced in Guyana. This was also a phased introduction in all ten regions. To-date there has been 50% coverage attained with the third dose. Challenges include retraining of staff, and in the case of Rotavirus, every effort is needed to ensure that the infants enroll in clinic by 2 months. There have been no reported adverse events of both vaccines.

RECOMMENDATIONS-PNEUMOCOCCAL AND ROTAVIRUS:

- Sentinel surveillance for pneumococcal and rotavirus in the countries is critical for identifying circulating sub types; countries are encouraged to develop a sampling strategy and submit specimens to CAREC for sub typing.
- Countries planning to introduce new vaccines must prepare an implementation plan to include logistics, training, and cold chain capacity, as well as ESAVI monitoring.
- Countries are to send stool specimens to CAREC for rotavirus genotyping. If rotavirus testing is done in countries, then stool specimens that are positive for rotavirus should be sent to CAREC.
- Surveillance should be enhanced and continue to be used to assess circulating types and antibiotic resistance patterns for pneumococcal organism causing invasive disease.
- Countries should improve or begin sentinel surveillance of rotavirus diarrhea, pneumonia, and bacterial meningitis in children aged <5 years, so that the impact of vaccine introduction can be adequately assessed and the prevalence of circulating strains and changes in the epidemiological profile of the disease monitored.

- All countries should systematically report their surveillance data for rotavirus diarrhea, pneumonia, and bacterial meningitis to facilitate the development of an epidemiological profile for the diseases in the Region, compare the profiles of different countries, geographical areas, and seasonality, and evaluate the epidemiological changes in these diseases that could occur with the introduction of the vaccine.
- Small countries and islands could have just one sentinel site for invasive bacterial disease and diarrhea due to rotavirus in the same hospital.
- Before introducing any new vaccine, countries should develop a plan of action, based on PAHO guidelines, that includes basic activities such as the evaluation of the cold chain at all levels, logistics, training, and strengthening of the ESAVI network.
- Rotavirus and pneumococcal vaccines should be considered for introduction in the immunization schedule, using the epidemiological profile as a guide. Introducing those vaccines in priority areas (i.e., only in certain municipalities/towns or provinces) makes it more difficult to assess the impact of the intervention and might create logistical and programming problems for the EPI. Therefore, these vaccines should be nationwide whenever feasible.
- Countries should study the impact of PCV on hospitalization and mortality trends caused by pneumococcal disease.
- Countries, and other stakeholders, should continue cost-effectiveness studies on PCV and Rotavirus introduction.
- Countries where interchangeability between PCV7 and PCV10 occurs, should document their results.

B. HPV Vaccination and Cervical Cancer Prevention and Control

1. Epidemiology of HPV and Cervical Cancer Disease

Dr. Elissa Meites, from the Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia, USA, discussed the epidemiology of human papillomavirus (HPV) infection and HPV-associated diseases including cervical cancer. Dr. Meites reviewed the virology, natural history, and transmission of the family of HPV viruses, focusing on high-risk (oncogenic) mucosal types, which cause nearly 100% of cervical cancers in the world (Just two types, HPV 16 and HPV 18, cause about 70% of all cervical cancers). Most people get infected within a few months to years after sexual debut, and nearly all sexually active adults get infected with HPV at some time during their lives, although <10% of HPV infections persist for longer than 2 years. Persistent HPV infections can cause a spectrum of disease in mucosal tissue, from low-grade intraepithelial lesions, CIN1, CIN 2/3, AIS, and cancers including cervical cancer, anal cancer, oropharyngeal cancer, and certain other cancers. Of these, cervical cancer is the most common worldwide, with >500,000 incident cases and >250,000 deaths annually. Cervical cancer is a tragic example of health disparities since almost 90% of cervical cancer cases and deaths occur among women in the developing world. For example, in the United States, the overall prevalence of HPV infection is 42.5% among women age 14-59, and there are about 12,000 cervical cancer cases and 4,000 deaths due to cervical cancers each year. However, in the Caribbean region, the crude rate of cervical cancer is 22.5 cases per 100,000 women, which is among the highest of any of the WHO regions anywhere in the world. Introducing vaccines that protect against infection with HPV types 16 and 18 could help reduce this burden of disease.

2. Regional Strategy and Plan of Action for Cervical Cancer and Evidence-based Screening Strategies: PAP, VIA, HPV DNA test

Cervical cancer remains one of the leading causes of death among women worldwide, with 88% of deaths occurring in developing countries. With mortality rates 7 times higher in Latin America and the Caribbean than in North America, cervical cancer highlights the existing inequities in wealth, gender and access to health services in the Region. The long natural history of the disease yields many opportunities for intervention throughout the lifecycle of women by effective primary and secondary prevention strategies in conjunction with appropriate diagnostic and therapeutic case management including access to palliative care.

For decades, cervical cytology has been the only available test used to screen women for early signs of cervical cancer and has led to an impressive reduction in cervical cancer deaths in developed countries. In developing countries, the cytology-based screening programs have not achieved a similar success due to the limitations of cytology as a screening technique but also to the organization of the health system, as well as cultural and community factors. In the last decade new technologies for cervical cancer screening have become available, including visual inspection with acetic acid (VIA test) and HPV DNA testing. Screening with the VIA test is effective and feasible in low-resource settings, especially when paired with cryotherapy for treatment of pre-cancerous cervical lesions (“screen and treat” approach).

In response to the high burden of disease and the availability of new technologies for cervical cancer prevention, PAHO developed a Regional Strategy and Plan of Action for Cervical Cancer Prevention and Control that was endorsed in 2008 by the Ministers of Health of the Americas. The aim of the Regional Strategy and its seven point Plan of Action is to improve the capacity of countries to implement sustainable and effective programs for the prevention of cervical cancer and generate an integrated approach across existing programs on adolescent health, sexual and reproductive health, immunization and cervical cancer control.

In conclusion, cervical cancer still represents an important public health problem that needs to be addressed through comprehensive cervical cancer prevention and control programs, including HPV vaccination and cervical cancer screening.

3. Update on HPV Vaccine

Cervical cancer is a striking symbol of enduring health inequities in the Americas. In 2010, an estimated 4,932 women were diagnosed with and 2,359 women died of cervical cancer in the Caribbean. In this Region, cervical cancer mortality rates are over five times higher than in Canada and the United States (age-standardized rates of 9.4 and 1.7 per 100,000 women, respectively). This disparity will grow further if no improvement in cervical cancer prevention and control is made. Due to a demographic effect alone (current large cohorts of young people becoming adults), >1,328 *additional* deaths per year (59% increase) might occur in 2030.

Together with new screening methods for HPV infections, HPV vaccines can boost cervical cancer prevention. As of February 2012, six countries of the Americas (Argentina, Canada, Mexico, Panama, Peru, and the United States), the Caribbean French Departments and the Caribbean Dutch Municipalities have structured universal HPV vaccination programs. Publicly funded HPV vaccination also occurs on demand in some Caribbean countries and territories (e.g., Bermuda, Cayman Islands, Curacao, Guyana) and in an unknown number of localities throughout the Region. Overall, these experiences show relevant programmatic and communication challenges of reaching and vaccinating adolescents. Careful planning is key to successful HPV vaccination.

In September 2011, the conference of the CARICOM Health Ministers decided that, together with pneumococcal conjugate vaccine, HPV vaccine should be introduced in the Region. As of

February 2012, Guyana, Suriname, and Trinidad and Tobago were planning for universal HPV vaccine introduction. A study on HPV infection prevalence carried out in Jamaica in 2009 confirmed that the HPV genotypes circulating corresponded with expectations from previous comprehensive global reviews.

While advances have been made, HPV vaccine uptake in the Americas is slower than that of new childhood vaccines (rotavirus and conjugate pneumococcal vaccines). Three reasons might explain this relative delay. First, most national programs perceive HPV vaccine as unaffordable. However, PAHO's EPI Revolving Fund can now purchase HPV vaccines at prices comparable to those of conjugate pneumococcal vaccines. Vaccination strategies focused on female adolescents should further increase affordability. Second, global development goals favor public health investments against diarrhea and pneumonia in children and maternal mortality. Even though the ratio of cervical cancer deaths to maternal deaths is 3.4 in Latin America and the Caribbean, cervical cancer still fails to arouse advocacy efforts and political will. Finally, programmatic uncertainty persists on best practices for vaccination of pre-adolescents and adolescents and the integration between cervical cancer screening and HPV vaccination.

Integrated with screening, detection, and treatment of pre- and cancerous lesions, HPV vaccination can reduce the incidence and mortality of cervical cancer in the Americas. Early concerns were that HPV vaccines would be introduced without proven cost-effectiveness and coherent planning. These concerns are valid and call on PAHO and its Member States to systematize ongoing experiences and define cost-effective and sustainable delivery options that can lead to high coverage in different national and local settings. However, a case should also be made that HPV vaccine introduction in pre-adolescent girls is an historical opportunity to reduce the future burden of HPV-related diseases. While improvements in screening are necessary to reduce the disease burden in today's women, we should also recognize that HPV vaccination is a necessary investment to avoid creating larger disease burden in tomorrow's women.

4. Activities of US ACIP Working Group on HPV Vaccine, 2006-2011

Dr. Meites also gave a presentation discussing the process of evidence-based policymaking for HPV vaccine by the American Committee on Immunization Practices (ACIP), which makes the national recommendations for safe use of vaccines in the United States. In addition to vaccine safety, efficacy, and immunogenicity data used to license new vaccines around the world, ACIP also considers country-specific data when making recommendations. These additional considerations include epidemiology of HPV infection and national burden of disease (cervical cancer and other HPV-associated diseases), HPV vaccine acceptability and community values, implementation and programmatic issues, cost and cost-effectiveness according to economic models, and equity. In the United States, each dose of HPV vaccine costs about \$130 in the private sector, or \$96 in CDC public programs, but the PAHO Revolving Fund price is currently \$14 per dose. HPV vaccination is most cost-effective for girls who are before the age of sexual debut; according to WHO, the primary target population for HPV vaccine is girls age 9-13 years. ACIP recommendations are published in the CDC's Morbidity and Mortality Weekly Report (MMWR) and full text is available free to anyone at: <http://www.cdc.gov/vaccines/pubs/ACIP-list.htm> This process may serve as a useful example when creating evidence-based vaccine policies in other countries.

5. HPV Prevalence Study in Jamaica

Based on the high incidence and mortality of cervical cancer and the availability of HPV vaccines in Jamaica, the country, in collaboration with PAHO and CDC, conducted a national study on HPV prevalence and vaccine acceptability in 2010-2011 as part of its evidence based approach to decision making regarding introduction of the HPV vaccine. The study was a cross-sectional study using a sample of 860 sexually active females aged 16-49 years in which Pap smears were done and HPV amplification and typing. The mean age of the sample was 32 years and 65%

were in a stable relationship although 78% reported 3 or more lifetime sex partners. 72% reported ever having had a Pap smear but only 43% was in the past 3 years. There was high rate (94%) of knowledge of cervical cancer and moderate knowledge of genital warts but low knowledge of the HPV virus (35%) and the HPV vaccine (28%). Of note, interest in receiving the HPV vaccine was high among study participants for both themselves and their daughters. This was probably a reflection of the value placed on immunization in general. As expected the majority (90%) of the cytology results were normal and 9% abnormal.

Prevalence of any HPV infection was 54%. This was higher than previously reported for Jamaica or any of the English speaking Caribbean countries. Some 37 different HPV DNA types were identified, 14 of which were high risk or oncogenic types. The prevalence of a high-risk genotype was 34.9% with the most common types being 16, 35, 58, 18 and 66 in descending order. This distribution of oncogenic types and the prevalence of HPV 16 (6.2%) differed from that found in Trinidad and Tobago and the USA. HPV 35 with the second highest prevalence of the oncogenic types has also been found in other Caribbean countries and in the African American population. HPV 16 and 18 were present in 8.4% of normal smears, 21.3% of low-grade lesions but 50% of high-grade cervical lesions. This may be predictive of the prevalence of these types in cases of cervical cancer. With other studies being done, Jamaica is the first country in the English-speaking Caribbean to undertake a comprehensive evidence based approach to a policy decision for HPV vaccine. The disease burden, HPV prevalence and type distribution all support introduction of the HPV vaccine.

6. Overview of ProVac and the CERVIVAC Model

In 2006, Ministers of Health from the Americas called for strengthened national capacity to make evidence-based immunization policy. In response, PAHO's ProVac Initiative has developed a work plan to bolster decision-making infrastructure and to build technical capacity to generate, synthesize and interpret relevant evidence to inform vaccination strategies and policy at the national-level. The initiative has developed three key tools to help countries to generate evidence on the costs, health impact, and cost-effectiveness of vaccines. The comprehensive childhood immunization cost-effectiveness tool, TRIVAC, allows for the evaluation of introducing Hib, rotavirus and pneumococcal conjugate vaccine. In the past year, a vaccination program costing tool was developed to estimate routine vaccination program costs as well as incremental costs borne by the program upon introducing a new vaccine. A cost-effectiveness model to evaluate integrated approaches for controlling and preventing cervical cancer (CERVIVAC), including HPV vaccines and screening programs, was launched in November 2011. This tool evaluates the costs and health impact of HPV vaccines and alternative screening strategies in a cohort of adolescent girls and a cohort of adult women, respectively. Given the recent decrease in the cost per dose of HPV vaccines available in PAHO's Revolving Fund, Gardasil (14.24 USD) and Cervarix (15.15 USD), combined with a mounting body of evidence in support of the vaccines' safety profile, efficacy and effectiveness, Caribbean countries will benefit from applying the CERVIVAC tool to generate local evidence on the vaccines' cost-effectiveness. Recent innovation in technologies for cervical cancer screening may also stimulate policy discussions around strengthening or adapting the current cervical cancer prevention program. ProVac's CERVIVAC tool can be used to systematically collect and analyze data required to determine the cost-effectiveness of both health intervention strategies. PAHO ProVac's technical team is currently providing or has provided support to over 20 countries in the region to use these decision analysis tools.

7. Cost-effectiveness Analysis of HPV Vaccine in Jamaica

Jamaica facilitated the piloting and testing of the CERVIVAC model developed through the Pro Vac Initiative to analyze the cost-effectiveness of HPV vaccination and cervical screening programmes on cervical cancer control. The process involved extensive data collection on the programme costs and strategies for the introduction of the HPV vaccine and various methods for

cervical cancer screening and treatment. The results indicated that the HPV vaccination at a cost of US\$6,000 per DALY averted was cost effective as it was less than three times the GDP per capita. The model indicated that in the cohort examined there would have been 14 deaths and 43 cases averted. Despite the cost-effectiveness of HPV vaccination, affordability and sustainability remained areas of concern as the vaccination programme cost was estimated at approximately US\$2M.

The preliminary results for cervical cancer screening using pap smears, demonstrated that this strategy is highly cost-effective as the cost per DALY was less than one times GDP per capita. The model provided for scenario analysis including vaccine efficacy, price of vaccine, screening and vaccine coverage, etc. With a reduction in vaccine price for example, it would be highly cost effective to introduce the vaccine.

8. Country Experiences in Planning and Introduction of HPV Vaccine

The HPV vaccines have been introduced in three of the English-speaking Caribbean countries on an optional basis – Bermuda in 2008, Cayman Islands in 2009 and Guyana in 2011. The vaccination programme is school based and the introduction has been among girls aged 11-13 years. Introduction of HPV vaccine is also being discussed by several countries (such as Barbados, Suriname) and preparatory documents are being developed. The Council of CAREC and the Caucus of CARICOM have requested discussion and costing on the feasibility of the introduction of the vaccine from a sub-regional perspective.

a. Guyana

For HPV, *GARDASIL* vaccines was introduced in a school based programme in four regions in January 2012. To-date there has been no serious adverse events to the vaccination. Over 400 doses have been administered to girls 11 years plus. IEC materials were prepared and advocacy is being done in collaboration with PAHO/WHO. Challenges include misinformation and myths by the media. Efforts are being made to intensify the awareness campaign among the public and the targeted group.

b. Suriname

In Suriname, countrywide implementation of HPV vaccine is considered through the use of existing delivery levels and facilities. Social mobilization activities will target parents, girls, school teachers, health practitioners, and community leaders by using a variety of methods (Table 2). Another vital component of the programme is the cost analysis and formative research. In addition, special attention will be paid to scaling-up of screening, ensuring high vaccination and screening coverage, and tracking of screen positive patients. The final plan is expected to be approved during the second trimester 2012.

The responsible group will be the national Implementation Committee. Tasks will include the planning and management of all phases of the programme and ensuring the adequate linkages between different levels of the programme. Preparations for the implementation will start prior to approval of the plan and are expected to be finished by end 2012.

Table. 2 Target groups	
For vaccination:	For screening:
Girls age 9-13 years	Women 30-64 years
Delivery methods:	Screening methods:
School based, health facility based	- VIA - Pap Smear
Expected Coverage levels : 1st year 70%; 2nd year 75%; 3rd year 85%	Frequency: every 2 years
	Delivery methods: Existing health care facilities
	Expected coverage: 80%
	Mobilization: personal invitation

c. The Netherlands

In 2009 HPV immunization was started in the Netherlands with a campaign for older girls (born in 1993-1996) and later, 2010, introduced as routine vaccination in the National Immunisation Programme for girls aged 12 years (cohort 1997 and onwards).

A new vaccine, based on a new technology (VLP, virus-like particles), not preventing a childhood disease, but cancer; a vaccination without an obvious short-term impact, such as averted threat of an epidemic, but long term impact; a different target group as usual in the NIP: 12-year-olds, and 13 to 16-year-olds, so decision to be vaccinated taken by girl together with her parents; and finally the relation with sex. There was a need of clear communication to support the introduction, for the target group of the immunisation programme and their parents, for the general public and for professionals.

A letter was sent to the parents including a leaflet, immunization cards and a personal invitation to hand over to their daughter. Additional information could be found on a special website. The HPV vaccinations were offered in mass immunization sessions organized in the place of residence by public health services.

Introduction of HPV vaccination against cervical cancer caused a heated discussion. After a vaccine uptake of about 80% in the first week, the coverage dropped below 50% in parallel to enormous negative media attention. This was partly provoked by anti-vaccine lobbyists, such as the *Nederlandse Vereniging Kritisch Prikken* (i.e. Dutch Association of Critical Anti-vaccine Lobbyists), through e-mails, on the Internet (i.e. hyves, YouTube), via schools etc. Some people thought: Again a vaccine added to the programme!? The vaccine comes too early; too much unknown; and suggested that it is one big experiment! Vaccination would be of no use and would lead to more deaths due to cervical cancer. The relation with sex was confusing the issue. Some thought that it is a wrong suggestion that sex at 13 years is normal, that vaccination is not needed if no sex before marriage and monogamous lifestyle. And fear for the unknown, particularly fear for possible adverse events in the long run, played a role. Uncertainties were presented by to opponents, among whom influential scientists, as evidence against HPV immunisation. Some of these issues were raised already by the Health Council, who eventually weighted the uncertainties against postponement of potential health gains for women now in the target group and came to a positive advice to introduce the vaccination, with monitoring and further studies in parallel. These are implemented: monitoring of vaccine coverage, of adverse events following immunisation; baseline studies on age-related incidence of auto-immune disorders; investigation of duration of immunity by serosurveillance, surveillance of HPV type distribution, monitoring of precancerous lesions and cervical cancer.

The communication campaign accompanying the introduction of HPV was evaluated soon after the drop of the coverage and it was concluded that the one-way communication was insufficient; we had to interact with the target groups in a dialogue, rather than just bringing the message to them. New media (internet fora) should be used also, rather than merely classical communication with leaflets and posters. Information on uncertainties and emotions should be included, not only facts. And possibly a more individual approach could be chosen offering vaccination on a smaller scale, not in a large-scale mass campaign, allowing only limited interaction with target group.

In response our communication strategy was adapted to deal with uncertainties and emotions, use modern communication tools (webfora, chat sessions) and interaction with the target group was sought. This was aimed at the girls being supported to informed decision making based on correct information.

The coverage is shown to gradually improve: cohorts 1993 -1998 had a response rate of respectively 48,8%, 52,4%, 53,8%, 54,2%, 57,6% and 53,4%; 7,6% of the girls of the last cohort, 1998, have had two doses and have one opportunity left to complete the series.

RECOMMENDATIONS-HPV:

- Countries and territories should consider HPV vaccine introduction in the context of a comprehensive review of their national cervical cancer prevention and treatment programs. A progress report on the implementation of the work plan developed during the present meeting should be submitted at the next meeting.
- Decision-making on HPV vaccine introduction and changes in screening strategies should be based on evidence—that is, a thorough evaluation of the burden of disease, of the cost-effectiveness of the proposed measures and of their financial and programmatic sustainability. ProVac's Cervivac tool is an invaluable tool for carrying out integrated cost-effectiveness analyses at the national level.
- Special projects and HPV vaccine donations should only be undertaken after considering the sustainability of the intervention after the end of the project or donation.
- Caribbean sub-region to establish a small working group to determine strategy and method for target setting and monitoring of coverage for cervical cancer screening as well as guidelines for doing Pap smears.
- Best practices in terms of resources/materials to be used for training to be shared among countries.
- Countries should consider sub-regional training in risk communication and development of media campaigns, as well as advocate to policy makers.
- Countries to share communication strategies used to improve awareness and coverage for cervical smears.
- A sub-regional meeting of the working group should be held to assess achievements (since 2007), determine the next steps to be taken and the timeframe for achievements, and develop a new work plan.

VIII. Other Topics

A. Operational Aspect of the PAHO Revolving Fund

The Revolving Fund of PAHO is a cooperation mechanism for the joint procurement of vaccines, syringes, and related supplies for participating Member States. Through the Revolving Fund, for over 30 years, participating Member States have ensured a continuous supply of high-quality products at the lowest possible price for their immunization programs thanks to the economies of scale that these Member States provide. Based on the principle of equity, and thanks to economies of scale, all participating Member States have access to the same products, offered through the Revolving Fund at the lowest price, which is a single price independent of the country's size or economic situation.

Through a multidisciplinary professional team in the areas of immunization, procurement, vaccine quality control, finance, and legal affairs, the Revolving Fund manages the planning and consolidation of demand, negotiations with producers, placement of purchase orders, coordination with suppliers and monitoring of shipments, as well as financial aspects involving paying suppliers and billing countries. The Revolving Fund has been a critical factor in making the Region of the Americas a global role model for the success of immunization programs and for its successful introduction of new vaccines. For this reason, promoting its achievements and protecting its well-being is in everyone's interest.

B. ISIS: Implementation Issues for Expansion to CMCs

Integrated Surveillance Information Systems (ISIS) is a software application that allows you to collect investigation data on measles, rubella, CRS and polio and to monitor the surveillance of VPDs by Ministries of Health of member countries, PWR offices and PAHO.

The client server application has been implemented successfully in 17 countries in the Americas Region, including at CAREC where all Caribbean countries data is centralized. There are plans to decentralize the data entry in the most populated countries, such as Belize, Guyana and Jamaica.

Countries would have the benefit of using relevant functionalities that allow one to generate surveillance indicator, reports, case reports that ease the follow up of cases in investigation and other analytical reports that allows for opportune decision making.

C. The National Immunization Program in the Dutch Caribbean

Political changes have occurred in the Netherlands Antilles and these changes may affect immunization policies in some of the Dutch isles. As of 10 October 2010 the Netherlands Antilles as a political entity no longer exists. Aruba, Curacao and St. Maarten are independent countries within the Kingdom of the Netherlands. Bonaire, St. Eustatius and Saba have become special municipalities of the Netherlands, somewhat comparable to the situation in the French Departments of the Americas. Together these three islands have been named the Dutch Caribbean. Here, Dutch public health laws apply and the Minister of Health of the Netherlands has a direct responsibility for the health of the people. The Minister asked the Health Council whether the Dutch National Immunisation Programme would be applicable or that diversions are needed. Diversions could be justified because of different epidemiological situations and for logistical reasons. Main differences with the vaccinations currently used on the islands include absence so far of vaccinations against pneumococcal disease, meningococcal C disease, cervical cancer (HPV) and slight differences in vaccination schemes.

The Health Council applied its assessment framework to the situation on the islands. Departing from 2 ethical principles - that the NIP should realise optimum protection against infectious diseases of the public at large, and that protection should be distributed fairly, giving priority to groups for whom it is most urgent – the factors that determine a vaccine's suitability for inclusion in a communal vaccination programme have been translated into seven selection criteria, grouped under five thematic headings: seriousness and extent of the disease burden, effectiveness and safety of the vaccination, acceptability of the vaccination, efficiency of the vaccination, and priority of the vaccination.

Data on disease burden for the islands and even the region is limited. Local expert involvement was deemed essential and sought on the islands and at PAHO/CAREC. The tentative advice of the Health Council is to implement the full NIP in the Dutch Caribbean, including pneumococcal, meningococcal C and HPV vaccinations. Whether or not and, if so, how BCG vaccination should be implemented on the islands deserves further study. Investments in local laboratory facilities and capacity are necessary for diagnosis and evaluation (monitoring). A necessary degree of freedom should be left for implementation. Regular meetings of experts from the six Dutch-speaking islands and the relevant institutions of the Netherlands (Health Council and RIVM) are essential for exchange of information and ideas. All future Health Council advisory reports on the NIP should include a paragraph on the situation in the Caribbean.

D. Surveillance and Immunization Awards

An annual **Caribbean Surveillance Award** has been established to recognize countries that have performed outstandingly on the surveillance component of their program during the previous year. The award is based on two main criteria: on-time reporting and the percentage of sites reporting to CAREC. The award consists of a certificate and the inscription of the name of the country on a plaque that is kept by the winning country during the following year and until a new country is selected to receive the award. The award is announced during the annual Managers' meeting. **Dominica** is the recipient of the 2011 Surveillance Award. Awards for the second and third places went to **Antigua/Barbuda** and **St. Maarten**, respectively.

In addition to the surveillance awards, certificates of achievement and recognition were awarded to **Belize** for maintaining excellent achievement indicators for the Immunization Programme and to **Guyana** for consistency in achieving the indicators of the Immunization Programme.

The Henry C. Smith Immunization Award is presented this year to **Jamaica**. The award is in honour of Mr. Henry C. Smith, who was the first PAHO-EPI technical officer for the Caribbean subregion. His service in the subregion spanned 18 years. The immunization trophy is awarded to the country that has made the most improvement in EPI.

Participants at the 28th Caribbean EPI Managers' Meeting sincerely congratulate these countries for being the recipients of awards and extend their compliments to all their health workers for such outstanding performances.