



Comprehensive Family Immunization Unit
Department of Family, Gender and Life Course



THIRTIETH MEETING OF THE CARIBBEAN IMMUNIZATION MANAGERS

FINAL REPORT

Philipsburg, St Marteen
19 – 21 November 2014

Table of Contents

Thirtieth Caribbean Immunization Managers' Meeting

1. Introduction	3
2. Objectives of the Meeting	3
3. Overview of the Immunization Program	4
3.1. Summary of 2014 TAG Recommendations	4
3.2. The Global Vaccine Action Plan and the Immunization Program in the Americas	5
3.3. Status of immunization in the Caribbean	6
4. Measles, rubella and CRS elimination	10
4.1. Update on documentation and verification of measles, rubella, and CRS elimination in the Americas	10
4.3. Rash and Fever Surveillance in the Caribbean	11
4.4. Caribbean Country Reports	14
4.5. Strategies to improve MMR2 coverage and age of vaccination	14
5. Sustaining Polio Eradication	16
5.1. Update on polio eradication and introducing of IPV	16
5.2. AFP Surveillance in the Caribbean	17
5.3. Caribbean Country Reports	19
6. Influenza immunization and surveillance	21
7. Update on pneumococcal, meningococcal and rotavirus vaccines	22
8. Update on HPV Vaccination	23
9. Experiences with other vaccines	26
10. Revolving Fund	27
11. Report of the 8th Dutch Caribbean Mini EPI Managers' Meeting	27
12. Overview of Vaccination Week in the Americas 2014	28
13. Program-related topics	29
13.1. Processes and tools for EPI planning and evaluation	29
13.2. Review of 2014 Plans of Action and discussion of the 2015 Plans of Action	30
13.2. Other topics	31
14. Surveillance and Immunization Awards	31

Thirtieth Caribbean Immunization Managers' Meeting

1. Introduction

The 30th Caribbean EPI Managers' Meeting was held at the Divi Little Bay Beach Resort in Philipsburg, Sint Maarten, from 19 – 21 November 2014. The meeting convened some 58 participants from 29 countries. Participants included representatives from the Ministries of Health, the Public Health Agency of Canada, the Caribbean Public Health Agency (CARPHA) and the Pan American Health Organization/World Health Organization (PAHO/WHO). The host country, Sint Maarten was afforded the opportunity of having ten of their health staff involved in EPI participate in the meeting.

The opening ceremony was chaired by Mr. Rolando Tobias of the Ministry of Public Health, Social Development and Labour. Ms. Erica Richards gave a beautiful rendition of the national song of Sint Maarten which was followed by Rev. Moreland Williams with the opening prayer. Dr. Virginia Asin-Oostburg, EPI Manager of Sint Maarten and Head, Department of Collective Prevention Services gave the greetings and welcome remarks during which she provided an overview of the programmes implemented by her department and the strategies being implemented to ensure universal access to care and engagement of the media in public education.

In his address, the Honorable Dr. Cornelius De Weever, Minister of Public Health, Social Development and Labour welcomed all the participants to Sint Maarten and congratulated the team on the 30th anniversary of the Caribbean EPI Managers' meeting as well as for a job well done in ensuring the protection of children and the family from vaccine preventable diseases. He gave special recognition to PAHO for their leadership role in establishing the EPI in the region and for the successes achieved thus far especially with respect to elimination of polio, measles and rubella. He emphasized the fact that vaccination is not a choice but a necessity and that countries must use supportive evidence to facilitate decision making regarding balancing rational investment and resource allocation amidst the many priority programmes to be implemented. He re-iterated Sint Maarten's strong support of the principles of the EPI Revolving Fund and their commitment for continued procurement of vaccines through this mechanism. He closed by officially declaring the meeting open.

Dr. Andrea Vicari, Advisor, Immunization who deputized for Dr. Cuauhtémoc Ruiz-Matus, Chief, Family Immunization Unit who was unavoidably absent from the meeting welcomed all participants and reminded them that the Caribbean has always been leaders in EPI and an example to others in the Region and the world.

2. Objectives of the Meeting

The **overall objective** was to analyze achievements for 2014 and plan activities for 2015 while sharing country experiences on the immunization programme.

The **specific objectives** were:

- 1) To review the status of the EPI program in the Region of the Americas and the Caribbean and to identify areas that require strengthening
- 2) To update information on selective scientific topics of common interest to countries in relation to immunization, service delivery and surveillance of EPI diseases

- 3) To discuss and 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 2015
- 4) To develop an action plan with a specific budget for each activity for each country to achieve the targets and objectives set for 2015
- 5) To discuss the status of verification of Measles, Rubella and Congenital Rubella Syndrome (CRS) elimination in the Americas and the implementation of Resolution CSP28.R14 “Plan of Action for maintaining Measles, Rubella, and CRS elimination in the Region of the Americas”
- 6) To discuss the implementation of IPV in the routine immunization schedule of each country for 2015/2016 in order to sustain the eradication of wild poliovirus
- 7) To discuss the status and advances made in the surveillance and management of vaccine preventable diseases and adverse reactions to vaccines
- 8) To discuss and share experiences related to various programmatic aspects of immunization management including data quality
- 9) To assess the status of and strategies for the introduction of new and underutilized vaccines such as seasonal influenza, pneumococcal, rotavirus and HPV vaccines in the national immunization schedules, including strengthening of the pertinent surveillance/monitoring systems
- 10) To inform participants of the recommendations from the XXII Technical Advisory Group (TAG) Meeting held in Washington D.C., July 2014.

After the Opening Ceremony, Prof. J.Peter Figueroa, TAG Member, chaired the meeting.

3. Overview of the Immunization Program

3.1. Summary of 2014 TAG Recommendations

The XXII Meeting of PAHO’s Technical Advisory Group (TAG) on Vaccine Preventable Diseases was held in Washington DC, USA, on 1–2 July 2014. The slogan for the meeting was “Vaccination: your best shot!”, chosen in the context of the FIFA World Cup Football (Soccer) taking place at the same time in Brazil. This meeting’s objective was to review progress on selected topics and issue recommendations to address pressing challenges faced by national immunizations programs in the Americas.

Three topics were presented for decision at the 2014 TAG Meeting:

- update on pertussis vaccination;
- status of human papillomavirus (HPV) vaccination; and
- vaccination with pneumococcal conjugate vaccine in adults.

In the pertussis vaccine section, it was shown that, although both available pertussis vaccines (acellular [aP] and whole-cell pertussis [wP] vaccines) elicit a good immune response, evidence suggests aP has a short-lived duration of protection. As such, TAG recommended that countries should give preference to the use of wP containing vaccines. However, countries using current vaccination schedules with wP vaccines should continue to do so and countries using aP should actively monitor the risk that waning immunity poses to the population. Countries should also ensure homogenous vaccination coverage $\geq 95\%$ with 3 doses of pertussis-containing vaccines in children aged < 1 year, encourage timely initiation and completion of the schedule, and continue strengthening pertussis surveillance to better monitor the epidemiology of the disease.

With regard to HPV vaccination, TAG reaffirmed the sound and robust evidence base that demonstrates the safety and efficacy of HPV vaccines among adolescent and young women. TAG also endorsed the March 2014 and prior Global Advisory Committee on vaccine Safety (GACVS) statements related to HPV vaccine safety and encouraged countries to adopt HPV vaccines in the routine national immunization schedule to prevent cervical cancer. To harmonize regional and global recommendations on HPV

immunization schedules, TAG endorsed the April 2014 SAGE recommendations that included a 2-dose schedule with an interval of at least six months between doses for girls aged <15 years of age.

Considering the outcomes of a working group, TAG reaffirmed that the introduction of pneumococcal conjugate vaccines in children continues to be the priority for the reduction of pneumococcal disease. For healthy adults, introduction of PCV13 vaccination into immunization programs will depend on the results of studies on efficacy, cost-effectiveness, and herd effect. For high-risk adults, countries that already introduced the 23-valent polysaccharide vaccine for use in adults could use the sequential schedule (conjugate-polysaccharide), whilst countries that do not currently use pneumococcus vaccine for that specific population group but consider vaccination of that population group a priority could introduce the PCV13 based on immunogenicity studies. Finally, TAG viewed strengthening or implementation of epidemiological surveillance of pneumonias and invasive pneumococcal disease (IPD) in adults as a priority for countries.

Additionally, four additional topics were presented for update and information to the TAG:

- Update on the regional immunization program of the Americas
- Update on the PAHO Revolving Fund
- Cholera vaccination in the Americas
- Status of influenza vaccination in the Americas and formation of the Network for Evaluation of Influenza Vaccine Effectiveness—REVELAC-i

The full report of the 2014 TAG meeting, which includes a complete list of topics and recommendations, is available at <http://www.paho.org/immunization/TAG-Reports>

3.2. The Global Vaccine Action Plan and the Immunization Program in the Americas

The Global Vaccine Action Plan (GVAP) is a framework approved by the World Health Assembly in May 2012 to achieve the Decade of Vaccines (2011–2020) vision of promoting and facilitating universal access to immunization. The mission outlined in the GVAP is straightforward: improve health by extending by 2020 and beyond the full benefits of immunization to all people, regardless of where they are born, who they are, or where they live. Continuous progress towards the six strategic objectives should enable the achievement of the goals of the GVAP and consequently the Decade of Vaccines.

The Region is working to present the regional adaptation of the Global Vaccine Action Plan (GVAP) to PAHO's Directing Council in 2015.

National coverage levels have remained over 90% throughout the Region and work is ongoing to maintain control and elimination of VPDs. Available preliminary data for 2013, however, suggests a downward trend in regional DTP3 and Polio3 coverage. This situation is being examined.

Coverage reported at subnational levels have been notoriously heterogeneous. Only about half of the ~15,000 municipalities in Latin America and the Caribbean (LAC) reach coverage rates $\geq 95\%$. Furthermore, several municipalities concentrated in a few countries report coverage levels $< 50\%$. To address this inequity, work has revolved around targeting underperforming municipalities and other areas within countries. Since its creation in 2003, Vaccination Week in the Americas (VWA) has also served as a platform to target vulnerable populations each year. In 2014, VWA's slogan was "Vaccination: Your best shot" in acknowledgment of the FIFA World Cup Football (Soccer) taking place in Brazil.

The introduction of newer vaccines (pneumococcal conjugate, rotavirus and human papillomavirus [HPV] vaccines) has been one of the main challenges immunization programs of the Americas have faced in recent years chiefly because the cost of those vaccines was much greater than traditional vaccines.

About 92% of the birth cohort in the Region (14.2 million children) live in the 29 countries that have introduced the pneumococcal conjugate vaccine in their regular program, 88% (13.6 children) in 18 countries that have introduced the rotavirus vaccine and 85% of the adolescent female cohort (6.5 million adolescent girls) in the 23 countries that have introduced the HPV vaccine.

The Revolving Fund for Vaccine Procurement is an important element of the program as LAC countries finance >90% of national immunization programme with national funds. Especially for vaccines, for which only one or two manufacturers exist (e.g. HPV vaccine), the contractual clause guaranteeing the lowest per-dose price available globally has become of greater difficulty to sustain. Dedicated lines in the national budgets are another important element in assuring sustainable financing of immunization programmes.

3.3. Status of immunization in the Caribbean

Over the past 37 years, the Governments and peoples of the Caribbean Community have remained committed to the sustainability of the immunization program which continues to be the most successful intervention in health. This commitment is demonstrated by 98% funding of the cost of the Immunization programme and 99% funding of the cost of the vaccines. Multi-year and/or annual programme planning with on-going monitoring and evaluation of the implementation have contributed to its success. Over 80% of the countries also have policies requiring vaccination for school entry and some 90% of the countries have manuals for guiding the operations of the EPI which were recently updated. 78% of countries have a dedicated line item in their budgets for vaccines.

The year 2013 was full of challenges, including the need to maintain services and support to the member states while finalizing the process of recruitment of the new Caribbean Sub Regional Advisor for the EPI, who assumed duties on 1 April 2014 and is hosted in the office of the PAHO/WHO Representation in Jamaica. In 2014, regular contact with the countries was re-established and support provided for the continued efforts to maintain elimination of measles, rubella, CRS and polio.

Protecting our achievements

In keeping with the goals of the Decade of Vaccines and the strategic objectives of the Global Vaccine Action Plan (GVAP), the objectives of the EPI programme remained as follows:

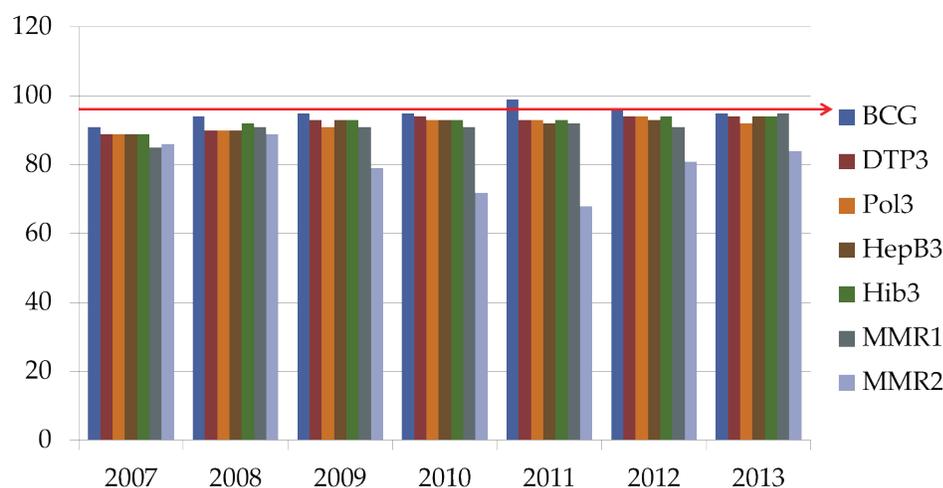
1. To achieve equity in the provision of vaccine services by achieving and maintaining $\geq 95\%$ coverage for all antigens at national, municipal and district levels
2. To maintain the polio eradication status
3. To maintain measles, rubella and CRS elimination status
4. To maintain and strengthen surveillance for VPDs with emphasis on measles, rubella, CRS and polio
5. To advocate for the introduction of new and underutilized vaccines using an evidence based approach

Universal Vaccine Coverage

The objective of at least 95% coverage for all antigens was achieved by many countries; however, for the Sub-Region as a whole, this was achieved only for the BCG vaccine in 2013 and indeed over the past seven years. Of particular note is the lower coverage for polio vaccination in 2013 compared to previous years. This was due to a stock out of vaccine in Jamaica as a result of damaged vials during

shipment. The infants under 1 year of age who missed their vaccination in 2013 have since been reported as vaccinated.

Fig. 1: Vaccination coverage by antigens given, Caribbean Sub-Region, 2007-2013



Despite relatively high national vaccination coverage for all antigens in most countries sustained for over three years, this was not equitably distributed as there remained municipalities with low vaccination coverage in many countries.

Table 1: Percentage of municipalities by coverage levels reported

Vaccine	Coverage Levels				
	<80%	80-89%	90-94%	95-100%	>100%
DTP3	5	17	15	34	29
Polio 3	7	19	17	31	26
MMR 1	11	11	14	36	28

In 2013, some 36-43% of municipalities had coverage less than 95% for DTP3, Polio 3 and MMR1. In addition, 28% of municipalities had coverage greater than 100% which may indicate issues with data quality or accuracy of the denominator which countries will have to review.

A number of countries with high DTP 3 coverage also had the majority of their municipalities with over 80% coverage in keeping with the GVAP indicator of percentage of districts with $\geq 80\%$ coverage with 3 doses of diphtheria-tetanus-pertussis-containing vaccine.

Table 2: Countries with DTP3 >90% and over 80% of municipalities with coverage > 80%, 2013

Country	DTP 3 coverage-2013	% Municipalities with >80% coverage
Anguilla	100	100
Turks & Caicos Islands	100	100
St. Vincent & the Grenadines	100	100
Guyana	98	100
Dominica	97	100
Belize	95	100
Jamaica	93	100
Trinidad and Tobago	92	100
Sint Maarten	92	100
Bahamas	97	97.8
St. Kitts & Nevis	97	94.1
Antigua	99	93.3
St. Lucia	100	86.1
Grenada	100	85.7

Use of newer vaccines

Countries continue to introduce new and underutilized vaccines in the routine immunization schedule in the public sector. At the end of 2013, 19 countries were using the influenza vaccine for various prioritized risk groups and 12 countries (Aruba, Bahamas, Barbados, Bermuda, Bonaire, Cayman Islands, Curacao, Guyana, Saba, St. Eustatius, St. Maarten and Trinidad and Tobago) were using the conjugated pneumococcal vaccine (half using the 10 valent and half using the 13 valent formulation). Jamaica continues to administer this vaccine only to the at-risk infant population. The quadrivalent HPV vaccine is now being administered in 10 countries, meningococcal vaccine in 5 countries, varicella vaccine in 8 countries and yellow fever vaccine in 3 countries. The rotavirus vaccine remains administered in only 2 countries, Guyana and the Cayman Islands.

General Disease Surveillance

All countries continued surveillance for vaccine preventable diseases (VPDs) and there were 719 surveillance sites for measles, rubella, CRS and other VPDs and 499 surveillance sites for Polio. Up to Epidemiology week 44, 2014, 82% of sites reported for fever and rash and 69% of sites reported for AFP. There were 445 fever and rash cases reported with a case detection rate of 6.1/100,000 population. 25 AFP cases were reported for 2014 (Epi weeks 1- 44) but only 11 of these cases were under the age of 15 years yielding a detection rate of 0.54/100,000 population < 15 years. Special Rotavirus surveillance

continued in 3 countries (Guyana, Suriname and St. Vincent and the Grenadines). All countries enhanced surveillance for measles and rubella during and after the World Cup Soccer Games.

Other Activities

All countries of the sub-Region observed the 11th Vaccination Week in the Americas with special emphasis on measles prevention. Countries also used the opportunity to conduct training/sensitization of health care workers on HPV and IPV introduction as well as social mobilization, risk communication and integrated service delivery.

Suriname, Aruba and Jamaica benefited from training in the Vaccine Supply Stock Management software and installation and use of this database was implemented in Suriname in October 2014.

A mini assessment of the EPI and training of health care workers in various aspects of EPI and surveillance was conducted in Turks and Caicos in June 2014.

Countries continued procurement of vaccines and supplies through the PAHO Revolving Fund for EPI but concerns remained regarding the threat of tiered pricing and the unavailability of HPV vaccine through the Fund in 2014.

All countries using OPV routinely commenced dialogue and planning for the introduction of the IPV vaccine by the end of 2015 or early 2016.

Challenges

Despite the achievements, there were some challenges. The country responses to Chikungunya and preparedness for Ebola Virus Disease stretched the capacity of the human resources including the EPI managers, many of whom are responsible for other health programmes at country level.

On-going fiscal constraints in some countries continued to delay the introduction of newer vaccines especially the HPV vaccine and the coordination of surveillance for EPI remained a challenge in some countries with a separate unit doing surveillance for VPDs, inadequate or very little information sharing and poor quality of reporting and investigation of suspected cases.

Opportunities

Despite challenges there are opportunities for strengthening the EPI. The strengthening of the health infrastructure and surveillance systems as a result of Chikungunya and Ebola preparedness will provide benefits to the EPI including capacity building for the EPI staff especially in disease surveillance. As the public has become more aware and concerned about these diseases and there have been calls for vaccines to prevent them, the opportunity exists to engage the public more in dialogue on disease prevention through vaccination and to address vaccine hesitancy. Through the on-going interest and advances in electronic patient records and registries in countries, this will also provide the opportunity to strengthen data quality for EPI.

Conclusion

The Governments continue to remain committed to the goals and objectives of universal immunization and elimination of vaccine preventable diseases. Much has been achieved in the EPI programme for

2013 and the first half of 2014. Coverage has been improving for DTP3, Hib3, HepB3, MMR1 and MMR2 but the polio coverage needs urgent improvement. Despite high national coverage, homogeneity of coverage requires improvement in most countries. Surveillance for VPDs needs continued strengthening and coordination at country level. Challenges exist but there are also opportunities to improve EPI so countries should seize these opportunities.

Recommendations:

- Countries should continue working towards achieving national coverage of 95% or more for each administered vaccine at each region, district, or zone level.
- To sustain polio eradication and measles/rubella/CRS elimination, additional steps should be taken to ensure >95% vaccination coverage and high-quality surveillance.
- Countries should increase efforts to introduce new and underutilized vaccines, for example HPV, PCV and influenza vaccines in the public sector immunization schedule.
- Countries should seek to institutionalize policies and legislation in support of immunization, including a dedicated line item in the national budget and mandatory vaccination for school entry.
- Countries should conduct ongoing activities to educate and empower communities in understanding the value of immunization programmes.
- Countries should assure updated immunization guidelines and periodic training for the health care workers in the public and private sectors.
- Countries should review quality of the immunization data for completeness and accuracy and explore measures to introduce electronic nominal registries as part of a national health information system.

4. Measles, rubella and CRS elimination

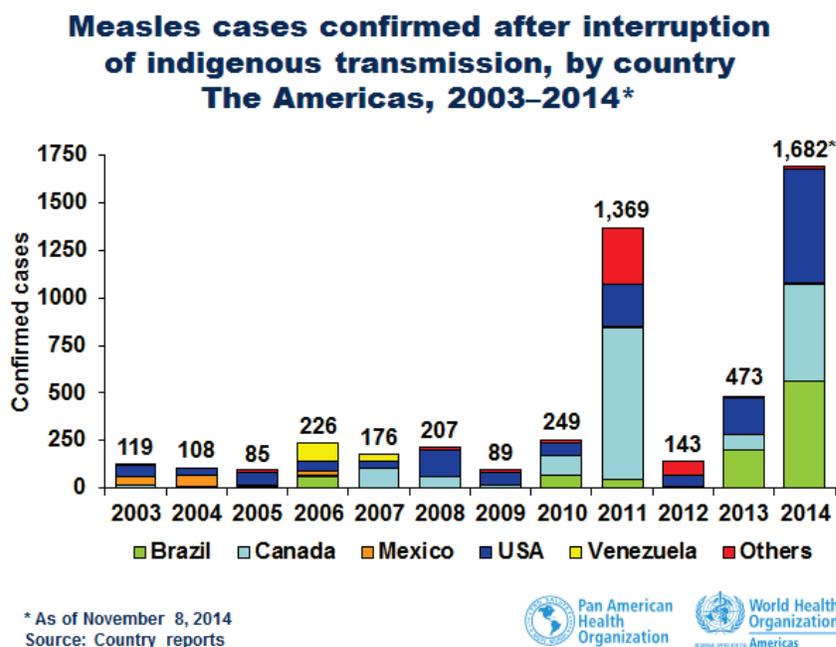
4.1. Update on documentation and verification of measles, rubella, and CRS elimination in the Americas

PAHO/WHO defines measles and rubella elimination as the interruption of endemic transmission of these viruses for a period of at least 12 months in the presence of high-quality surveillance. To confirm elimination of these diseases, countries have to document interruption for a period of at least three years from the last known endemic case. In order to implement the documentation process, an International Expert Committee (IEC) was created and 23 national commissions were established, including one for the French Overseas Departments of the Americas and one sub-regional commission for the English-speaking and Dutch-speaking Caribbean countries and territories, including Suriname.

In their reports on elimination, the national and sub-regional commissions presented evidence indicating the interruption of endemic transmission of the measles and rubella viruses in their countries and territories including the occurrence of the last endemic measles case in 2002 and the active case searches for the period 2006-2012. This evidence suggested a strong basis for measles elimination in the Region.

As of 8 November, 1,682 measles cases were confirmed in the Americas during 2014. Three countries reported most of the cases: USA, 603 cases; Brazil 563; and Canada 512. The USA cases were reported from 22 different states and were related to 20 distinct outbreaks. Outbreaks in Canada are related to importations into population “pockets” where coverage is low due to vaccination avoidance related to religious or philosophical reasons.

Fig 2: Confirmed measles cases in the Americas 2003-2014 (8Nov)



In Brazil, measles transmission occurred in two states. In Pernambuco, transmission was stopped. However, it is ongoing in Ceará, a state in the Northeast of Brazil with 8.8 million residents and an area of 150,000 square km. The first case in Ceará occurred in the last week of 2013. As of November, the outbreak was mainly localized in the capital city of Fortaleza (3.6 million residents). No cases have been reported in the other 22 municipalities of the State. Rash onset of the last confirmed case (at the time of the meeting) was on 7 November. A mass vaccination campaign targeting children aged 6 months to 5 years was being implemented.

In its sixth meeting held in Brasilia on 5 September 2014, the IEC put on hold the declaration of measles elimination in the Americas until the transmission in Brazil is controlled. At the same time, the IEC reaffirmed that rubella and CRS elimination have been sustained in the Americas.

Even if measles elimination is confirmed, the Americas will remain under constant threat of importations of measles and rubella viruses. Maintaining high and homogeneous vaccination coverage and high-quality surveillance is critical to contain importations.

4.3. Rash and Fever Surveillance in the Caribbean

The elimination of measles and rubella in the Caribbean is supported by multiple political mandates, including resolutions of both CARICOM Health Ministers in 1988 (measles) and 1998 (rubella and CRS) and resolution CSP28.R14 of the Directing Council of the Pan American Health Organization in September 2012 (Plan of Action to Maintain Elimination of Measles, Rubella and CRS). The sub region continues to remain at high risk for the importation of measles and rubella cases due to the high intensity of international travel due to the large tourism sector. In 2013, there were approximately 10 million tourist stop over visits and approximately 17 million arrivals via cruise ship, underlining the need to maintain high quality surveillance for suspected cases.

The objectives of the Rash and Fever Surveillance are:

- To maintain elimination of measles, rubella and CRS
- To achieve timely, complete, regular and accurate surveillance for measles and rubella with active case finding
- To maintain > 95% coverage for measles and rubella vaccine for each birth cohort
- To ensure all measles, rubella and CRS Indicators are met in each country
- To ensure no established local transmission of measles and rubella following importations

The fever/rash surveillance system implemented in countries as of 1991 has shown that indigenous measles cases have been eliminated; no indigenous measles cases have been reported since 1991. Measles importations however, have been reported in Barbados in 1992, Bahamas and Trinidad in 1997 and Jamaica in 1998, 2008 and 2011. In 2011, Jamaica reported 1 case which was an importation of the B3 genotype from the UK; no secondary cases were found. The last indigenous case of CRS in the Caribbean was reported in 1999, the last indigenous case of rubella in 2001 and the last imported case of rubella in 2008 (in Bermuda). From 2010-2013, MMR1 coverage in the Caribbean ranged from 91-95%, whereas coverage for MMR2 was lower, ranging from 68-84%.

The Measles Surveillance System (MESS) began in September 1991, the same year the laboratory at CAREC started testing samples for measles and rubella. Integrated measles and rubella surveillance was implemented in 1999. In 2003, routine reporting of febrile rash illnesses started from French Guiana and as of 2010, St. Maarten reports separately and weekly. The French overseas departments, French Guiana, Martinique and Guadeloupe report quarterly. Currently there are over 700 sites that send reports in weekly from a total of 19 countries. Over the history of the measles surveillance system in the sub region, 9,579 fever and rash cases have been reported and investigated (up to EW 44, 2014).

In 2013, there were 343 suspected measles, rubella and CRS cases reported, but no cases were confirmed. One case was diagnosed as dengue and the rest (342) were discarded as not measles or rubella. Out of all cases, 90% were adequately investigated, 91% had adequate sample collection, 20% of samples were received by the lab within 5 days and 95% of the lab results were returned within 4 days.

As of EW 44 of 2014, 445 fever and rash cases were reported, primarily by Jamaica (51%), Suriname (16%), Belize (14%), Guyana (11%) and Barbados (6%). To date, one case has been confirmed as dengue, 35 as chikungunya, and 41 cases were still pending classification, all others (368) have been discarded. Out of the 445 suspected cases, 39% were adequately investigated, 82% had adequate samples taken, 12% of samples were received in the lab within 5 days and 91% of the lab results were returned to the reporting country within 4 days. Challenges with flight schedules and in-country transportation of samples to the national level for shipment have been the major factors which have affected the timely submission of samples and the achievement of this indicator. In the sub region 18 countries are reporting Chikungunya cases versus only 9 for fever and rash. In terms of congenital rubella syndrome, up to EW 44, 2014 there were 3 suspected cases, none of which had been confirmed.

In conclusion, surveillance indicators for measles, rubella and CRS need strengthening especially adequate investigations and timely delivery of samples to CARPHA. Countries must improve efforts to maintain $\geq 95\%$ coverage for MMR1 and MMR2 at both the national level and district levels; it is also essential that countries must remain vigilant for importation of cases and there must be measures in place for the timely response to imported cases.

Review of EPI laboratory tests and data in the Caribbean

Laboratory confirmation is essential for adequate integrated measles and rubella surveillance. The laboratory of the Caribbean Public Health Agency serves as the reference sub-regional laboratory for the English and Dutch-speaking countries in the Caribbean. The test of choice for suspected measles and rubella samples is IgM EIA, using Enzygnost Anti-Measles Virus and Anti-Rubella Virus IgM kits (Siemens). Confirmation of positive samples is performed at CDC by testing with in-house IgM ELISA and PCR for both measles and rubella.

From January 2014 to October 2014, a total of 368 samples from patients with fever and rash coming from 10 countries were received and analyzed in the laboratory as shown in table 3 below. All samples were found to be negative for anti-measles/anti-rubella IgM except for three positive anti-rubella IgM samples from Jamaica which were considered to be related to recent vaccination. Moreover, 24 samples from pregnant women with suspected rubella infection and 8 samples from children with suspected CRS were tested and found to be negative for anti-rubella IgM.

The number of samples from patients with fever and rash received in the laboratory within the first ten months of 2014 was slightly higher compared to the total number of samples received in 2013 (347) mostly due to an increase of samples received from Jamaica (186 in 2013 versus 235 in 2014). Some performance indicators were analyzed. All the samples were collected within the first 28 days after rash onset. Core data such as age was reported in more than 99% of the cases although vaccination status was missing in 47%. Laboratory test results were reported back to all countries in less than 5 days.

Finally, in order to analyze the impact of Chikungunya on the surveillance of fever and rash, 122 samples received in the laboratory for Chikungunya testing with a history of fever and rash but with no severe joint pain were selected. Positive result for Chikungunya or Dengue was obtained in 58 of these samples. The remaining samples will be tested for anti-measles and anti-rubella IgM before the end of 2014.

Table 3: Test results of fever and rash samples received at CARPHA January -October 2014

Country	# of samples	Measles IgM		Rubella IgM	
		Negative	Positive	Negative	Positive
Bahamas	1	1	0	1	0
Barbados	13	13	0	13	0
Belize	60	60	0	60	0
Dominica	1	1	0	1	0
Guyana	33	33	0	33	0
Jamaica	235	234	0	232	3*
St.Lucia	1	1	0	1	0
St.Kitts	2	2	0	2	0
Suriname	18	18	0	18	0
Trinidad and Tobago	4	4	0	4	0
Total	368	367	0	365	3*
<i>*Recently vaccinated</i>					

With the outbreak of Chikungunya, health workers may erroneously assume that all fever and rash cases are Chikungunya and not report them as such or submit samples for testing for suspected measles/rubella. Educational efforts and outreach-particularly to the private sector-regarding the importance of measles/rubella surveillance is necessary. Legislative options to ensure reporting can also

be explored. Countries should also consider setting up measles/rubella sentinel sites in urban areas with sensitized health workers. As chikungunya spreads to other countries in the Region, such as Mexico and Brazil, the Caribbean's experience confronting the outbreak will provide important lessons learned.

4.4. Caribbean Country Reports

Implementation of ISIS and impact on Fever and Rash Surveillance in Suriname

The Integrated Surveillance Information System (ISIS) software was introduced in Suriname in 2014. The main reason for this introduction was that Suriname reports more Fever and Rash (F/R) cases every year, than the required eleven cases.

The introduction was accompanied by a training, which was conducted by the sub-regional PAHO team on 21-22 July. With the instalment of the software several aspects like data security and accessibility, and backups needed to be taken into account. The persons trained by PAHO held a second training for other personnel involved in F/R surveillance, with emphasis on a standardized way of filling out the surveillance forms. A Dutch manual was developed for reference, which included the responsibilities of the different health care workers (lab and surveillance personnel) and data flow.

The implementation of ISIS in Suriname has had a positive impact on F/R surveillance. It has increased understanding among personnel about the importance of surveillance. It also improved the system, as forms are filled out more completely and also in a more timely manner as the ISIS reporting was linked to the weekly report. With the ISIS program in country, Suriname has easy access to reports about their own surveillance data and can act on that accordingly.

Fever and rash surveillance and impact of Chikungunya in Antigua and Barbuda

In Antigua and Barbuda, rash and fever surveillance is on-going at health centres, and cumulative reports are received from all 10 sentinel sites. No rash and fever cases were reported for 2014 to date. The first case of Chik-V reported in April 2014 at the MSJMC health facility was clinically diagnosed then confirmed by CARPHA. All age groups were affected but the least affected age group was the 0-4 year olds. As of October 2014 the number of cases reported was 1355. The Impact of Chik-V was seen through the number of sick leave and absent days from the work places.

4.5. Strategies to improve MMR2 coverage and age of vaccination

Strategies used in BERMUDA

Bermuda utilizes the integration of family health through the National Health Promotion Strategy to reduce missed opportunities for vaccination. The points of access in the health care system include routine preventive health services through child health clinics, school health services, maternal health screening and Travel Health. The Adult Immunization Schedule launched in 2011 serves to guide health professionals and strengthen health seeking behavior by the public using the life course approach. However, there is a need to explore legislation around vaccination, including health care workers for vaccines not limited to MMR. In addition, the national information system needs strengthening with advances in technology, to meet the public and private sector needs for the future. Consideration should be given to the related regulations and policies associated with an integrated delivery network system. To sustain the goals of elimination of measles, rubella and CRS in the sub-region, vaccine hesitancy should be explored to facilitate corrective actions with changes in demographics and risk perceptions.

Strategies used in JAMAICA

Based on the TAG recommendations to decrease the age of administration of the 2nd dose of MMR to 15-18 months, Jamaica reviewed the data for the last 3 years (2011-2013).

Table 4: Comparison of coverage by antigen and dose 2011-2013, Jamaica

YEAR	BCG	POLIO 3	DPT 3	HIB 3	HEP 3	MMR 1	MMR 2	DPT Booster 1
	%	%	%	%	%	%	%	%
2011	100.0	92.5	91.9	91.4	91.5	87.9	59.8	82.8
2012	95.5	95.8	95.6	95.7	95.8	92.3	75.6	83.3
2013	92.7	86.0	93.1	93.1	92.8	94.0	71.4	88.1

As a result of this review, the evidence was presented to the Chief Medical Officer for approval to move the age of administration from 4-6 years (as indicated in the current immunization schedule) to 18 months. The primary objective of implementing this was to ensure a reduction in the build-up of the susceptible cohort of children within the population.

The strategies being employed include:

- Sensitization of our healthcare workers on the revised schedule for MMR2, as well as reminders regarding utilizing the appropriate risk communication strategies to ensure a seamless transition
- Adjusting the current EPI database to ensure appropriate data capture (adjusting the current target population)

The expected outcomes are an improved MMR2 coverage, to achieve higher measles protection sooner, and to prevent measles outbreaks in school aged children

Recommendations:

- To sustain measles/rubella/CRS elimination, additional steps should be taken to ensure >95% vaccination coverage at all levels.
- Countries should administer the 2nd MMR dose during the second year of life.
- On school entry, there should be mandatory checking of vaccination status and catch-up of incomplete or missing vaccination schedules.
- Countries should reduce missed opportunities for vaccination by reviewing immunization cards of the children on all contacts with the health services and provide vaccination. They should also regularly review their immunization registries to identify and vaccinate drop-outs.
- Countries should review their surveillance systems to ensure detection, reporting, and adequate investigation of fever and rash cases in the public and private health sectors, including tourism.
- Countries that have not reported cases in the last few years or failed to meet a minimum rate of 2 cases per 100,000 population should formally evaluate their surveillance system and take the necessary corrective measures.
- Countries must improve the timely submission of surveillance specimens to CARPHA for testing.
- CARPHA should retest a representative portion of samples received which are discarded for chikungunya and dengue and that meet the criteria for suspected measles/rubella.

5. Sustaining Polio Eradication

5.1. Update on polio eradication and introducing of IPV

The Polio Eradication and Endgame Strategic (PEES) Plan 2013-2018, approved by the WHO Executive Committee in January 2013, has 4 main objectives:

1. Detection and interruption of poliovirus transmission.
2. Strengthening of systematic immunization programs and withdrawal of the oral polio vaccine.
3. Containment of wild and Sabin poliovirus and certification of the global eradication.
4. Development of a polio legacy plan.

The principal activities proposed by WHO to fulfill the first two objectives of the PEES plan 2013-2018 are to:

- Strengthen epidemiological surveillance to rapidly detect any poliovirus importation. Acute flaccid paralysis (AFP) surveillance remains the primary mechanism for the detection of poliovirus. In addition, environmental surveillance can complement AFP surveillance for detecting the presence of poliovirus in selected areas and populations.
- Reach and maintain vaccination coverage > 95% in all districts and municipalities.
- Introduce IPV to ensure that the new birth cohorts will be protect against poliovirus type 2 after the switch from tOPV to bOPV in case of an emergence of cVDPV type 2 or a containment failure of wild poliovirus type 2.

In April 2014, an extraordinary TAG meeting was convened to review and discuss the adoption of this plan in the Americas. The main TAG recommendations are:

- In light of the newly confirmed risk of WPV importation in the Americas, TAG calls upon PAHO Member States to urgently take action to strengthen AFP active surveillance and ensure high and homogenous polio coverage to maintain the achievement of polio elimination in the Region.
- TAG agrees with the renewed efforts towards eradicating polio and the objectives of the polio endgame. These efforts include the ongoing removal of Sabin oral polio vaccine from the routine immunization schedule.
- When introducing IPV, countries should consider sequential schedules. Ideally, countries should consider two IPV doses followed by two OPV doses. However, if a country is considering only one IPV dose, this should be with the first DTP dose and followed by three OPV doses.
- Countries should not consider moving directly to an IPV only schedule at this time, unless they meet the criteria previously recommended by TAG and WHO i.e low risk of transmission and importation, high homogeneous coverage, and good sanitation.

The switch from tOPV to bOPV is planned to be launched in April 2016 if the countries that are experiencing outbreaks of cVDPV type 2 achieve the interruption of these outbreaks. As the global demand of IPV vaccine is very high due to the fact that all countries that are using OPV only schedule need to introduce at least one IPV dose in the routine immunization schedule by the end of the 2015 and there are only two IPV producers worldwide. PAHO is recommending to the countries of the Region to introduce the IPV dose during the second semester of 2015.

For guaranteeing at least one dose of IPV to all countries, the Revolving Fund will prioritize the delivery of this vaccine as follows:

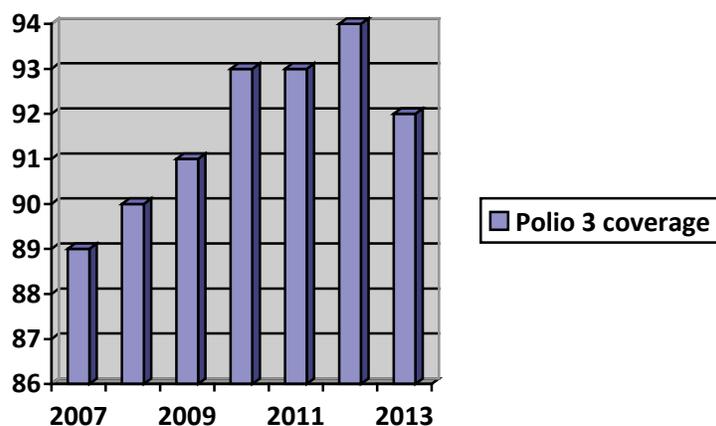
1. To countries that have already introduced IPV in routine immunization program or to risk groups.

2. To countries that submitted vaccine request for 2015 by 15 December 2014. All countries need to confirm their request by this date.
3. To countries that request two or three doses, only when the supply of IPV vaccine is sufficient to sustain the vaccine in the priority groups 1 and 2.

5.2. AFP Surveillance in the Caribbean

Until the global eradication of wild poliovirus, the countries of the Caribbean remain at risk for importation of wild poliovirus and cVDPV. In keeping with the Global Polio Eradication Initiative and the polio Eradication and Endgame Strategic Plan 2013-2018, the Caribbean countries have been making efforts to strengthen surveillance for polio using the proxy condition of acute flaccid paralysis as well as increasing efforts to improve population immunity. The last confirmed polio case in the Caribbean sub-region was in 1982. Efforts at improving the polio vaccine coverage were sustained until 2012 but in 2013 due to stock-out of vaccines in a couple countries, the coverage fell to 92%.

Fig. 3 Polio 3 vaccine coverage in the English and Dutch-Speaking Caribbean 2007-2013



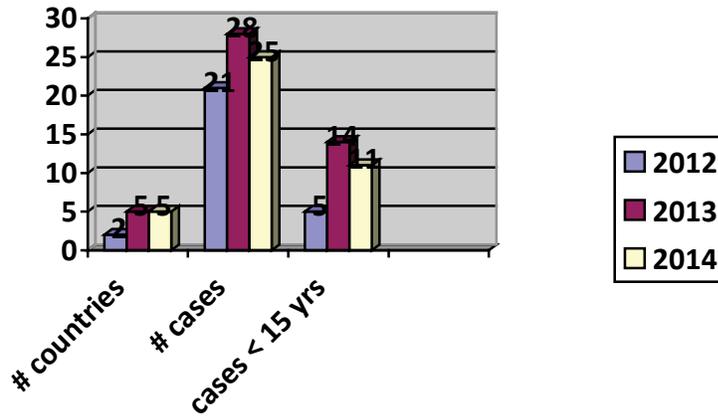
The objectives of the AFP surveillance for the Caribbean remained as follows:

- To achieve timely, complete, and effective surveillance for acute flaccid paralysis (AFP).
- To ensure all AFP Indicators are met in countries
- To have a rate of detection of AFP cases in countries and the sub-region of at least 1.0/100,000 population <15 years

Annually, a total of some 20 AFC cases in the < 15 year population should be reported from the countries. In 2013, a total of 28 AFP cases were reported from only 5 countries. However only 14 or 50% were in children 15 years of age or younger. This resulted in a case detection rate of 0.89 per 100,000 population < 15 years. In 2014 up to EW 44, there were a total of 25 cases reported, 11 of whom were in children < 15 years of age resulting in a case detection rate of 0.54 per 100,000 population < 15 years.

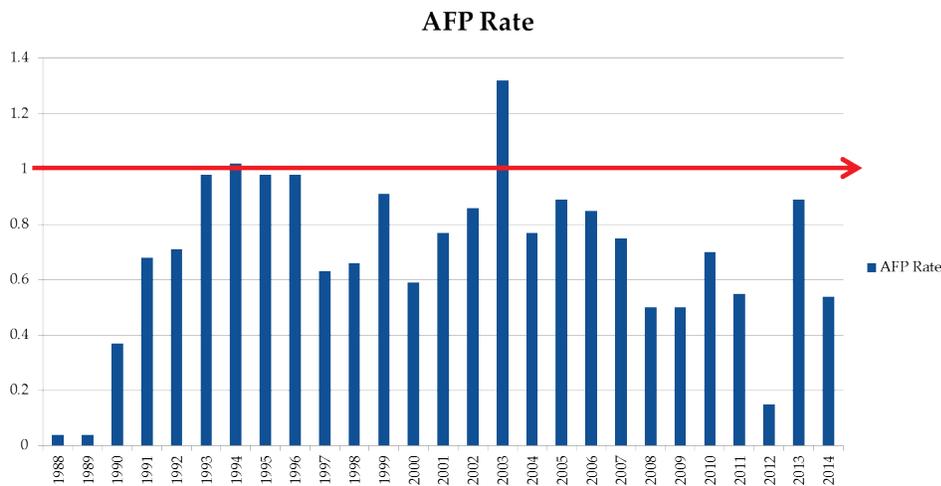
Fig. 4: AFP cases reported 2012-2014 (EW 44)

AFP cases reported 2012- 2014 (EW44)



Since 1988, the Caribbean has only realized the expected rate of AFP cases of 1 per 100,000 population < 15 years twice.

Fig. 5: Rate of detection of AFP cases in the Caribbean Sub-region 1988-2014 (EW 44)

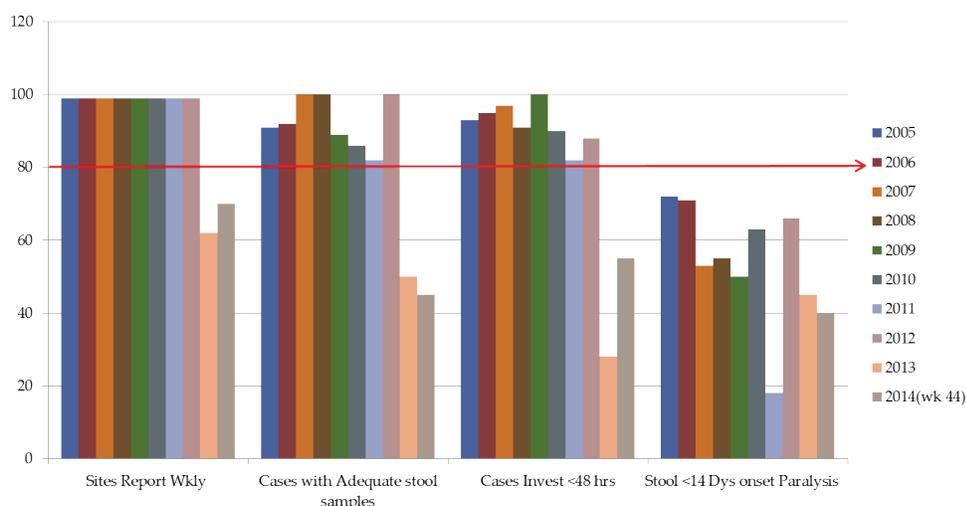


From 2000 to 2013, Guyana has met the required rate of case detection 8 times, Jamaica 7 times and Trinidad and Tobago 5 times.

From 1994 to 2014 (EW 44), there were 331 AFP cases aged less than 15 years reported from 11 countries.

The quality of surveillance for AFP cases has been on the decline since 2012 with a decline in the rate of achievement of the indicators for monitoring. In 2013, only 62% of the surveillance sites for AFP reported on time weekly and only 50% had an adequate stool sample collected. 28% of the cases were adequately investigated and 45% had stool sample submitted to CARPHA within 14 days of the onset of paralysis. In comparison, in 2014 up to Epidemiology week 44, 70% of sites reported weekly, 45% of cases had adequate stool sample collected, 55% were adequately investigated and 40% of samples were submitted to CARPHA within 14 days of the onset of paralysis. Despite this low rate of achievement of the surveillance indicators, no case of polio was confirmed.

Fig. 6: AFP Surveillance Indicators 2005-2014 (EW 44)



Polio vaccination coverage and surveillance has declined over the past 2 years and internal evaluation and validation of the AFP surveillance system needs to be done in each country.

5.3. Caribbean Country Reports

Planning for Introduction of IPV in Grenada

Grenada, in compliance with the WHO global polio eradication initiative, plans to introduce IPV into the National Schedule during the second quarter of 2015. The decision was taken to follow the single dose IPV schedule, based on the country's financial status. Orders for the vaccine and other supplies have been made through the PAHO Revolving Fund and vaccination will commence during the first week of June following distribution of IPV to all the health districts. Infants will be administered the vaccine together with the first dose of the pentavalent vaccine, according to the national childhood immunization schedule. No catch up doses will be administered to infants who have started on the OPV only series. The process of IPV introduction will be overseen by the EPI Manager and the Chief Community Health Nurse.

As part of the management and organization, meetings will be convened with the EPI Committee. Training of staff and sensitization of the public will be undertaken. Social mobilization will be conducted on media as well through printing of fliers and posters. There will be continuous monitoring of the vaccination activities at the district level by the supervisors, ensuring that reports of ESAVIs and other

events are submitted promptly. Additionally, weekly reports will be submitted to the Ministry of Health during the first six (6) months of IPV vaccination. A modification to existing forms and charts is anticipated and provision will be made for inclusion of IPV in the Immunization Law which is under review. Development of a Crisis Management Plan will also be pursued vigorously with request for assistance from the EPI Sub Regional Advisor.

Planning for Introduction of IPV In St. Vincent and the Grenadines

In May 2012, the World Health Assembly declared the completion of poliovirus eradication to be a programmatic emergency for global public health and called for a comprehensive polio endgame. In response, the Global Polio Eradication Initiative developed The Polio Eradication and Endgame Strategic Plan which provides a detailed approach and concrete timeline for complete eradication of polio. The Plan called for a phased withdrawal of OPV globally beginning with removal of the type 2 component of OPV through a switch globally from trivalent OPV (tOPV) to bivalent OPV (bOPV) containing only types 1 and 3) in 2016. To ensure that a substantial proportion of the population is protected against type 2 polio after OPV type 2 withdrawal, the WHO's Strategic Advisory Group of Experts (SAGE) has recommended that all countries introduce at least one dose of inactivated polio vaccine (IPV) in their routine immunization programs before the end of 2015, prior to the tOPV- bOPV switch.

In Planning for the introduction of IPV discussions were held with senior health officials, the Chief Medical Officer, Permanent Secretary and Primary Health Care senior staff to gain approval and support and the cold chain capacity at central and district levels was reviewed. In the first quarter of 2015 the following activities will be carried out: sensitization workshops for all categories of health care workers (to ensure that they understand the importance and implementation process of IPV), sensitization of the public and development and distribution of an IPV fact sheet.

IPV will be given in addition to the existing doses of OPV and will not replace any OPV dose. Implementation will begin in April 2015 with the 2015 birth cohort and one dose of IPV will be given at age 4 months.

Monitoring and evaluation will be done through weekly surveillance of AFP and ESAVIs, monthly reports on coverage and review of the immunization registers for identification of infants who may have missed the IPV dose.

IPV implementation plan Trinidad and Tobago

Trinidad and Tobago has given technical commitment to the introduction of the IPV Vaccine and the PEESP 2013-2018. As such the main objectives of the IPV Introduction Plan will consist of the following objectives:

- Obtain strong political and financial commitment to the PEESP. A presentation will be made to the Executive of the Ministry of Health which will include among other key decision makers:-
 - The Minister of Health
 - Permanent Secretary
 - Director of Finance
 - Chief Medical Officer
- Sensitization of Community Health Managers e.g. County Medical Officers, Primary Care Nurse Managers and Chief Pharmacist
- Sensitization/Training of others :-

HCWs e.g. Primary Care Doctors, Nurses, Surveillance Nurses, Pharmacists
Internal Stakeholders e.g. Hospital Infection Control Nurses, Liaison Nurses
External Stakeholders e.g. Paediatric & Medical Association, Sentinel Physicians,
Consultant Paediatricians, Private Hospitals
Caregivers
Media Professionals

- Formation of a National IPV Committee
- Improve District and National Immunization Coverage to >95%
- Strengthen surveillance in the area of AFP Surveillance

Of high priority to the success of the introduction plan is the development of a timeline for all activities and ensured availability of vaccine stock for commencement of the program.

Recommendations:

- To sustain polio eradication, additional steps should be taken to ensure >95% vaccination coverage at all levels. Countries that have reported lower coverage should find drop-out children and vaccinate them.
- Countries that have not reported AFP cases in the last few years or failed to meet a minimum rate of 1 case per 100,000 children aged <15 years should formally evaluate their surveillance system and take the necessary corrective measures.
- Special efforts must be taken to ensure collection of stool samples while case-patients are hospitalized.
- To be prepared for the switch from tOPV to bOPV, all countries need to elaborate an IPV introduction plan by the end of 2014 and should introduce the vaccine by the end of 2015. Those countries that are currently using OPV should not switch to an IPV-only schedule.
- Countries need to communicate their IPV requirements to the PAHO Revolving Fund by 15 December 2014.
- If multiple vaccine injections are indicated on a particular visit, the third injection may be given in the same thigh a minimum of 2.5 cm (1 inch) from another injection site.

6. Influenza immunization and surveillance

Vaccination is the most effective measure to prevent influenza illness and its complications. Safe and effective vaccines are available and have been used for decades. The most widely used are the trivalent inactivated influenza vaccines (TIV) that contain three vaccine strains: an influenza A/H1N1 strain, an influenza A/H3N2 strain, and one influenza B strain.

In 2012, WHO updated its position paper on immunization against influenza following the review of the epidemiological evidence available globally and recommendations from the Strategic Advisory Group of Experts (SAGE) on immunization. WHO recommended that countries considering the initiation or expansion of programs for seasonal influenza vaccination should include pregnant women as the highest priority group. Additionally, in no particular order of priority, the following high risk groups were recommended for vaccination: children aged 6–59 months, the elderly, individuals with chronic medical conditions, and health care workers.

There has been a significant increase in influenza vaccines uptake since 2004 in the Americas. That year only 13 countries had policies for influenza vaccination and currently 40 out of 45 countries/territories of the Americas have defined such policies. Various high risk groups are targeted by these vaccination

policies, with the most frequently targeted group being healthcare workers and the elderly (in 38 countries), followed by individuals with chronic conditions (in 35 countries), pregnant women (in 27 countries) and healthy children (in 25 countries) or children suffering chronic conditions (in 5 countries).

In the Caribbean, 19 countries have reported influenza vaccine policies. However, reported vaccine coverage is inconsistent or often unavailable.

Despite substantial increases in vaccine uptake since 2004, reports of vaccine effectiveness in the LAC region have been rare. In order to address this gap in evidence, in February 2013, Ministries of Health from 12 LAC countries, PAHO, the US CDC and TEPHINET launched the network for influenza vaccine evaluations in Latin America and the Caribbean denominated as REVELAC-i for its acronym in Spanish (Red para la Evaluación de Vacunas En Latino América y el Caribe–influenza) . Such a platform would allow for the pooling of data from a larger number of countries to improve vaccine effectiveness precision.

As of November 2014, 14 countries have joined the network (Argentina, Brazil, Chile, Colombia, Costa-Rica, Cuba, Ecuador, El Salvador, Honduras, Mexico, Nicaragua, Panama, Paraguay, and Uruguay); nine of which have collected and shared data during the 2013 influenza season. Accurate vaccination history is crucial for the assessment of vaccine effectiveness and the availability of nominal vaccination registers significantly facilitates such endeavor. Interested Caribbean countries are welcome to join in this effort.

Recommendations:

- CARPHA should work with countries to strengthen influenza surveillance to better understand seasonality and to inform the timing of annual vaccination efforts and thus of the selection of the most adequate vaccine.
- Use of the influenza vaccine especially in at-risk groups should be increased. These groups are pregnant women, children aged 6-23 months, persons aged >65 years and individuals with chronic diseases. Strategies may include engaging scientific societies, training health professionals (such as obstetricians and gynecologists), and strengthening social mobilization and communication efforts.
- Countries should introduce or implement policies requiring immunization with influenza and other vaccines for health workers in order to reduce disease transmission in health settings.

7. Update on pneumococcal and rotavirus vaccines

Pneumococcal Conjugate Vaccine

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 LAC in children less than 5 years of age. As of end 2014, 28 countries in the Region have introduced the pneumococcal conjugate vaccine in their national immunization programs. An estimated 13.7 million children (90% of the regional cohort) has in principle access to PCV. Effectiveness studies of PCV10 and PCV13 carried out in the Region demonstrate the impact of pneumococcal vaccination.

In LAC, an epidemiological surveillance network of bacterial pneumonia and meningitis in children less than 5 years in sentinel hospitals has been supported and complements the laboratory network of SIREVA II. The following 11 countries in the Region report their epidemiological surveillance data for bacterial pneumonias and meningitis to PAHO: Brazil (meningitis), Bolivia, Ecuador, El Salvador,

Guatemala, Honduras, Nicaragua, Panama, Peru, Paraguay and Venezuela. While surveillance is a significant element in showing the impact in invasive disease and pneumonias, this system can continuously be improved, for instance monitoring serotype circulation.

Rotavirus Vaccine

In LAC, rotavirus causes an estimated 15,000 deaths, 75,000 hospitalizations, and 2 million clinic visits annually. Two available vaccines are currently in the global market, which are WHO-prequalified. Two or three oral vaccine doses are required, depending on the vaccine to be administered. At least one-month intervals should be provided between doses. As of end 2014, 17 countries in the Region have introduced the rotavirus in their national immunization programs. An estimated 13.3 million children (87% of the regional cohort) has in principle access to this vaccine.

Eighteen countries in the Region have a sentinel surveillance system for a total of 83 hospitals. In the Caribbean, the following countries have an instituted rotavirus surveillance system: Dominican Republic, Guyana, Haiti, Suriname, and St. Vincent and the Grenadines. Field studies have demonstrated the effectiveness of the vaccine in preventing severe cases of rotavirus gastroenteritis in children aged <12 months and an important reduction in hospitalizations due to rotavirus infections. The effectiveness of this vaccine has not been verified in emergencies.

Recommendations:

- Countries are encouraged to introduce routine use of PCV in children under 5 years of age.
- The larger countries should strengthen hospital-based surveillance of invasive bacterial diseases, including sending of isolates to CARPHA for serotyping.

8. Update on HPV Vaccination

As of November 2014, 23 countries and territories in the Americas have introduced the vaccine against human papillomavirus (HPV) in their publicly funded immunization programs. Notably, Brazil introduced the HPV vaccine in March 2014 and 4.2 million Brazilian girls aged 11–13 years (85.3% of the target population) received the first vaccine dose by the end of June. Compared to the Sub regions of North America, the Southern Cone and the Andes, fewer countries in Central America and the Caribbean have introduced the HPV vaccine. Overall, an estimated 85% of a typical birth cohort of adolescent girls (6.5 million girls) has in principle access to HPV immunization in the Americas.

However, data on HPV vaccination coverage are limited. Only one country publishes coverage data each year, which are estimated through nation-wide surveys. For 2012—the sixth year of vaccination in this country – the estimated first-dose coverage in girls aged 13 years was 47%; drop-out between the first dose and the dose given after six months was 57%. For the same year, nine countries reported the number of administered HPV vaccine doses in their UNICEF/WHO Joint Reporting Forms (JRF); overall, 8.7 million doses were administered. For the four countries with adequate data for analysis (4.7 million doses administered), first-dose coverage ranged from 51% to 81%. Drop-out between the first dose and the dose given after six months ranged from 14% to 41% for the three countries with a classical 3-dose immunization schedule and was 48% for the country with an extended 3-dose immunization schedule. Although limited, these coverage data indicate that real access to and/or acceptability of the HPV vaccine and the monitoring of vaccinated cohorts remain deficient.

In July 2013, TAG recommended extended HPV immunization schedules for adolescents aged <14 years. TAG considered that these schedules could offer immunological, programmatic and financial advantages. In April 2014, WHO's Strategic Advisory Group of Experts on Immunization (SAGE) discussed the same issue. Specifically, SAGE considered that vaccine-induced antibodies mediate HPV vaccine efficacy and that, as immunobridging studies show, adolescent women had similar or higher antibody titers than adult women. SAGE also considered a systematic review of randomized and non-randomized studies and a descriptive review of observational studies, as well as the findings of an ad-hoc expert consultation on HPV immunization schedules. SAGE concluded that, based on immunologic evidence, a 2-dose extended schedule with a minimum interval of six months administered to adolescent women was non-inferior to a 3-dose classical schedule administered to adolescent and adult women. SAGE recognized that the potential of reducing the dose schedule from 3 to 2 and the flexibility in intervals between doses may lead to improvement in vaccination coverage.

Despite concerns by the public and some health professionals, the HPV vaccine is safe. In 2013–2014, WHO's Global Advisory Committee on Vaccine Safety (GACVS) reviewed the occurrence of events supposedly attributed to HPV vaccine and immunization at three occasions, namely in June and December 2013, and March 2014. At the last occasion, GACVS stated that "it is important to highlight and reiterate [these reviews] because a number of national immunization programs have been facing real and potential public losses of confidence in their programs as a result of increased negative publicity, even from safety issues that have been addressed." The four elements that underpin HPV vaccine safety are the efforts made by immunization programs to guarantee safe vaccine development and administration, the characteristics of today's HPV vaccines, the data generated in the controlled clinical trials, and the data emerging from post-marketing active surveillance and large and lengthy studies.

Emerging evidence shows the effectiveness of HPV immunization programs in reducing HPV infections and precancerous cervical lesions among young women. HPV immunization has a real potential to curb the burden of HPV-related cancers within a generation. However, the realization of this potential depends on a greater uptake and acceptability of the HPV vaccine by the public and health professionals alike.

HPV vaccination in Sint Maarten

Sint Maarten introduced the HPV vaccine in its routine schedule for girls at the age of 9 in September/October 2013. In the preparation phase information materials were developed, a press conference was held with the minister, a gynecologist, the pediatrician and representatives of the Department of Collective Prevention Services, including the section of Youth Health Care. A presentation was given for the school boards and presentations made to the different schools. Overall the vaccine has been received positively.

The coverage up to date for the HPV1 vaccine was 68%. Looking at the school level there is a big variance between schools. Public schools have an average coverage of 79.8% and 6 private or non-subsidized schools have an average coverage of 17.9%, ranging from 0 to 30%. Continued monitoring of the HPV program and attention for schools with low coverage will continue.

HPV vaccination in Bahamas

During 2013–2014, Bahamas implemented ProVac's CERVIVAC model to assess HPV vaccine introduction. In particular, the study intended to evaluate health outcomes, averted healthcare systems costs, and the cost effectiveness of a national HPV vaccination programme. Indirectly, the study also represented an opportunity to strengthen national capacity to conduct and produce data for evidence-

based decision-making on vaccine introduction and the introduction of other health technologies. The reference data used to populate the model was that for 2010. The Incremental Cost Effectiveness Ratio (ICER) or cost per DALY averted was \$4,123 which was significantly less than the GDP (\$31,900 in 2010) and HPV vaccine introduction was therefore deemed to be highly cost-effective. The country plans to introduce the vaccine for the 9 to 10 year old cohort of girls in 2015.

HPV vaccination in Aruba

In November 2014 Aruba introduced the HPV vaccine into the national immunization program. The introduction followed the 2009 WHO recommendations and the recognition of cervical cancer and other HPV-related diseases as a national public health priority. Additionally, the Health Council of the Netherlands published in 2012 a report about the national immunization programmes in the Dutch Caribbean, in which a case was made for the addition of HPV vaccine to the immunization programmes.

Girls attending grade 6 in primary school are the primary target population in Aruba. Despite several communication activities to assure the public and health professionals about the efficacy and safety of HPV vaccines, preliminary results of the first phase of the school-based HPV vaccination campaign which commenced at the beginning of November 2015 (administration of 1st dose) showed coverage of 45% among the primary target population. Consequently, the initial communication plan needs strengthening and adjusting to address remaining public concerns and to gain greater confidence in the vaccine. This action will nonetheless be challenging because misinformation spread through social media is widespread.

Recommendations:

- Countries are urged to introduce by 2016 routine use of HPV vaccine in pre-pubertal girls within the framework of integrated cervical cancer prevention and control programmes.
- Countries are encouraged to adopt global and regional recommendations on a 2-dose immunization schedule with a minimal interval of 6 months between doses for girls aged <15 years of age who are not immunocompromised.
- Countries need to plan carefully HPV vaccine introductions, especially their communication and crisis management plans. The safety and efficacy of HPV vaccines among adolescent and young women has been demonstrated by a sound and robust evidence base.

9. Experiences with other vaccines

Status of varicella vaccine introduction and lessons learned in Barbados

On the 19th of June 2012, the Ministry of Health, Barbados implemented the routine administration of Varicella Vaccine to all children of 15 months of age. The Varicella vaccine coverage for January to December 2013 was noted to be 71% leading to an evaluation of the Varicella vaccine programme.

Eight polyclinics and one outpatient clinic were visited and immunization registers for the period between July 2012 and December 2013 were examined. Defaulters were recorded and 15% interviewed.

The greater number of defaulters occurred during the first six months of the programme. Of the 3757 children in all clinics who were eligible for the vaccine, 1530 or 41% defaulted. 43 % of the parents interviewed claimed that they were not aware of the availability of Varicella vaccine and 30 % said when the child attended for the 18 months booster of DPT and Polio, Varicella vaccine was not administered.

Interventions included:

1. Changing the age of administration of Varicella vaccine from 15 months to 12 months of age from July 1, 2014.
2. Developing posters and radio messages promoting immunization and including Varicella vaccine.
3. Including Varicella vaccine on the Immunization Pamphlet.
4. Sensitization of staff and the public during VWA activities.

Varicella vaccine coverage for January to August 2014 was 87%.

Cholera in the Americas

In 2014, cholera cases were reported in four countries of the Americas—Cuba, Haiti, Mexico, and the Dominican Republic. Although transmission in Haiti has declined significantly since cholera emerged in October 2010, the country is still reporting the greatest incidence in the Region. During the 12 months from October 2013 to September 2014, 27,972 cholera cases and 304 cholera-related deaths were recorded in Haiti. In contrast, during the 12 months from October 2010 to September 2011, 464,670 cases and 6,555 deaths were reported—17 and 22 times greater, respectively, than in the most-recent 12-month period.

Deployment of oral cholera vaccine (OCV) is part of the comprehensive "National Plan for the Elimination of Cholera in Haiti, 2013–2020," which the Haitian Government issued in February 2013. The vaccine was deployed in all years between 2012 and 2014. Between April and June 2012 two non-governmental organizations, GHESKIO and Zanmi Lasante/Partners in Health, conducted separate but coordinated cholera vaccination of nearly 100,000 people in one urban and one rural area of Haiti. The Haitian Ministry of Health with PAHO and UNICEF support vaccinated an additional 120,000 people in two large communities in July–August 2013 and 200,000 people in seven municipalities in August–September 2014. Second-dose coverage, as measured with surveys after the 2013 vaccination, ranged from 63% to 77%. In all three years, the cholera vaccination faced almost no hesitancy. While on-going, impact assessment of the vaccination is difficult due to the lower disease incidence.

10. Revolving Fund

The PAHO Revolving Fund (RF) for EPI is a cooperation mechanism for the joint procurement of vaccines, syringes, and related supplies for participating Member States. Through the Revolving Fund, for almost 35 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.

The vaccine market has been changing a lot in the last few years. Its dynamic indicates the need for different approaches in order to guarantee availability of doses, with duopoly markets, vulnerable markets, transitioning markets, etc. Therefore, the Revolving Fund has revised its procurement strategy for 2015-2017, having 3 different types of bid solicitations: 1 year, 2 years and 3 years, depending on the type of vaccine and the respective market. In this scenario, discussions were held re HPV vaccine. It is a duopoly market and the RF has been seeking, as mandated by the Member States, better price conditions for the Region. By November 2014, an agreement was achieved with one of the manufacturers with a significant reduction in price for the purchases through the RF.

Regarding IPV introduction following the Polio Eradication and Endgame Strategic Plan (PEES) and recommendation of at least one dose of IPV by the end of 2015, a specific approach with manufacturers along with close communication with World Health Organization and other international organizations are in place. The IPV production is tight and anticipation of demand is critical in order to guarantee availability of doses.

But, on the top of any different approach to assure doses to the Region, a better demand planning is crucial to the process, showing to the market consistency in demand guaranteeing its supply.

Recommendation:

- Countries should provide timely and accurate forecasting projections of all vaccine requirements.
- Countries should guarantee timely payments of the invoices.

11. Report of the 8th Dutch Caribbean Mini EPI Managers' Meeting

Dutch Caribbean Mini EPI Managers Meeting

The 8th Mini EPI Managers Meeting of the Dutch Caribbean was held in Bonaire from 3-4 June, 2014. Participants included the RIVM of Bonaire, the BES Islands, Curacao, Sint Maarten, Aruba and PAHO (subregional advisor for immunization). The major goals for the meeting were to discuss current threats concerning vaccine-preventable diseases like measles and polio, discuss challenges for the introduction of HPV vaccination and to discuss the challenges for the BES islands with regards to their constitution and the need for harmonization with the national immunization program of the Netherlands. Other topics included validation of the cold chain (good distribution practices), vaccine supply/storage and the implementation phase of the heel prick screening on the BES islands.

In Bonaire, plans are being made to implement the heel prick screening in January 2015, to introduce HPV during the 2015 school year and to do a vaccination catch up with HPV for the two prior age cohorts, to do a cold chain validation and training, and in 2016, to conduct the PIENTER 3 study, which will analyze the prevalence of infectious diseases in the population which are the targets of the EPI. Since January 2014, as a result of efforts to align the vaccination schedule of Bonaire with that of the

Netherlands, Bonaire's vaccination schedule now includes DaPT -IPV/Hep B/Hib vaccination at 2 months, 3.5 months, 5 months and 11 months; vaccination with pneumococcal vaccine (10-valent) at 2 months, 3.5 months and 11 months; MMR vaccination at 14 months and 9 years, DT-IPV vaccination at 9 years and 2 doses of HPV vaccine between 9-10 years.

Introduction of Heel Prick Screening in Bonaire

As of 1 January 2015, Bonaire will officially begin the implementation of a heel prick screening for newborns. In preparation for this introduction, a phased feasibility study was conducted over the course of two years. There was also training for health professionals on conducting the heel prick in November 2014, conducted by Dr. Gert Weijman from the Netherlands, and an initial pilot period, which began in November 2014.

The goal of heel prick screening is early detection of severe hereditary diseases in newborns and, in the case of a positive result, intervention with early treatment. The heel prick test is done between 3 and 7 days after birth and provides very few false-positives (unnecessary referrals for treatment) and very few false negatives (missed diagnoses). In the Netherlands, heel prick screening has been in place since 1974 and currently tests for 18 diseases, including cystic fibrosis, sickle cell disease, adrenogenital syndrome, congenital hypothyroidism and phenylketonuria.

12. Overview of Vaccination Week in the Americas 2014

April 2014 marked the 12th year that the countries and territories of the Americas and the Pan American Health Organization/World Health Organization (PAHO/WHO) have come together to celebrate Vaccination Week in the Americas. Since 2003, more than half a billion people of all ages have been vaccinated under the umbrella of this initiative, which strives to advance equity and access to vaccination for all citizens of the Region. The initiative has become a bright example of what can happen when countries work together, across borders and in different languages, to improve their populations' health. Other regions of the World Health Organization have also implemented their own regional immunization week initiatives, a global movement which culminated with the establishment of World Immunization Week (WIW) in 2012 as the overarching framework for all efforts. In 2014, VWA was selected as one of the "five memorable moments in public health" by the Global Development Professionals Network of the Guardian Newspaper in the U.K.

In 2014, 43 countries and territories took part in VWA. The regional social communication campaign was based around the slogan "Vaccination: Your Best Shot!", which was chosen to encourage people to protect themselves and the Region against the importation of polio, measles, and other vaccine-preventable diseases, in the lead up to the celebration of the 2014 World Cup in Brazil. The regional launch of VWA 2014 took place in Montevideo, Uruguay, on 26 April. Dozens of additional VWA national and binational launching events took place around the Region and frequently counted on the highest levels of political priority, counting on the participation of Presidents, first ladies, Ministers of Health and community leaders.

Countries implemented a variety of vaccination activities under the framework of VWA 2014 and in accordance with national health priorities. In total, thousands of health workers vaccinated more than 51 million people of all ages, including those living in remote, border, and urban fringe areas, indigenous populations, and other at-risk groups against a wide range of diseases. Common campaigns included those to start, update or complete childhood schedules, mop up activities, measles/rubella campaigns

targeting children and/or travelers to the World Cup, EPI training for health workers, teachers and parents, seasonal influenza campaigns (Southern Hemisphere formulation), indiscriminate polio vaccination, vaccination of occupational risk groups and tetanus/diphtheria vaccination of women of childbearing ages. Thirteen countries also used Vaccination Week as an opportunity to integrate other preventative health interventions with vaccination.

In 2015, VWA will take place from 25 April to 2 May. The regional theme will revolve around the power of vaccines and will incorporate the use of superhero images. The proposed slogan is “Boost/Activate your power: Get vaccinated!” More information on VWA can be found at www.paho.org/vwa.

Recommendations:

- Countries should continue to support VWA as an initiative that reduces inequities in vaccination coverage, highlights the work of the EPI and places the topic of immunization on political agendas. Where it is applicable, countries should continue to use the VWA as a platform for the integration of other preventative interventions.
- Countries are encouraged to document the impact of VWA to their routine program. Consistent reporting of VWA results to PAHO is also essential in order for the Caribbean to be accurately represented in regional materials and resources.

13. Program-related topics

13.1. Processes and tools for EPI planning and evaluation

EPI Plan of Action database

The annual plan of action of the Expanded Program on Immunization (EPI) is a managerial tool for programming and monitoring that helps facilitate the prioritization of activities, while supporting efficient and timely achievement of objectives and goals. First and foremost, an EPI plan of action should be a tool that is useful for national immunization programs and EPI managers, but it is also essential to guide PAHO’s provision of technical cooperation to each country and for negotiation with other partners, among other uses. When constructing their EPI plans of action, in addition to considering their national context, EPI managers are encouraged to pay attention to the mandates of politically endorsed global frameworks, including the goals, indicators and targets of the Global Vaccine Action Plan (GVAP) and the main objectives of the Polio Eradication and Endgame Strategic Plan.

The process of EPI planning is cyclical and includes the phases of situation analysis, priority setting, formulation of objectives and goals, creation of the plan of action, implementation of the plan, monitoring and supervision and evaluation. Traditionally, EPI plans of action in the Caribbean have been constructed around 9 different components of work (biologicals and logistics, cold chain, training, social mobilization, operating costs, supervision, epidemiological surveillance, research and evaluation). In order to standardize the components of work included in EPI plans across the diverse countries of the region, PAHO is introducing a revised Excel-based format for the annual plans of action that includes 12 standardized components of work (political priority and legal framework, planning and coordination, biologicals and supplies, cold chain, training, social mobilization, operating costs, supervision and monitoring, epidemiological surveillance and lab, information systems, research and evaluation). This revised format also includes more detailed EPI cost information (for those EPI managers that have it at their disposal) and automatically generates multiple graphs to facilitate visualizing costs and tracking expenditures. Analyzing the costs of an EPI plan of action is important for numerous reasons, including:

resource mobilization (making accurate budget requests that can be defended), understanding the drivers of costs (finding opportunities for greater efficiency), identifying areas of the program with insufficient funds (finding investment opportunities) and planning for expansion (improving the precision of costs estimates for successful vaccine introduction).

The proposal is that this revised format will begin to be used in the Caribbean, beginning in 2015 (for 2016 planning) and the hope is that it will support the work of EPI Managers, streamline technical cooperation provided by PAHO, reduce requests for additional information and the need for parallel plans, and advance the use of EPI cost data.

Participants expressed an overall interest in the revised format for the EPI plans and countries are willing to adopt its use for 2016 EPI planning.

Effective Vaccine Management (EVM) assessment in Guyana

Guyana conducted an EVM assessment in July 2014. This was done in collaboration with PAHO/WHO, private immunization consultants and EPI staff Guyana. After using an approved WHO statistical package and with a 90% confidence limit, 17 sites were assessed, using the 9 EVM tools. Guyana was ranked 3rd out of 75 countries which was a great achievement internationally. In addition, an improvement plan was prepared with the main emphasis on two areas to strengthen temperature control and vaccine distribution

13.2. Review of 2014 Plans of Action and discussion of the 2015 Plans of Action

Countries met in 4 working groups of 6-7 countries each, for peer discussion regarding the implementation of each country's 2014 EPI Plan of Action and peer review of their proposed Plan of Action for 2015. Countries were instructed to specifically include in their 2015 revised plans of action activities in relation to the routine introduction of IPV where relevant and activities for Vaccination Week in the Americas, 2015.

In general, achievements of the planned activities for 2014 were good. However there were some challenges. Due to delays in shipments, damaged stock during shipment or outstanding debt to the EPI Revolving Fund, some 7 countries had stock-outs of vaccines during 2014. These stock-outs included polio and MMR vaccines and negatively affected the coverage. There was vaccine loss due to cold chain failure in 5 countries. As a consequence of insufficient resources, mainly human and financial, supervisory visits, social mobilization, training of health care workers, revision of the EPI/MCH manuals and timely submission of fever and rash samples to CARPHA for testing were impacted. Challenges also existed with the surveillance for measles and rubella due to the demand of services of the EPI team for management and control of the Chikungunya outbreak and Ebola preparedness. Limited research or programme assessments/evaluations were also done. For countries which had planned to revise their Immunization legislation, this was not done as it was not given priority on the legislative agenda.

Of concern is the fact that equitable access to vaccination services for children is being threatened due to introduction of fees or sale of vaccines to the private sector in some countries.

All countries' plans of action were reviewed but only 22 countries submitted their final Plans of Action for 2015. Plans for 2015 include the routine introduction of IPV, MMR mop-up activities, reduction in the age of administration of the MMR2, introduction of new vaccines (HPV, varicella and rotavirus),

implementation of electronic immunization registers, upgrading of cold chain infrastructure, training of health care workers and revision to EPI manuals among other activities.

13.3. Other topics

Management of cold chain failure in Jamaica

On 2 August 2014, the EPI manager was advised that the central cold room had malfunctioned. The temperature recorded at that time was 21°C. The Director of Emergency Disaster Management and Special Services was alerted and the help of Dr. Karen Lewis-Bell, PAHO Sub-regional Advisor on Immunization was also enlisted.

Large quantities of vaccine were in stock as delivery of vaccines took place during the preceding week. Vaccines were placed in freezers and the chill room, while some of the toxoids remained in the malfunctioning cold room. Due to the lack of space and the fact that appropriate temperatures were not being attained (2-8°C), the decision was taken to store the vaccines in refrigerated trucks.

The defective component of the cold room (a compressor) was sourced and the company conducting the repairs advised that this work was scheduled for completion at approximately 9:30 – 10:00 p.m., 2 August 2014. The repairs however were not completed in a matter of days but took approximately 2 weeks. During that time the vaccines were kept in the refrigerated trucks.

Based on advice from the PAHO office, only 2 vaccines were eventually discarded; Hib and IPV. An emergency order was then placed to replace this stock.

An EPI Plan of Action was developed to mitigate against recurrence of such a situation which included:

1. Training of team members at NHFP in cold chain management of vaccines. This training was conducted in September 2014 facilitated by the Family Health Unit and Dr. Lewis-Bell.
2. Assignment of the Programme Officer from the FHU for the onsite monitoring of receipt of vaccines upon delivery to central stores.
3. Procure additional cold chain equipment (freezers and refrigerators), to facilitate better storage of vaccines.

Several lessons were learnt from this particular cold chain failure including:

- Accessibility & availability of technical support is crucial to ensuring appropriate management of crisis situations
- Timely and effective action required to mitigate against possible large financial and physical loss
- Communication with key stakeholders at all levels
- Opportunities that crisis situations present to improve and restructure existing systems

14. Surveillance and Immunization Awards

The annual Caribbean Surveillance Award was established to recognize countries that have performed outstandingly on the surveillance component of their programme during the previous year. The award is based on the following criteria:

1. Timeliness of reporting

1. % of sites reported
2. # of fever and rash cases reported compared to the expected
3. Rate of fever and rash cases
4. Adequacy of investigation of reported cases
 - a. % with blood samples
 - b. % with adequate investigation
 - c. Level of completeness of investigation forms
5. Quality of weekly surveillance reports including reporting of other VPDs

The award consists of a certificate and the inscription of the name of the winning country on a plaque that is kept by the country during the following year and until a new country is selected to receive the award.

For 2014, the surveillance award was presented to Jamaica. Awards for the second and third places went to Barbados and Suriname respectively.

The Henry C. Smith Immunization Award in honor of Mr. Henry C. Smith, who was the first PAHO-EPI technical officer for the Caribbean sub region and whose service in the sub region spanned 18 years, is awarded to the country that has made the most improvement in EPI during the past year. This year the award was presented to Grenada.

Participants at the 30th Caribbean EPI Managers' Meeting sincerely congratulate these countries for being the recipients of awards and extend their compliments to all their health workers for their continued dedicated and outstanding performance during the past year.

In addition to the surveillance and EPI awards, a certificate in recognition of excellent support for planning and coordinating the meeting was presented to St. Maarten.



Participants of 30th Caribbean EPI Managers' Meeting 19-21 November 2014