Pan American Health Organization

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REGIONAL OFFICE FOR THE Americas

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

THIRTY-FIRST MEETING OF THE CARIBBEAN IMMUNIZATION MANAGERS

FINAL REPORT

Georgetown, Guyana
17-19 November 2015

Contents

Thirtieth Caribbean Immunization Managers' Meeting

1. INTRODUCTION

The 31th Caribbean EPI Managers' Meeting was held at the Georgetown Marriott Hotel in Georgetown, Guyana from 17-19 November 2015. The meeting convened 73 participants from 24 countries. Participants included representatives from the Ministries of Health, the Caribbean Public Health Agency (CARPHA), the Caribbean Community (CARICOM) and the Pan American Health Organization/World Health Organization (PAHO/WHO). Twenty health staff from the host country Guyana also attended the meeting.

During the opening ceremony, Dr. Shivon Lewis, the acting EPI Manager of Guyana, served as the Master of Ceremony. Ms. Ebony Nelson sang the Guyanese national anthem to open the ceremony, which was followed by a group prayer, led by Ms. Heather Edwards, Guyana's national surveillance nurse. Dr. Adu-Krow, the PAHO/WHO Representative in Guyana welcomed all participants to Guyana and then shared some of his first hand experiences witnessing the commitment, dedication and personal sacrifices of Guyanese health care workers in the interior Hinterland - especially those working for the EPI - in providing health services to rural and hard-to-reach populations. He commented that the EPI in Guyana has grown significantly in recent years; in the 1970s, the program managed six vaccines and today it has introduced 16 antigens. Dr. Adu-Krow also reported that during a recent Effective Vaccine Management (EVM) assessment, Guyana achieved a score which ranked it third out of 75 countries assessed at the global level.

In his address, Dr. Peter Figueroa, the Chairperson of the EPI Managers Meeting, thanked the Guyanese government for hosting the meeting and then reflected on how this annual meeting drives the work of EPI programs in the sub region. He congratulated the EPI in the Caribbean for progress to date and recognized the work of all EPI Managers and their local teams. Dr. Figueroa also recognized the work of PAHO's sub regional Immunization advisor Dr. Karen Lewis Bell, who has taken over from Dr. Beryl Irons following her retirement and he thanked the regional EPI team, led by Dr. Cuauhtémoc Ruiz Matus. Dr. Figueroa also recognized the presence of Mr. Henry Smith at the meeting; Mr. Smith was the former PAHO immunization advisor for the sub region over the span of 18 years. In closing, Dr. Figueroa shared his experience visiting Guyana as a medical student to take part in a national nutritional survey; he commented that during that visit, he experienced the warmth and hospitality of the Guyanese people as he traveled around the country.

The Diamond Deaf Drummers then gave a short performance. Composed of young musicians who are all deaf, this musical group has represented Guyana internationally.

Dr. Cuauhtémoc Ruiz Matus, Unit Chief of the Comprehensive Family Immunization Unit at PAHO headquarters in Washington DC, then addressed the meeting participants. He recognized Guyana's excellent EPI program and commented that while small in size, the Caribbean countries have consistently been in the forefront of immunization-related achievements. Dr. Ruiz Matus reflected on some of the new challenges confronting countries,

including the need to maintain immunization achievements while also preparing to expand the routine program and to introduce new vaccines; the upcoming polio switch and containment; the need to maintain measles and tetanus elimination; and the issues of missed opportunities for vaccination and vaccine hesitancy. In his closing remarks, Dr. Ruiz Matus stated that the EPI could also serve as a catalyst for the achievement of universal health coverage.

The main speaker, Dr. George Norton, Minister of Public Health of Guyana, welcomed all participants in his remarks. He commented that the vision of the Ministry of Public Health is for all citizens of Guyana to enjoy improved quality of life, good health, have gainful employment and contribute to the economy. The focus of the Ministry is on the primary health care system, with an emphasis on advancing equity and universal access to health so that all Guyanese can count on free access to health care. Dr. Norton remarked that the EPI is one of the most successful health programs in Guyana, but while the program has reached 90% coverage, there is a need to focus on the remaining 10% of the population left to be covered.
Dr. Norton lauded the work of international partners such as PAHO/WHO, UNICEF and GAVI as well as the dedication of health care workers who go beyond the expected to ensure that children are vaccinated. He closed by pledging his commitment to facilitate the availability of resources to continue support to the EPI program.

Following the conclusion of Dr. Norton's remarks, the dance company Kreative Arts presented a cultural dance. To conclude the opening ceremonies, Nurse Rhonda Douglas gave the vote of thanks.

2. OBJECTIVES OF THE MEETING

Overall objective:

To analyze achievements for 2015 and plan activities for 2016, while sharing country experiences on the immunization program.

Specific objectives:

1. To share the Regional Plan of Action on Immunization
2. To review the status of the EPI program in the Region of the Americas and the Caribbean and to identify areas that require strengthening
3. To update information on selective topics of common interest to countries in relation to immunization, service delivery and surveillance of vaccine preventable diseases (VPDs)
4. To develop an action plan with costs for each activity for each country to achieve the targets and objectives set for 2016
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 the Polio Eradication and Endgame Strategic Plan 2013-2018 with special reference to:
    a. IPV introduction in the routine immunization schedule of each country
    b. The plans for the Switch from tOPV to bOPV

c. Polio Containment

7. To discuss the status and advances made in the surveillance and management of VPDs, including data quality
8. To assess the status of and strategies for the introduction of newer and underutilized vaccines in the national immunization schedules
9. To share updates on EPI related activities or initiatives implemented in countries
10. To inform participants of the recommendations from the XXIII TAG Meeting held in Cuba, July 2015
11. To present and discuss terms of reference to formalize a sub-regional decision making structure in lieu of a National Immunization Technical Advisory Group for interested countries
12. To review with EPI Managers the process for completing the annual WHO/UNICEF Joint EPI Reporting Form

3. UNIVERSAL VACCINATION COVERAGE

3.1. Summary of 2015 TAG Recommendations

The XXIII Meeting of the Technical Advisory Group (TAG) on Vaccine-preventable Diseases of the Pan American Health Organization (PAHO) was held in Varadero, Cuba on 1-3 July 2015. The slogan for the meeting was "Bye-bye rubella! Let's go for more!" which was selected in recognition of the recent certification of the regional elimination of rubella and Congenital Rubella Syndrome (CRS). The objectives of this meeting were to present the regional adaptation of the Global Vaccine Action Plan (GVAP), to review progress on disease elimination and control initiatives and to issue recommendations to address the many challenges faced by national immunization programs in the Americas. During the meeting, TAG reviewed and endorsed the Regional Immunization Action Plan (RIAP) which has also been approved by PAHO's Governing Bodies.

Among a number of reports on progress and challenges for national immunization programs in the Region, the TAG reviewed the following issues which are particularly relevant for the Caribbean:

- The need to ensure immunization coverage >95% and sustain high quality surveillance
- Compliance with the introduction of IPV, completing the tOPV to bOPV switch in the agreed upon timeframe and completing all steps of polio containment and implementation of the polio Endgame
- The importance of introducing a Hepatitis B (Hep B) birth dose and eliminating maternal to child transmission of HIV, congenital syphilis and Hep B
- The accelerated introductions of the HPV and pneumococcal vaccines

The full report of the 2015 TAG meeting, which includes a complete list of topics and recommendations, is available at http://www.paho.org/immunization/TAG-Reports

3.2. The Regional Immunization Action Plan and Update on EPI in the Americas

Since the inception of the Expanded Program on Immunization (EPI) 38 years ago, countries and territories in the Americas have made significant strides in protecting their populations against vaccine-preventable diseases. Many Member States consider immunization a public good and a political priority; national immunization programs have also contributed substantially to the targets set by the Millennium Development Goals.

Historically among the highest regional vaccination rates globally, coverage levels with the third dose of DPT in the Americas have reached above 90% and work to maintain control and elimination of VPDs continues. However, as of 2013, the Americas fell to the rank of third in DPT3 coverage, when compared to other regions of the World Health Organization. Additionally, available data for 2014 suggests a downward trend in regional DTP3 and Polio3 coverage. This situation is being examined.

While challenges exist, the Region still remains at the forefront in the sustainable introduction of new vaccines; to date, 24 countries and territories have introduced the pneumococcal conjugate vaccine, 18 countries and territories have introduced the rotavirus vaccine and 22 countries and territories have introduced the vaccine against human papilloma virus.

In 2015, the elimination of rubella and CRS was officially declared and – with the exception of Haiti – neonatal tetanus is no longer a public health problem in the Region. This is a notable regional achievement and hopefully will catalyze progress in these areas for other WHO Regions.

Looking to the future, the Regional Immunization Program and Member States have a number of priorities and challenges to tackle: certifying the elimination of the endemic transmission of measles; adding a dose of the injectable polio vaccine and switching from the use of tOPV to bOPV, in accordance with the Polio Eradication and Endgame Strategic Plan, 2013-2018; overcoming a limited global supply of certain biologicals; identifying better strategies to reach vulnerable populations at the local level and improve coverage; and improving the quality of immunization data and its use for decision-making and strategic intervention.

The Regional Immunization Action Plan (RIAP), an overarching regional framework to help accelerate the achievement of goals set at the global- and regional-levels, was approved by the PAHO Directing Council in September 2015. Over the last eight years (2007-2015), PAHO's Regional Immunization Vision and Strategy (RIVS) – approved by the 50th annual Directing Council through Resolution CD50.R5 – has served this purpose, as the strategic roadmap for national immunization programs across the Region. The new plan aims to provide PAHO Member States with the justification, guiding principles, objectives, and monitoring and evaluation (M&E) frameworks to enable national immunization programs in the Region to align successfully with the Global Vaccine Action Plan (GVAP) and implement strategies to ensure

that all citizens of the Americas will benefit from immunization, regardless of where they are born, who they are, or where they live, until 2020 and beyond. The RIAP also encourages countries to take a more active role to achieve universal health coverage and address inequities and social determinants of health to ensure the protection of all individuals against vaccine-preventable diseases.
The Plan and Directing Council Resolution is available at:
http://www.paho.org/hq/index.php?option=com_content&view=article&id=11087&Itemid=41537&lang=en

3.3. Overview of EPI in the Caribbean

Over the past 38 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 funding 98% of the cost of the immunization program and 99% of the cost of the vaccines from domestic sources. Multi-year and/or annual program planning with on-going monitoring and evaluation of the implementation have contributed to these successes. Eighty percent of countries have mandatory vaccination requirements for school entry, 90% have current manuals for guiding the operations of the EPI, 90% have national surveillance systems for ESAVIs and 60% have a dedicated line item in their budgets for vaccines.

The year 2015 saw some improvements in immunization in the sub region but challenges remain. However these challenges also present opportunities for strengthening the EPI program in countries.

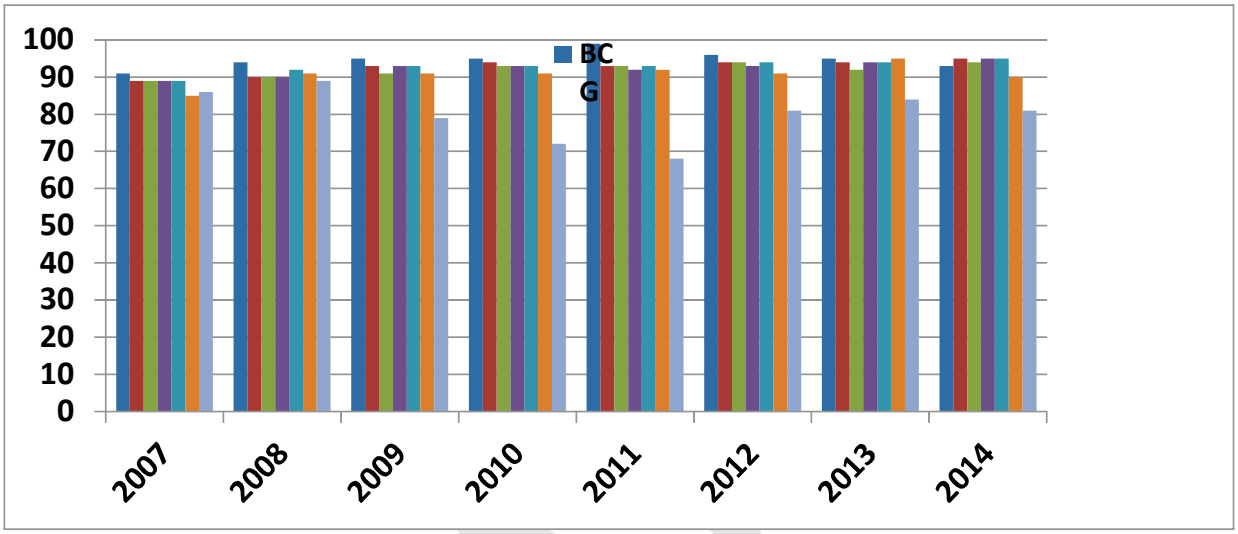
Protecting the achievements
In keeping with the goals of the Decade of Vaccines and the strategic objectives of the GVAP and the RIAP, the objectives of the EPI program in the Caribbean remained as follows:

1. To achieve equity in the provision of vaccine services by achieving and maintaining ≥ 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 at all levels was achieved by many individual 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. In 2014, the coverage for DTP3, Hib 3 and Hep B 3 achieved the required 95%. Coverage for polio 3 improved from 92% in 2013 to

94% in 2014. However, there are concerns regarding the declining coverage for BCG, MMR1 and MMR2 which were 93%, 90% and 81% respectively in 2014 (declining from 95% for BCG, 95% for MMR1 and 84% for MMR2 in 2013).

Fig. 1: Vaccination coverage by antigens given, Caribbean sub-region, 2007-2014



Despite relatively high national vaccination coverage for all antigens in most countries sustained for over three years, this was not equitably distributed at the subnational level and many municipalities with low vaccination coverage remained in 2014.

Table 1: Percentage of municipalities by coverage levels reported, 2014

Vaccine	Coverage Levels				
	<80%	80-89%	90-94%	95-100%	>100%
DTP3	4.9	20.7	18.3	43.3	12.8
Polio 3	7.3	22.1	17.2	40.5	12.9
MMR 1	8	16	19	41	16
MMR 2	30.5	16.9	14.4	22.9	15.3

In 2014, some 43-47% of municipalities had coverage less than 95% for DTP3, Polio 3 and MMR1. For MMR 2 this was even higher at 62%. The continued reporting of coverage of > 100% indicates ongoing challenges with the accuracy of the target population for children less than 1 year of age. Of note, one country reported DTP3 coverage of 126% but still had a dropout rate of - 29% implying that the denominator for calculating coverage needs urgent review. A number of countries with high national DTP 3 coverage also reported the majority of their municipalities with over 80% coverage, in keeping with the GVAP/RIAP indicator of percentage of districts with ≥ 80% coverage with 3 doses of diphtheria-tetanus-pertussis-containing vaccine.

Table 2: Countries with DTP3 coverage >90% and over 80% of municipalities with coverage > 80%, 2014

Name of Country	% DPT coverage in 2014	% Municipalities with >80% DPT coverage in 2014
Montserrat	100	100
Anguilla	100	100
Antigua and Barbuda	100	100
St. Vincent and Grenadines	98	100
Guyana	98	100
St. Kitts & Nevis	98	100
Dominica	97	100
Cayman	97	100
Belize	95	100
Barbados	94	100
Trinidad and Tobago	92	100
Bahamas	96	94
Jamaica	91	92
St. Lucia	99	88.9

Use of newer vaccines

The introduction of new and underutilized vaccines in the routine immunization schedule in the public sector in 2014 was limited to only the introduction of HPV vaccine in the Bahamas. At the end of 2014, 19 countries were using the influenza vaccine for various prioritized risk groups, 12 countries were using the conjugated pneumococcal vaccine routinely, 5 countries were using the meningococcal vaccine, 8 countries were using the varicella vaccine, 3 countries were using the yellow fever vaccine and 2 countries were using the rotavirus vaccine. The HPV vaccine is now being administered in 11 countries. It is anticipated that over the next 2-3 years, almost all countries will introduce this latter vaccine, as both HPV vaccine presentations are now available through the PAHO EPI Revolving Fund at reduced prices.

General Disease Surveillance

All countries continued surveillance for vaccine-preventable diseases (VPDs) throughout 2015. In total, there were 714 surveillance sites for measles, rubella, CRS and other VPDs and 500 surveillance sites for polio. Through Epidemiology Week 43 of 2015, 90% of sites reported for fever and rash and 100% of sites reported for AFP. There were 235 fever and rash cases reported with a case detection rate of 4.3/100,000 population. A total of 18 AFP cases were reported for 2015 (EW 1- 43) but only 8 of these cases were under the age of 15 years, yielding

a detection rate of 0.4/100,000 population < 15 years. Special rotavirus sentinel surveillance continued in 3 countries (Guyana, Suriname and St. Vincent and the Grenadines).

Other Activities

All countries of the sub-region observed the 12th Vaccination Week in the Americas with special emphasis on social mobilization, public awareness and IPV introduction.

To facilitate routine IPV introduction, countries were supported with guidance materials, including training and communication materials. Special support with in-person training was provided to two countries as requested. Of the 18 countries routinely using OPV, 8 have already introduced IPV and another 9 were expected to do so by the end of the year. Only one country planned to delay IPV introduction until January 2016. All countries are preparing for the switch from tOPV to bOPV in April 2016. To this end, 14 countries have completed and submitted their plans to PAHO and 16 have submitted the switch Dashboards indicating their status with preparations.

Additionally, a mini assessment of the EPI and training of health care workers in various aspects of EPI and surveillance was conducted in the Cayman Islands in September 2015. Training in the Integrated Surveillance Information System (ISIS) was conducted in Guyana in September, 2015 and the database was installed for use by the country. In October, 2015 Jamaica introduced the web based version of the Vaccine Supply Stock Management (VSSM) software and trained staff in its use. Guyana and Bermuda were able to participate in this training and it is hoped that they too will introduce the VSSM in 2016. Jamaica conducted a MMR vaccination campaign from February to July 2015 and St. Lucia commenced a MMR coverage survey at the end of September. St. Kitts introduced a birth dose of Hepatitis B and Grenada is in the final stages for implementation of an electronic immunization registry. It is hoped that this registry can be customized for other islands as well.

Countries continued procurement of vaccines and supplies through the PAHO Revolving Fund but there are concerns regarding cold chain failures on arrival of the vaccines in countries due to packaging issues by suppliers as well as the timeliness of payment on invoices by some countries.

Challenges

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

On-going fiscal constraints in some countries continued to delay the introduction of newer vaccines, in particular the HPV vaccine. The coordination of surveillance for EPI has also 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 such challenges, there are continued opportunities for strengthening the EPI. The strengthening of the health infrastructure and surveillance systems as a result of outbreaks of infectious diseases, including pertussis and the confirmation of the Zika virus in one of the islands, will provide benefits to the EPI, including capacity building for the EPI staff, especially in disease surveillance and outbreak response. There are also ongoing opportunities to engage the public more in dialogue on disease prevention though vaccination and to address vaccine hesitancy. On-going interest and advances in electronic patient records and registries in countries will also provide the opportunity to strengthen data quality for the EPI.

Conclusion

Governments continue to remain committed to the goals and objectives of universal immunization and elimination of VPDs. Much has been achieved in the EPI program for 2014 and the first half of 2015. Coverage has been improving for DTP3, Polio3, Hib3 and HepB3 but declining for MMR1 and MMR2. 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 the EPI that countries should seize. The year 2016 marks 25 years since the last case of measles in the Caribbean and is a cause for celebration.

UNIVERSAL VACCINATION COVERAGE Recommendations:

- Countries should seek to align strategies and targets of their programs to the recently endorsed Regional Immunization Action Plan (RIAP). The PAHO TAG and Directing Council will annually review progress on the implementation of the RIAP, including review of country reports through the PAHO-WHO/UNICEF Joint Reporting Form (JRF).
- While coverage targets for DTP3 across the Caribbean were met in 2014, coverage for other vaccines has stagnated at levels below 95% or even declined (e.g. BCG, MMR1 and MMR2 were 93%, 90% and 81% respectively in 2014). Countries are urged to continue work to achieve national and district coverage of 95% or more for all recommended vaccines.

4. Progress of Measles, Rubella and CRS Elimination

4.1. Update on measles, rubella, CRS elimination in the Americas and maintenance of elimination status

In 1994, PAHO set a goal to eliminate measles in the Region of the Americas and in 2002, the last endemic case occurred in Venezuela. In 2001, the Measles and Rubella Initiative (MRI) formed by WHO, UNICEF, CDC, the UN Foundation, and the American Red Cross, proposed the “vision of a world without measles”. In this context, the GVAP includes a goal for measles elimination in 5 of the 6 WHO regions by 2020. In 2013, the South-East Asia Region (SEARO) adopted a goal for measles elimination, marking the first time that all 6 WHO regions had established goals for measles elimination – and all with target dates before or by 2020.

However, the global trend of measles cases between 2008 and 2014 in all the WHO regions shows major outbreaks worldwide in 2010, 2013 and 2014. The increase in measles incidence in the Americas was largely the result of outbreaks reported in four regions of the world, mainly in Africa, China, and Asia, and the associated importations. Fortunately, there has been an 87% decrease in global measles deaths since 1985 and a 75% decrease since 2000. From 2000 to 2013, 15.6 million deaths from measles were prevented. Nonetheless, the world is not on track to meet the 2015 global target of a 95% mortality reduction compared to 2000.

In terms of rubella, the region of the Americas is the first to have eliminated the disease, as declared by the International Expert Committee (IEC) in April 2015. Europe is the only other WHO region to have set a rubella elimination target (2015). It has been more than 3 years since the last endemic case of rubella was confirmed in the Americas (Argentina, 2009) and the last case of CRS case was confirmed that same year in Brazil. Since then, the countries of the Region have detected 56 cases of rubella in different countries and 4 cases of CRS. To date, there have been no reported cases of rubella or CRS in 2015.

In terms of the status of the regional measles elimination and the secular trend of imported measles cases in the post-elimination era, between 2003 and 2010, an average of 153 cases were reported each year. However, large outbreaks in Canada, Brazil, Ecuador and the United States resulted in an 8-12 fold increase in the number of cases reported in 2011 and in 2014. The highest rate of confirmed cases was reached in 2014 with 1.9 cases per million people, which is still lower than the rate of 5 per million people established as a milestone by the World Health Assembly in 2010.

The latest measles outbreak in Brazil is a special situation because it resulted in 2 subsequent years of continuous measles transmission (genotype D8), from March 19, 2013 to July 2015. This is the first outbreak of the post-elimination era with transmission lasting more than 12 months, and by definition, it represented the reestablishment of endemic transmission in Brazil (and the Americas). This situation was widely discussed during the last 2015 TAG meeting in Cuba, particularly the next steps for the verification of measles elimination at the regional level.

The most important next steps were highlighted in the resolution presented before the 2015 PAHO Directing Council, “the Regional Plan of Action for maintaining Measles, Rubella and CRS elimination in the Americas” (Resolution CSP28.R14- 2012). Twenty national commissions have also presented an elimination sustainability plan for 2013-2015 to address challenges identified in their epidemiological surveillance systems and routine vaccination programs, but it is necessary to reactivate these plans in order to guarantee the sustainability of measles and rubella elimination.

Measles, rubella and CRS surveillance

The surveillance indicators for measles, rubella and CRS are met with difficulties, and some of them have not been utilized and reported on by all countries. It is important to review and propose changes to said indicators, as well as other solutions, in order to have a more sensitive, timely and reliable monitoring system, and integrated surveillance for all three diseases. In the

post-elimination era, measles importation from other regions of the world constitutes the biggest threat to measles elimination in the Americas. Massive events in our Region, such as the World Cup, large church gatherings and the Olympic Games, need to be addressed to strengthen surveillance and vaccination coverage. During the period from 2011-2015, there were more than 4,000 imported and "import-related" cases. Therefore, countries have to be prepared to implement the best practices for outbreak response, which entail intensified epidemiological surveillance, quality case investigation, and rapid follow-up of contacts.

Vaccination coverage

A critical challenge is to increase the MMR2 vaccination coverage. Only 13 out of 20 Latin American countries have introduced the second dose of MMR in their immunization schedule and only 2 countries are administering the second dose in the second year of life (Brazil at 15 months and Peru at 18 months), following the TAG recommendation. Earlier administration of MMR2 would protect more children and would facilitate the interruption of outbreaks due to imported cases.

Mass campaigns

The mass campaign is the best complementary strategy for maintaining measles/rubella elimination, as it ensures a second vaccination opportunity. Of the five countries which had a scheduled follow-up campaign in 2015, only two countries (Chile and the Dominican Republic) carried them out. Five countries have expressed their intention to conduct a mass campaign in 2016, including Haiti, Honduras Mexico, Nicaragua and Panama. Between 2009 and 2014, more than 60 million children less than 5 years of age were vaccinated against measles and rubella in "follow up" campaigns and more than 250 million adolescents and adults were reached as part of "speed up" mass campaigns.

Given the pressing needs to preserve the gains achieved thus far and to continue to address existing problems, it is imperative that countries adhere to the 2015 recommendations of the TAG, which included:

- urging countries to fully implement the currently recommended surveillance indicators, in order to have sensitive and timely surveillance systems;
- recommending the vaccination of infants 6-11 months of age in the case of outbreak situations (this dose should be considered to be a "zero dose").
- strongly recommending that WHO-Geneva intensify progress towards the global elimination of measles as a resolution at the next World Health Assembly (WHA) in 2016.

In conclusion, the critical challenges to sustain the gains at the regional level with regards to the elimination of measles, rubella and CRS are to:

1. Increase the quality of the MR surveillance indicators for rapid response to imported measles/rubella cases.
2. Increase data analysis and decision-making at the local level to strengthen measles and rubella surveillance.
3. Increase MMR1 and MMR2 vaccination coverage as part of the routine immunization

program.

4. Support countries to ensure high quality follow-up campaigns, to reach at least 95% of coverage at the sub-national level.
5. Declare measles elimination in the Americas by 2016, one year after the successful interruption/control of the Brazilian outbreak (July).

4.2 Review of Fever/Rash and CRS Surveillance in the Caribbean

The elimination of measles and rubella in the Caribbean is supported by multiple political mandates, including resolutions of the CARICOM Health Ministers in 1988 (measles) and 1998 (rubella and CRS) and the Governing Bodies of the Pan American Health Organization in September 2012 (Resolution CSP28.R14: Plan of Action to Maintain Elimination of Measles, Rubella and CRS) and in October 2015 (Resolution CD54/7: The Regional Plan of Action for Immunization). The Caribbean however, continues to remain at high risk for the importation of measles and rubella cases due to the high intensity of international travel, given the large tourism sector in the sub-region. This underlines 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 cases of measles have been eliminated; no cases have been reported since 1991. However there have been 7 importations, with 8 cases reported in four Caribbean countries during the period from 1992 to 2011. No cases of CRS have been confirmed since the last indigenous case in 1999 and only one imported case of rubella was reported since the last indigenous case in 2001. From 2010-2014, MMR1 coverage in the Caribbean ranged from 90-95%, whereas coverage for MMR2 was lower, ranging from 68-84%. Of note is the decline in both MMR1 and MMR 2 coverage for 2014 compared to 2013.

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. Currently there are 714 sites that send weekly reports from a total of 20 countries. Over the history of the measles surveillance system in the sub-region, 9,864 fever and rash cases have been reported and investigated (up to EW 43, 2015).

In 2014, there were 492 suspected measles, rubella and CRS cases reported, but no cases were confirmed. One case was diagnosed as dengue and the rest (491) were discarded. Many

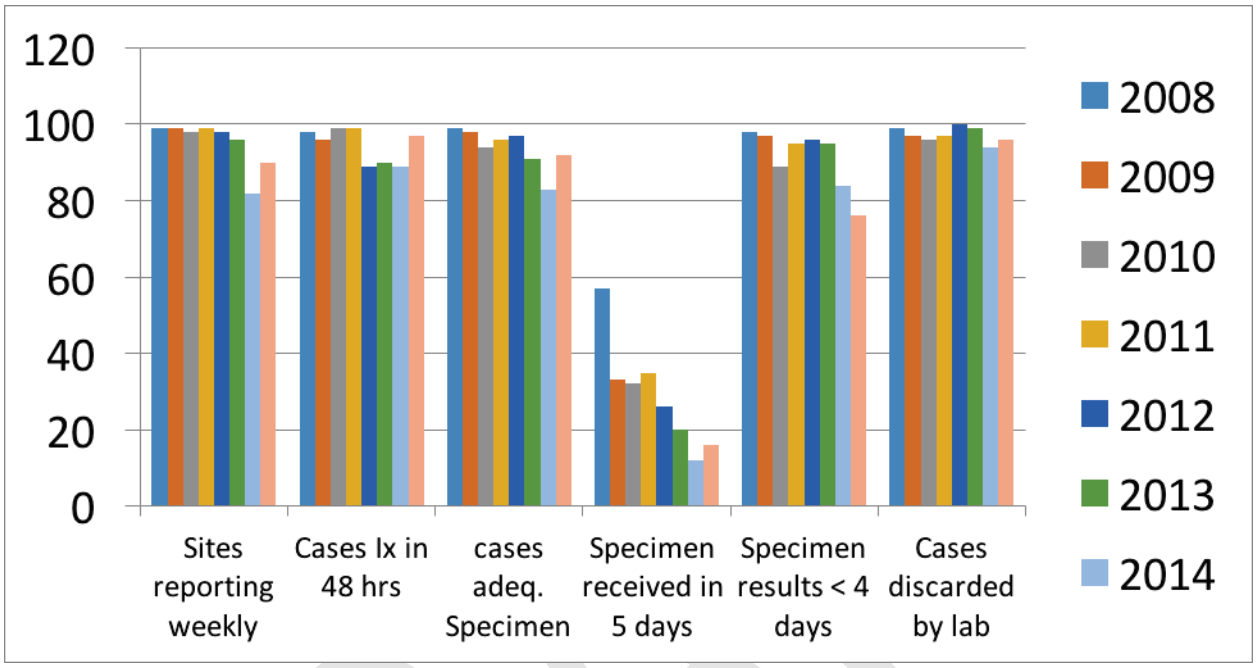
cases were clinically confirmed as chikungunya in keeping with the outbreak which countries experienced in 2014. Out of all cases, 89% were adequately investigated, 83% had adequate sample collection, 12% of samples were received by the lab within 5 days and 84% of the lab results were returned within 4 days.

As of EW 43 of 2015, 235 fever and rash cases were reported, primarily by Jamaica (51%), Suriname (11%), Belize (17%), Guyana (10%) and Barbados (5%). To date, one case has been confirmed as dengue, 232 have been discarded as neither measles nor rubella and 3 cases were still pending classification. Out of the 235 suspected cases, 97% were adequately investigated, 92% had adequate samples taken, 16% of samples were received in the lab within 5 days and 76% 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 continue to be major factors which have affected the timely submission of samples and the achievement of this indicator. In terms of congenital rubella syndrome, up to EW 43, 2015 there were 10 suspected cases, none of which had been confirmed.

Table 3: Surveillance indicators 2011-2015 (wk 43)

Year	No. of suspected cases reported	Rate of reported cases /100,000 pop.	Confirmed				Discarded (other diagnoses)
			Measles	Rubella	CRS	Dengue	
2011	490	7.1	1**	0	0	72	417
2012	559	8.1	0	0	0	2	557
2013	343	5	0	0	0	1	342
2014	492	6.6	0	0	0	1	491
2015	235	3.7	0	0	0	1	231

Fig 2: Status of measles/rubella surveillance indicators (% achievement) 2008-2015 (wk 43)



In conclusion, surveillance indicators for measles, rubella and CRS have been strengthened in terms of adequate investigations, but timely delivery of samples to CARPHA still needs to be significantly improved. Countries must also improve their efforts to maintain ≥ 95% coverage for MMR1 and MMR2 at both the national level and district levels. It is also essential that countries remain vigilant for the importation of cases and that measures are in place to ensure a timely response in the event of an importation.

4.3 Review of EPI Laboratory tests and Data in the Caribbean

The Caribbean Agency of Public Health (CARPHA) supports the EPI program as the sub-regional reference laboratory for the English and Dutch-speaking countries in the Caribbean. Laboratory activity is mainly developed to support the fever and rash and acute flaccid paralysis syndromic surveillance in the sub-region ensuring accurate and timely diagnosis of suspected cases of measles, rubella and polio. The methods used for testing are commercial IgM enzyme immune assays (EIA) for measles and rubella (Enzygnost Anti-Measles Virus and Siemens Anti-Rubella Virus IgM kits). Poliovirus diagnostic is performed using viral culture and isolation from stool specimens and molecular biology. Positive samples are confirmed at CDC by testing with in-house IgM ELISA and PCR for both measles and rubella, and PCR for poliovirus.

From January 2015 to October 2015, a total of 236 samples from patients with fever and rash coming from 10 countries were received and analyzed in the laboratory, as shown in the table below. All samples were found to be negative for measles/ rubella IgM except for two positive

measles IgM samples, one positive for rubella and one indeterminate for rubella IgM. Regarding the positive measles samples, one was considered to be a false positive after performing further laboratory testing. The second positive measles sample and the positive rubella sample were considered to be related to recent vaccination. Moreover, 33 samples from pregnant women with suspected rubella infection and 4 samples from children with suspected CRS were tested and found to be negative for rubella IgM, except for one specimen which showed indeterminate results and was considered cross-reactive.

The number of samples from patients with fever and rash received in the laboratory within the first ten months of 2015 was consistent with samples received during the last 3 years, except for 2014 which had slightly more cases, likely due to the chikungunya outbreak.

An analysis of some of the performance indicators was conducted. Only 17% of the samples reached the laboratory within 5 days after collection. All the samples were collected within the first 28 days after the onset of the rash. Core data such as age and gender was reported in more than 95% of the cases, although vaccination status was missing in about 50% of the forms. Laboratory results were reported to all the countries in less than 7 days, with 75% of those being reported within 4 days.

Regarding polio investigations, 140 samples were received and tested between January and October 2015. Seventeen samples were received from 7 countries of the Caribbean (Barbados, Belize, Dominica, Guyana, Jamaica, St Lucia and Trinidad and Tobago). Two samples were considered inappropriate for poliovirus testing. Tested samples were found to be negative for both polio and non-polio enteroviruses. The remaining samples were received from Haiti, Dominican Republic, Panama and Honduras for supporting confirmation of results and quality control. All samples were found negative for poliovirus. Sixteen specimens were positive for non-polio enteroviruses.

In the Caribbean, the main challenges for laboratory surveillance are the complex regional differential diagnoses of fever and rash, the logistics for timely response (sample collection and shipment, missing information) and the potential importation of cases due to the high number of tourist stops and cruise ship visits. Laboratory activities are crucial in maintaining elimination and allowing a timely response capacity to potential outbreaks due to imported cases. Moreover, performance needs to be maintained and strengthened in some specific areas for ensuring timely and high quality surveillance.

Table 4: Fever and Rash Lab results from CARPHA by country 2015 (EW1-43)

Country	# of samples	Measles IgM		Rubella IgM		
		Negative	Positive	Negative	Positive	Indeterminate
Anguilla	2	2	0	2	0	0
Barbados	10	10	0	10	0	0
Belize	40	40	0	40	0	0
Bermuda	1	1	0	1	0	0
Dominica	1	1	0	1	0	0
Grenada	3	3	0	3	0	0
Guyana	20	20	0	20	0	0
Jamaica	133	129	2*	131	1**	1***
Suriname	20	20	0	20	0	0
Trinidad	5	5	0	5	0	0
TOTAL	**236**	**231**	**2**	**233**	**0**	**2**

**One recently vaccinated and one false positive*
*** recently vaccinated *** considered to be related to unspecific cross-reactivity*

4.4. Country Reports

4.4.1 Guyana-Implementation of ISIS and impact on Fever and Rash Surveillance

In Guyana, the incidence of fever and rash varies during the year and geographic location within the country. The borders of the country are very porous and the concern has been heightened due to the fact that Brazil recently had an outbreak of measles. In 2015, there had been 23 cases of rash with fever but all the samples sent to CARPHA tested negative for measles and rubella.

Traditionally, a weekly report has been sent to PAHO's sub regional office for the Caribbean (c/o Dr. Lewis-Bell) who enters all suspected cases into the regional database using the Integrated Surveillance Information System (ISIS). In September 2015, a total of 20 people were trained to use ISIS and the software was subsequently installed at the Ministry of Public Health, Guyana. In the future, this installation will allow Guyana to enter its own fever and rash surveillance information on a weekly basis.

4.4.2 Trinidad and Tobago-Fever/rash surveillance and status of indicators

The last imported case of measles in Trinidad and Tobago was reported in 1997. Although tourism is not a major sector in the country (cruise ship arrivals occurring mostly in Tobago), there is still some flow of emigrants and people leaving and returning. Despite a slight improvement in some of the surveillance indicators, there is room for major improvement. The challenges encountered are numerous and include, but are not limited to, the following: the under-reporting of fever/rash cases, lack of adherence to case definition, under or lack of sampling for measles by physicians, non-adherence to the protocol for measles investigation, lack of transportation on weekends of samples from collection points to the Trinidad Public

Health Laboratory, samples left unattended on weekends, mismatch with unofficial results arising when samples received from CARPHA are not signed by the TPHL director and complacency among healthcare workers given the distant memory of the last case of measles dating from 1997. These challenges must be addressed in order to ensure the preservation of the measles-free status of Trinidad and Tobago.

4.4.3 Belize- Fever/Rash Surveillance and Status of Indicators

Much of the surveillance activity in Belize is performed by public health nurses who report to the EPI Manager and the Epidemiology Unit in the Ministry of Health, which submit weekly reports to CARPHA. An average of 60 samples are collected and sent to CARPHA for testing. As vaccination coverage with measles containing vaccine has increased over the past 20 years, the number of confirmed cases has remained at zero. As of September 2015, 40 cases have been investigated and all the specimens tested negative. Overall, the surveillance indicators are achieved (at least 80%) in Belize, with the exception of the percentage of samples that are received at CARPHA within five days of collection (20%).

PROGRESS OF MEASLES, RUBELLA AND CRS ELIMINATION: Recommendations:

- Countries are urged to ensure high, sustained and homogenous coverage above 95% for measles containing vaccine to adequately protect the Region against the risk of imported cases, given the high level of tourist traffic in the Caribbean.
- Countries should administer a second dose of measles-mump-rubella (MMR) vaccine in the second year of life, preferably at 18 months.
- In the elimination era, there continues to be a risk of reintroduction by imported measles cases. Therefore, countries are called on to continue to strengthen their fever/rash surveillance efforts in order to ensure timely detection, reporting, investigation and response.
- In light of the circulation of emerging infections including chikungunya and zika in the Region which present with fever/rash, countries should ensure that surveillance for measles and rubella remain active and that adequate samples are obtained for all suspected measles/rubella cases.

5. PLANS OF ACTION ON IMMUNIZATION

5.1 Review of the purpose and use of the new tool

The annual EPI plan of action (PoA) is a managerial tool for planning and monitoring that aims to foster the efficient and timely achievement of objectives and goals. A strong PoA facilitates: (1) implementing activities consistent with defined objectives and strategies on schedule; (2) harmonizing actions and actors around a common objective; (3) obtaining and committing the necessary resources to execute the plan; and (4) monitoring and evaluating progress towards objectives. Above all else, an EPI PoA should be a tool that is useful to Managers and helps them to advocate for and promote their programs.

Over the last 40 years, the EPI in the Americas has grown increasingly complex, a situation which further underlines the need for well-organized planning and accurate costing of programs. When the program began in the 1970s, there were only 6 vaccines, while many programs today have introduced more than 20 antigens, resulting in many more doses per fully vaccinated child. Cohorts across the Region are also now much larger and the EPI has expanded to cover age groups across the life cycle. Finally, the investments governments are making in the EPI have also increased substantially.

The external environment for immunization at the global, regional and national levels has also grown more complex, highlighting the fact that EPI planning cannot be done is isolation. Governments in the Americas have endorsed the goals and objectives of several frameworks and plans and meeting these targets needs to be considered in national planning. Global documents of note include the Sustainable Development Goals, as well as the Polio Eradication and Endgame Strategic Plan, among others. Additionally, in 2012, the GVAP was also endorsed during the World Health Assembly, which led to the elaboration of the RIAP, as the guiding document for immunizations in the Americas over the next 5 years. The importance of countries having an up-to-date annual immunization plan of action, including both operational and financial information, has been incorporated as one of the RIAP indicators. At the national level, countries must also take into account their own health systems changes, reorganizations and reforms when doing their EPI planning.

The major phases in EPI planning include: 1) conducting a situation analysis; 2) defining priorities; 3) formulating objectives and goals; 4) creating the plan of action; 5) implementing activities outlined in the plan of action; 6) monitoring and supervising the plan; and 7) evaluation. While EPI planning in the Caribbean has traditionally used a template in Microsoft Access, PAHO is encouraging all countries in the Region to transition towards using a standardized Plan of Action template based in Excel and used across the Region. This latter template has several advantages, including the automatic generation of consolidated summaries and graphs. The Excel utilizes 12 standardized components of work and has a comparison table to allow Managers to compare planned versus executed costs over the course of the year. Over the course of 2016, EPI Managers will be given the opportunity to explore the Excel-based template in more detail and have their questions answered. Next year, all EPI Managers (across the Americas) will be asked to complete their EPI plans in Excel.

PLANS OF ACTION ON IMMUNIZATION: Recommendations:

- The annual EPI plan of action should be used as an essential managerial tool to aide countries in prioritizing key immunization objectives and strategies, committing the necessary resources and implementing activities in a timely way.
-
- Accurate planning and budgeting of programs should be done, especially considering that the internal and external contexts of immunization programs have grown increasingly complex in recent years.
- The plan of action should be used as a tool for negotiations on behalf of the EPI both within governments and with external partners.

6. SUSTAINING POLIO ERADICATION

6.1. Update on Global Polio Eradication and Endgame Strategic Plan

Tremendous progress has been made towards the global eradication goal. A total of 80% of the world's population now lives in WHO Regions certified as polio-free. Africa celebrated one year without polio cases caused by wild polio virus (WPV) in July 2015. WHO removed Nigeria from the polio endemic list in September 2015. Currently, only Pakistan and Afghanistan are the two countries that have endemic polio. WPV2 was declared eradicated by the Global Certification Commission on 20 September 2012, and the last reported case of WPV3 was on 10 November 2012. In 2015 (01 January – 10 November) there have been 52 cases of WPV type 1, 15 cases of circulating vaccine derived polio virus (cVDPV) type 1 and 2 cases of cVDPV2.

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.

Following OPV2 cessation, there will be a relatively higher, but time-limited, risk of the emergence of cVDPV type 2, and there is a lower, but long term risk of poliovirus re-introduction from a manufacturing site or laboratory. For these reasons, all countries must maintain sensitive surveillance systems in order to rapidly detect and interrupt any circulating poliovirus.

Acute flaccid paralysis (AFP) surveillance continues to be the priority mechanism for the detection of poliovirus circulation. Investigation should always be done for:

- any AFP case detected in children less than 15 years of age, for any reason other than severe trauma;
- any AFP case detected in any person, of any age, in whom polio is suspected; and
- any outbreak of AFP to discard polio diagnosis.

Environmental surveillance can complement AFP surveillance in selected areas based on risk criteria.

In terms of quality surveillance indicators, since 1986, the Region of the Americas has consistently achieved the notification rate of 1 AFP case per 100,000 children less than 15 years. However, in recent years, the Region has not reached 80% of AFP cases with adequate samples and investigation of cases within 48 hours. In the last year there have been an

increasing number of countries that are not achieving the surveillance indicators, including in the Caribbean sub-region.

Regional vaccination coverage against polio, which reached 94% in 2011, has declined over the past three years, falling to 90% in 2014. Additionally there are notable coverage differences between and within countries. In 2013 and 2014, most countries did not reach polio vaccination coverage of 95%. According to 2014 data, 6 million children under 1 year of age live in the 60% of municipalities in Latin America and the Caribbean that reported coverage less than 95% for OPV3. In the countries of the Caribbean, the percentage of municipalities within a country with less than 95% polio coverage varies between 0% and 100%.

To fulfill the Endgame guidelines, the countries of the Region will be introducing at least one dose of IPV, by the end of 2015, into their routine immunization program as part of a sequential schedule: IPV followed by 3 or 4 doses of OPV. Of the 22 countries and territories in the Caribbean, 4 introduced IPV before 2015 (Aruba, Bermuda, Cayman Islands, St. Maarten), 7 introduced in the second and third quarters of 2015 (Anguilla, Grenada, St. Vincent & the Grenadines, Dominica, Guyana, Jamaica, and Turks and Caicos), 10 are introducing IPV in the 4th quarter (Antigua and Barbuda, Bahamas, Barbados, Belize, Montserrat, Saint Lucia, St. Kitts & Nevis Suriname, Trinidad and Tobago, and Virgin Islands), and Curacao will introduce in January 2016.

The Strategic Advisory Group of Experts on Immunization of the World Health Organization (SAGE) has confirmed April 2016 as the definitive date for the global switch from trivalent OPV to bivalent OPV. The 4 countries listed above that introduced IPV before 2015 do not use OPV. The other 18 countries that use OPV will be participating in the global switch from trivalent OPV to bivalent OPV. These countries should intensify their preparatory efforts for the switch in order to meet this timeline.

Withdrawing OPV type 2 is a crucial part of the polio endgame strategy, in order to eliminate the very rare cases of vaccine associated paralytic polio (VAPP) or circulating vaccine derived polioviruses (cVDPVs). cVDPV2 occurs when OPV2 is used in populations with low vaccination coverage, allowing the vaccine virus to be transmitted from one susceptible individual to another, progressively acquiring, through mutation, the transmissibility and neurovirulence characteristics of wild polioviruses.

A key component of a successful switch involves effective monitoring of health facilities after the national switch date in all countries to ensure that tOPV is no longer available for administration. Ensuring that tOPV is no longer being administered or in the cold chain is the responsibility of each country.

The key objectives of the monitoring strategy are to:

- conduct site visits at all cold chain stores from the national to the district levels (where the largest quantities of tOPV will generally be stored at the time of the switch), as well

as selected service delivery points (health facilities), in order to verify removal of these stocks from the cold chain;
- take corrective action to remove tOPV stocks from the cold chain if found and mark these stocks for disposal; and
- assess the status of bOPV and IPV distribution at monitored facilities.

The validation of the switch should be completed within a two week period following its occurrence.

It is recommended that supervision visits are conducted to supplement independent monitoring of health facilities to provide additional verification of the adequate withdrawal of tOPV from the cold chain. These additional monitoring activities for tOPV withdrawal should be completed as soon as possible, while tOPV disposal should occur within 3 months of the switch.

There are many resources (technical documents, implementation guidelines, training modules, and communication materials) available at the PAHO Polio webpage (www.paho.org/polio), to help countries with the preparation for IPV introduction and the switch, including guidelines for monitoring the switch.

6.2. AFP Surveillance in the Caribbean

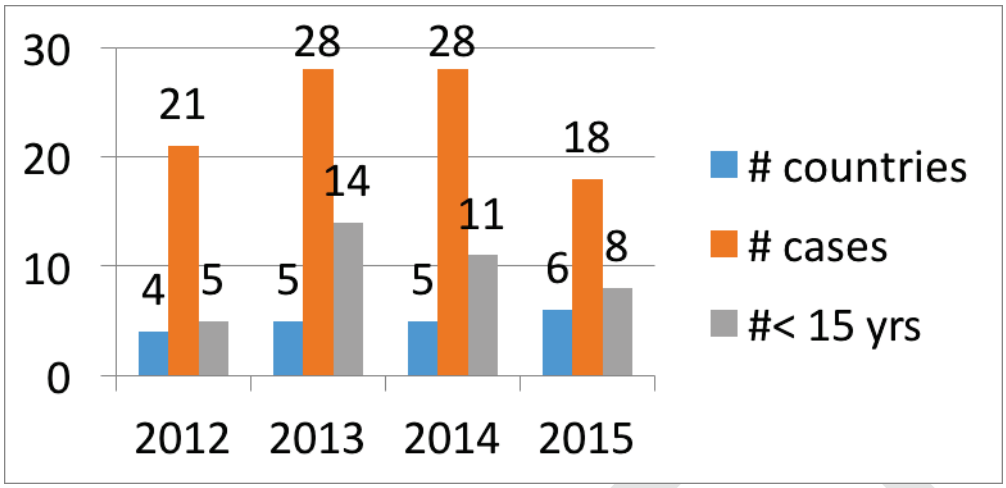
Until the global eradication of wild poliovirus, the countries of the Caribbean remain at risk for importation of wild poliovirus and cVDPV. In keeping with the Global Polio Eradication Initiative and the Polio Eradication and Endgame Strategic Plan 2013-2018, the Caribbean countries have been making efforts to strengthen surveillance for polio using the proxy condition of acute flaccid paralysis (AFP), 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 continued and in 2014 the coverage was 94% up from 92% in 2013.

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

- To achieve timely, complete, and effective surveillance for 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

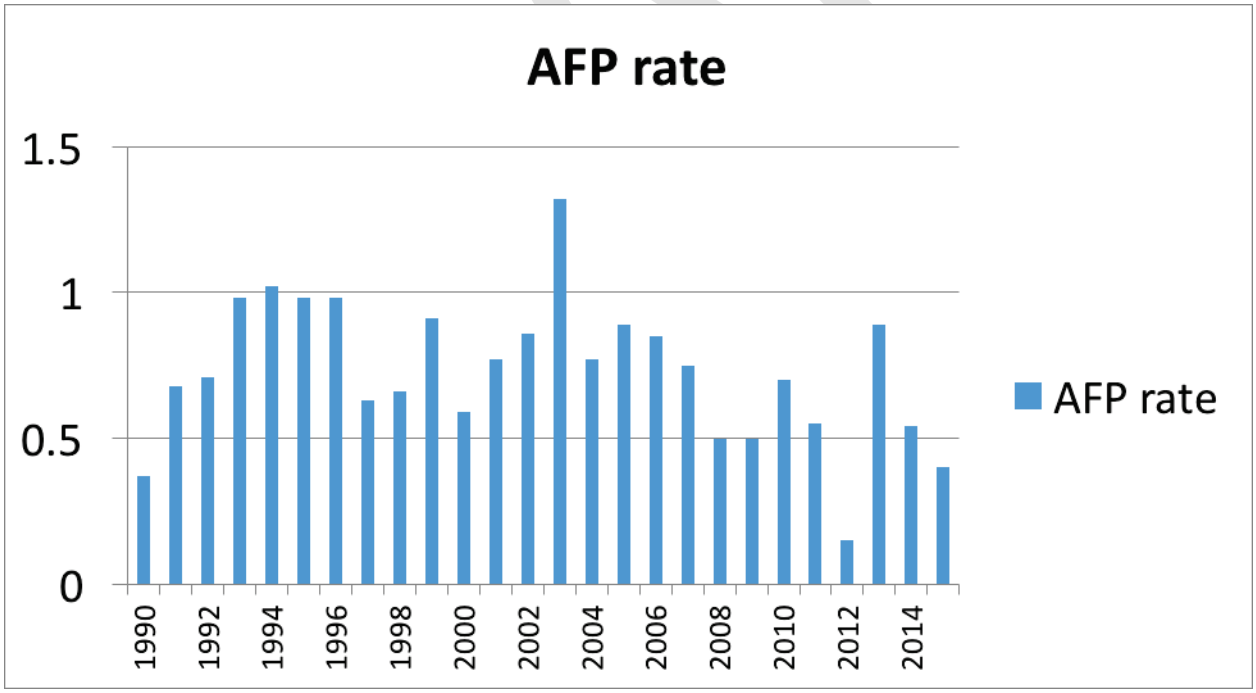
Annually, a total of some 20 AFP cases in the population aged less than 15 years should be reported from the countries. In 2014, a total of 28 AFP cases were reported from only 5 countries; however, only 11 (39%) were in children 15 years of age or younger. This resulted in a case detection rate of 0.54 per 100,000 population <15 years. Up to EW 43 of 2015, there were a total of 18 cases reported from six countries, 8 (44%) of whom were in children aged less than 15 years, resulting in a case detection rate of 0.4 per 100,000 population <15 years.

Fig 3: AFP cases reported 2012-2015 (EW 43)



The expected rate of AFP cases of 1 per 100,000 population <15 years continues not to be met by the Caribbean, despite the active surveillance and investigation of AFP cases.

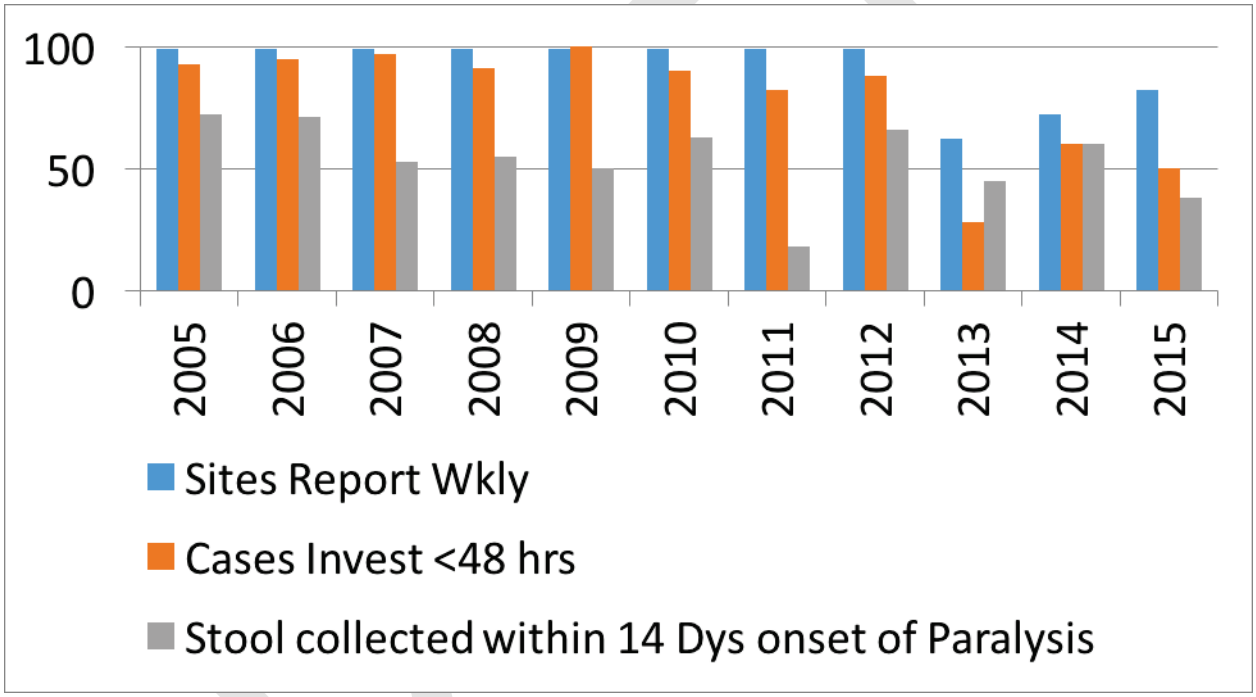
Fig 4: Rate of detection of AFP cases in the Caribbean Sub-region 1990-2015 (EW 43)



From 1994 to 2014 (EW 44), there were 351 AFP cases in the population aged less than 15 years and reported from 11 countries.

The quality of surveillance for AFP cases has remained inadequate since 2012. In 2013, only 62% of the surveillance sites for AFP reported on time weekly, only 28% of the cases were adequately investigated and only 45% had stool samples submitted to CARPHA within 14 days of the onset of paralysis. In comparison, in 2014, 70% of sites reported weekly, 60% were adequately investigated and 60% had samples submitted to CARPHA within 14 days of the onset of paralysis. In 2015 up to EW 43, 82% of sites reported weekly, 50% were adequately investigated and 38% had samples submitted to CARPHA within 14 days of the onset of paralysis. Despite this low rate of achievement for the surveillance indicators, no case of polio was confirmed in 2015.

Fig 5: AFP Surveillance Indicators 2005-2015 (EW 43)



Polio vaccination coverage and surveillance has not met the required levels to ensure adequate population protection. Internal evaluation and validation of the AFP surveillance system needs to be done in each country to improve the surveillance indicators.

6.3. Caribbean Country Reports on Routine IPV Introduction

6.3.1 Anguilla

Following discussions with the Ministry of Health and key stakeholders, a decision was made to introduce IPV in Anguilla. To ensure a successful vaccine introduction, health professionals were trained and the media and other promotional material were used to sensitize the public Up

on governmental approval, 350 single dose vials of IPV were procured, and on June 1st, 2015 the vaccine was introduced in the immunization program. The primary target population was children 2 months of age. As of October 2015, 71 children had been immunized, which corresponded to coverage of 95%. Thus far, the introduction of the new IPV vaccine has been successful; there have been no refusals from parents and no adverse events reported. It is the goal of the Ministry of Health and the EPI team to achieve 95-100% coverage for all antigens administered in the program.

6.3.2 Dominica

IPV was introduced to new babies in the Primary Health Care System of Dominica in August and September of 2015. To date, 72 first doses and 8 second doses have been administered. Prior to its introduction, training sessions were conducted to introduce the vaccine to the staff. Parents and guardians, especially those of children under 5 years of age, and the general public were also targeted for information dissemination.

Five core senior staff received the initial training on IPV. These individuals were then responsible for conducting additional trainings throughout the island, which reached a total of 149 health care staff including nursing students from the Dominica State College. Two full day training workshops for staff were conducted and districts were combined for logistical purposes. Various methods were utilized to conduct the trainings, including lectures, discussions, group work and role plays.

The IPV toolkit supplied by PAHO was utilized in conducting the sessions, including PowerPoint presentations which were extremely helpful in delivering the sessions. The success of the training was evaluated from the results of a pre and post test, which showed a substantial increase in scores obtained. Staff feedback also indicated that individuals felt more comfortable with giving the vaccine following the trainings and would therefore be better able to respond to questions from the public.

Information on IPV was disseminated to the general public via various means, which included electronic and print media. The media sessions included live radio talk shows on all four major radio stations in Dominica, in both English and Creole. As part of these programs, the public was given the opportunity to call in and ask questions. Printed articles were prepared for the two major newspapers, and Dominica news (online). Television interviews on the Government Information Service were also done.

Additionally, public service announcements in the form of “edutainment” were also aired. Discussions were organized at churches, schools and in the community and information sessions were also held at the various clinics. Home and household visits were also conducted for face to face communication.

Insufficiency of funds was one of the challenges encountered during implementation of the above efforts. Additionally, Tropical Storm Erica caused a delay in the commencement of the administration of the vaccine; however, since its introduction in September no additional

difficulties have been experienced. To date, public education efforts in Dominica have not yet been evaluated.

6.3.3 St. Vincent and the Grenadines

To respond to the polio endgame strategy, the Ministry of Health of St. Vincent and the Grenadines made the decision to introduce IPV into the national immunization program. To prepare for the introduction the following activities were carried out: 1) IPV demand was calculated and the vaccine order was placed; 2) monitoring indicators were developed; 3) training and sensitization workshops were conducted for all categories of health care workers and for parents and guardians

Following the official introduction of IPV on June 1st, monitoring activities were carried out. From April 1st to August 31st 2015, a total of 612 births were registered and 584 children received their 1st dose of IPV, resulting in coverage of 95.6%. A total of 402 children received their 2nd dose of vaccine, resulting in 65.6% coverage to date.

Challenges encountered during the introduction process have included incorrect recording of IPV in the vaccination register, delays in receiving reports from selected nurses and administration of OPV instead of IPV by two private practitioners.

6.4 Country preparations for the tOPV to bOPV Switch

6.4.1 Barbados

The Global Polio Eradication Initiative's Polio Eradication and Endgame Strategic Plan 2013-2018 calls for the eventual removal of all oral polio vaccines (OPVs). Barbados' tOPV to bOPV Switch Plan details the first phase of this endeavor.

Barbados has completed all of the 2015 milestone activities as indicated on the I_Dashboard for monitoring of the switch from tOPV to bOPV. Committees have been established and commitment has been garnered from the political directorate for full financial and technical support. Operationalization of the Switch Plan continues, with support teams conducting and assisting with training, inventory management and information dissemination and planning. Monitoring during the Switch, especially in the private sector, will be human resource intensive but has been meticulously planned and training of support staff is ongoing.

Barbados will continue its committee meetings, stakeholder training and operationalization of the Switch Plan to ensure that all activities indicated on the I_Dashboard are completed in a timely manner, ultimately leading to a successful switch process.

6.4.2 Suriname

Suriname has a population of 534,189, and the number of live births is 10,000. 90.2% of the population lives in the coastal area and 9.8% in the interior. With the geographic and demographic differences between the coastal area and the interior of the country, it is

necessary to apply different methods for the switch. All clinics in the coastal area that can be reached by land will be visited on April 26th 2016 to do the switch. The clinics in the interior will receive their supply of bOPV one month prior and will need to keep the vaccine sealed until the switch day. All retrieved tOPV will be destroyed by incineration. A verification team will check whether the switch and incineration were implemented according to protocol.

In the preparatory phase the OPV stock management activities are on schedule. Training to raise awareness among healthcare workers has already started. When the switch protocol has been completed, the teams which will conduct the switch in the coastal area will be trained. The clinics will be contacted to identify a key person, who will be responsible for facilitating the switch process. Special attention will be given to the interior to ensure that everything is done according to protocol.

6.4.3 St Kitts and Nevis

In St. Kitts and Nevis, vaccination for the childhood population is provided through a network of 17 public health clinics and one private health provider. The vaccines utilized in the public health sector are procured through the PAHO Revolving Fund (RF). It is important to note that only IPV is administered in the private sector. The National Poliovirus Eradication Coordinating Committee/ Switch Support Team is a sub-committee of the country's already established Epidemiological Surveillance Group (ESG). The Committee is comprised of key managers of departments who will be responsible to plan, manage, and oversee all activities related to the endgame strategy such as the switch plan and its related activities.

In preparation of the global switch from tOPV to bOPV and the introduction of IPV a plan of action was developed and is to be implemented in phases utilizing the EPI Plan of Action Framework and Polio Switch Plan Dashboard. Monitoring and evaluation is of crucial importance for the success of the switch. The process will be monitored by assessing switch activities/milestones while the outcome will be monitored by collecting bOPV distribution data and validating/verifying tOPV removal and disposal.

6.5 Global and Regional Action Plan for Polio Containment

In December 2014, the WHO published the third edition of the Global Action Plan (GAP-III) to minimize poliovirus facility-associated risk after polio eradication and the sequential withdrawal of OPV. The GAP-III aligns the safe handling and containment of poliovirus infectious and potentially infectious materials with the Endgame.

The GAP-III strategy for minimizing poliovirus facility-associated risks consists of risk elimination by destruction of poliovirus materials in all but certified essential poliovirus facilities and bio risk management of such facilities. Risk elimination in non-essential facilities is achieved through destruction, or transfer of infectious and potentially infectious WPV materials and OPV/Sabin materials to essential poliovirus facilities.

In the discussions for adaption of the containment plan for the Americas Region two issues were extensively considered:

- The Region's 24 year history without AFP cases caused by WPV

- The use of OPV in the majority of countries

The regional plan includes the containment of all WPV and Sabin vaccine polio type 2, as well as the containment of material specimens potentially infected with these viruses.

Countries of the Americas are in the process of implementing the Regional Plan that is aligned with GAP-III. It's expected that most of the biological specimens (stool and respiratory samples) collected during the time of WPV circulation or tOPV use will be destroyed, with only a few specimens moved to certified essential facilities. It is also expected that only a few poliovirus essential facilities will be identified by countries, and that these facilities should be able to fulfill the requirements to be certified.

6.6 Country Reports on Polio Containment

6.6.1 Aruba

As far back as 1957, Aruba introduced inactivated polio vaccine (IPV) for children aged 9 months up to 12 years. A few years later, a combined DPT-IPV vaccine was introduced for infants at well baby clinics reflecting the immunization program in the Netherlands. Oral polio vaccine (OPV) was used during a few years at the end of the sixties, likely due to outbreaks of polio during that period. It has been noted that vaccination coverage for OPV depended mainly on the occurrence of cases. Nowadays the immunization schedule consists of not less than six doses of combined inactivated polio vaccine (IPV), a third booster being given in the 5th grade at all primary schools.

The last case of polio in Aruba probably occurred in 1968. Although there is not an active surveillance system for AFP, polio is a Group A infectious disease, meaning that by law any suspected (AFP) case should be reported immediately. In accordance with the Regional Plan for Containment of Poliovirus in the Americas, a working group has been formed which studied the working documents and distributed the Regional GAP- III Survey to all five laboratories in Aruba. A timeline has been set to collect and analyze survey results, visit sites if needed and submit a country report to the Sub-Regional Polio Certification Committee.

6.6.2 Belize

The IPV introduction and the switch plan have been completed in Belize. Switch monitors have been selected and training is 90% completed for IPV Introduction, on topics including cold chain, surveillance of ESAVI and AFP. Surveillance of AFP cases is ongoing, with emphasis on the need for active case searches. The introduction of one dose of IPV in the routine immunization schedule is set for December 7th 2015, and the switch from tOPV to bOPV is scheduled to occur on April 25th 2016. Training of health care workers and switch monitors is scheduled for March and early April 2016, prior to the switch date. The containment activity plan is in progress, and the laboratory survey will be conducted in the first week of December 2015.

6.6.3. Curacao

In August 2015, the Ministry of Health, Nature and Environment of Curacao appointed Dr. Sirving Keli, the Ministry's Sector Director, to serve as the Polio Containment Coordinator. A National Polio Coordination Committee was also established in October 2015 consisting of public health doctors and nurses from the Ministry of Health. This committee needs to be expanded to include the local surveillance expert and chief laboratory staff.

One of the first tasks of this committee was to conduct an inventory of the laboratories on the island. Curacao has one National Public Health Laboratory, the 'Analytisch & Diagnostisch Centrum' as well as 2 small privately owned laboratories and 2 hospital laboratories. The National Public Health Laboratory and the 2 hospital labs will be instructed by the Ministry of Health to fill out GAP- III surveys by the end of November 2015, for the identification of polio-related material and the analysis of risk. In January 2016, the committee will do site visits, if applicable, and start instructing these labs about the possible need and ways to dispose of any polio-related material.

The committee plans to instruct the local waste company to destroy all polio-related material stored at the laboratories, as well as all the remainder of tOPV vaccines, within two weeks after switch day (April 25th 2015). After this destruction, certification will be acquired within 1 month.

6.6.4. Guyana

The last recorded confirmed case of WPV 2 in Guyana was in 1962. PAHO/WHO granted Guyana Polio Free Status in 1994, along with most of the countries of the Caribbean. Active surveillance is done routinely and a weekly report is made of all cases of AFP, which is entered into the regional database. In September 2015, training in the Integrated Surveillance Information System (ISIS) was conducted in Guyana and the software was subsequently installed at Ministry of Public Health, Maternal and Child Health Department. This will facilitate Guyana entering its own information into the database directly.

Guyana has a total of 41 functional laboratories throughout the ten regions of the country. Of these, only five (5) have the capacity to store material at or below -20°C. The only material that is stored in three of these laboratories however is fresh frozen plasma (FFP). One facility uses such a fridge as a short term holding space for specimens that are later sent out to other facilities for testing. The National Public Health Reference Laboratory had fresh sputum stored in a -70°C fridge but these specimens will be discarded and pictographic evidence of this will be submitted.

SUSTAINING POLIO ERADICATION: Recommendations:

- Countries that have introduced IPV are commended for meeting this important target in the Polio Endgame and Eradication Strategic Plan (PEESP). Countries that have not yet introduced at least one dose of IPV should stay on track with their introduction plans and guarantee that the vaccine is introduced in the planned period, in order to assure a safe switch from tOPV to bOPV.

- When sufficient IPV supply is available, countries should be prepared to follow the TAG recommendation on the introduction of a second dose of IPV.
- Countries should strengthen AFP surveillance as a priority, due to the risk of cVDPV2 emergence in the period post-switch and the risk of reintroduction of wild poliovirus
- Countries that are not achieving a notification rate of 1 AFP case per 100,000 children less than 15 years of age, for the last 52 weeks, should review their systems of active surveillance to ensure that no AFP cases are being missed.
- Countries should analyze vaccination coverage and implement vaccination activities with tOPV to improve coverage in areas with low tOPV coverage prior to the switch.
- Countries should intensify preparation activities outlined in the National Switch Plan, and should ensure quality training for all health care workers as a high priority.
- Countries should follow monitoring and supervision guidelines to ensure that there is no tOPV left in the country and that it has been properly disposed.
- Countries should ensure timely delivery of their Poliovirus Containment Plans.
- Full polio vaccination coverage needs to be maintained in all districts

7. DATA QUALITY, COLD CHAIN and PROGRAM MANAGEMENT

7.1. Update on PAHO EPI Revolving Fund and the Global Vaccine Market

The PAHO Revolving Fund (RF) for EPI continued to provide timely access to WHO prequalified vaccines at the lowest price for national immunization programs of participating countries in Latin America and the Caribbean. Meeting participants received an update on the growth of the RF, its accomplishment and challenges in the global vaccine marketplace. Supply challenges were highlighted, e.g. IPV (availability) PCV (price); the status of recommendations from last year's meeting were reviewed and new recommendations were offered for 2016.

Annual immunization plans and accurate vaccine demand forecasts at the national level are key components in securing national financing to meet the estimated costs for vaccines, syringes and cold chain equipment offered through the RF. Those costs continued to grow with the uptake of new vaccines like PCV, rotavirus, HPV and seasonal influenza. PCV is currently the principal contributor to these costs, representing approximately 63% of the total vaccine costs in 2012 and 2014. This has placed an increasing burden on national immunization budgets and likely contributed to deterioration in DPT3 coverage rates, as available resources are diverted from program activities to meet vaccine costs.

Moving forward, countries are asked to: 1) complete a more thorough cost analysis to minimize the risks associated with compromising program objectives due to fast growing vaccine costs and associated funding gaps and 2) review and validate their PCV demand forecasts for 2016 and submit an accurate projection of their vaccine needs for the period 2017-19, using the PAHO 173 template to facilitate RF engagement with current suppliers. Ongoing supply challenges for IPV and some of the traditional vaccines, such as BCG, YF, and acellular pertussis containing vaccines are currently being monitored closely by the RF and updates will be provided as needed for the Caribbean.

In terms of accuracy in demand forecasting, approximately 13 of the 22 countries/territories in the Caribbean experienced variances of more than 20% in their demand forecasting for more than half of the vaccines planned in 2015. Similarly, approximately 10 of 22 were in financial arrears to the RF for 90 days or more, effectively halting procurement actions on new vaccine orders. To address these challenges: 1) countries could provide quarterly updates on these two indicators, which would then be reviewed to identify corrective actions, and 2) CARICOM could be engaged on a strategy for outreach with Ministers of Health and Ministers of Finance on vaccine budget lines.

Key activities in the RF work plan for 2016-2017 include those linked with implementation of the Regional Immunization Plan of Action 2016-20. Key activities to be implemented include:

- Roll out of country demand forecasting workshops
- Roll out of training plan for transition to AD syringes in 2018
- Revitalization of RF IT platform (data warehouse & dashboard)
- Operational assessment of the RF with a view toward creating more value for countries

The work of the Revolving Fund for Vaccine Procurement has been recognized and commended as a decisive contributor to the progress of national immunization programs in the Caribbean

REVOLVING FUND: Recommendations:

- The Caribbean welcomes the PAHO Revolving Fund's efforts to negotiate lower prices for pneumococcal vaccines.
- The accuracy of country vaccine projections should be monitored and training should be provided on topics including country demand forecasting and training for the transition to AD syringes in 2018
- Efforts should also be made to reduce the number of countries in arrears with the Revolving Fund.

7.2. Electronic Immunization Registry Implementation in Grenada

Documentation of immunization data in Grenada is largely paper based, which has led to challenges when trying to reflect the true picture of the status of the EPI in terms of coverage.

Responding to an invitation from United States' Centers for Disease Control and Prevention for countries to apply for small grants to support routine immunization and surveillance, Grenada submitted a proposal in January 2015 to establish an Electronic Immunization Registry (EIR). The proposal was approved in February, and Grenada was awarded $49,000 to support the project through technical assistance from the Pan American Health Organization. The grant is time limited and funds must be spent by 31st December.

In preparation for the implementation of the EIR, activities commenced in March 2015 with virtual demonstrations of EIRs and the attendance of Grenada's Management of Information System (MIS) Officer to an immunization registry conference in New Orleans. After several

discussions with the PAHO team and based on Grenada's needs, a system designed by developers in Albania and commissioned by WHO was selected by the country.

Following the selection of the system and to further advance the process of implementation of the EIR, a visit was made to Grenada during the period July 14 -17 by Dr. Karen Lewis- Bell, PAHO Caribbean Immunization Advisor and Information Systems Specialist, Ms. Claudia Ortiz. The objectives of their visit were to conduct a rapid assessment of the immunization documentation, monitoring and reporting process to inform customization, as well as provide technical assistance. Several decisions were made during this visit regarding the implementation of the system, which will initially be placed at the six main health centers in the six Health Districts in the country, in three public hospitals, one private hospital, four pediatricians' Offices, in the St. Georges University Health Clinic, in the Ministry of Health (Community Nursing/Epi Unit) and in the Central Procurement Unit. A plan of action for the completion of the project was also developed, with the associated budget and time lines.

Based on this plan, a series of sensitization sessions were initiated and 122 health care providers in the public and private sector were made aware of the proposed system during the period of August 18 – 25. Preparations were also made for training of prospective users of the system in late September; however, this training was put on hold, based on the recommendation of the Albanian developers who visited the country during the period of September 17 – 20 for the purpose of conducting further assessments for customization of the system.

Public awareness about the new and upcoming EIR system commenced to a minimal extent, with a television interview with the developers, MIS Officer and EPI Manager in September and with the EPI Manager on radio and television in October. This will be followed by more in-depth, sustained activities when the system is commissioned in November.

After much communication and testing of the various functionalities of the system between the MIS Officer and the developers, the customized electronic system was delivered to Grenada on September 30th. As part of the requirement for implementation of the EIR, internet access has been provided to the six health centers. Four health centers have received computers with two still pending. All the other facilities are already equipped. Another requirement for the implementation of the EIR is the entry of backdated immunization data for 2012 to 2014. This is currently being undertaken. Training of the prospective users of the system is scheduled for November 23 – 26 and in the first week in December. Further training and support will be provided by the MIS Officer and team as the project is rolled out in the ensuing months.

It is envisioned that despite the challenges with delays in the process of implementation, the EIR will soon become a reality in Grenada, thereby ensuring not only improvement in the documentation and information system, but in all other aspects of the immunization program.

7.3. MMR Vaccination Coverage Survey in St. Lucia

A measles, mumps and rubella (MMR) vaccination survey was carried out in Saint Lucia in October, 2015 with the aim of determining the immunity levels among children born in 2004 through 2009. The Ministry of Health, Wellness, Human Services and Gender Relations undertook this project with the goal of maintaining measles and rubella elimination in Saint Lucia. Reported coverages of MMR1 have been above 95%, however MMR2 coverages of 70% -80% have been of concern for the past 5 years.

In terms of sampling, two students were randomly selected per grade (grade K to grade 5) via schools lists from all Infant, Primary and Special Needs Schools on the island, for a total sample of 836 children (out of from 15,000). Parents of the selected students were interviewed using paper-based questionnaires, to obtain information on the child's vaccination status and their knowledge and attitudes on vaccines and vaccination. A school-based questionnaire was also administered to 86 principals to access their own knowledge and attitudes on vaccines and vaccination requirements prior to school entry.
A total of 91% of household questionnaires were completed successfully, there was a 1.3% refusal and 6.3% of participants were not available. Data entry and cleaning is ongoing and data analysis will commence in December. The results of the survey are expected by February 2016 and will help tailor strategies to increase vaccination coverage of MMR2 and improvements in the overall EPI.

7.4. Report on the Vaccination Stock Supplies Management (VSSM) Training in Jamaica

The VSSM software is an efficient information tool for managing and controlling inventories; it was developed by WHO/Geneva and is open source, utilizing Microsoft Access. Based on the attributes of the VSSM, the decision was made in Jamaica to implement this system to efficiently manage vaccines. Attractive software attributes included the availability of a web-based version of the application (wVSSM), alerts generated for supplies close to their expiry dates and the minimum and maximum stock levels for each product and the availability of 'real time' information regarding the flows and movements of inventories.

To prepare for VSSM implementation, several trainings were undertaken. The objectives of these trainings were to:

- Evaluate the application of the wVSSM Software in supporting cold chain and supply chain operations in Jamaica
- Train users in the installation and use of the web-based application (wVSSM) and
- Prepare a work plan for implementing a 6 month pilot program to evaluate the effectiveness of wVSSM at the central level and in the 5 pilot parishes

The first training activity took place at the Central Vaccine Store in Jamaica. This involved three days of intensive training with the team from the central level, which included personnel from the National Health Fund Pharmaceuticals (NHFP), managers of the central vaccine store and the Ministry of Health (MOH). Key activities included:

- Physical inventory of vaccines, syringes, safety boxes and cold chain equipment
- Installation of wVSSM software
- Establishment of a database of actual stocks

- Configuration of basic data
- Generation of reports on actual stocks, dispatches and alerts

Training activities were then carried out for the health departments in October 2015. The five selected parishes were introduced to the fundamentals of the wVSSM system. They were then given the opportunity to enter the physical inventory of their stocks unto the system and were also activated to be able to utilize the site. A total of 30 participants attended these trainings, including personnel from the:

- Ministry of Health and the central stores (National Health Fund) – the EPI team integrally involved at these levels
- Regional Health Authorities – IT personnel and key team members who manage the EPI at the parish and regional levels
- EPI Manager/Officers – Bermuda & Guyana

Guidelines have now been developed for the use and monitoring of wVSSM, in addition to a plan of action for the progressive phased implementation of the software throughout the country.

7.5 Investigation of an ESAVI in the British Virgin Islands

The British Virgin Islands immunization program endeavors to make vaccination risk free. An ESAVI is referred to a clinical symptom that occurs following the administration of a vaccine that may or may not be related, but often leads to concern, and is perceived to be attributable to vaccination.

In BVI, a seven week old male infant, who had received his first dose of OPV and pentavalent was reported to have experienced symptoms of being pale, limp, dazed and with rolling of his eyes approximately eight to ten hours following vaccination. This infant was admitted to the hospital where he was assessed by the attending pediatrician who reported no evidence of any of the reported symptoms. The infant was monitored throughout the night and discharged the following morning in satisfactory condition.

The child was subsequently followed-up and continues to be in satisfactory condition.
Reports were received from both the pediatrician who administered the vaccines, as well as the attending emergency room pediatrician and these were forwarded to the chief medical officer who presided over the investigation. A meeting was also held with the father of the child, based on BVI's protocol for case investigation.

8. PROGRAM ACTIVITIES AND EXPERIENCES

8.1. Vaccination Week in the Americas

In 2015, the countries and territories of the Region celebrated the 13th annual Vaccination Week in the Americas (VWA), an initiative that seeks to: 1) promote equity and access to immunization, 2) promote the transition from child to family immunization, 3) keep immunization on the political agenda, 4) promote cooperation between countries and 5) serve as a platform for integrated activities. VWA is meant to be flexible, in order to allow countries and territories to

select activities each year in accordance with national public health priorities. The success of VWA in the Region has helped to inspire the establishment of sister initiatives in other WHO Regions, which led to the establishment of the overarching global effort, World Immunization Week, in 2012.

Over its tenure in the Region, more than 580 million people have been vaccinated as part of campaigns completed under the framework of VWA, including approximately 67 million in 2015. While this number is heavily influenced by mass campaigns in some of the larger countries, it is arguable that equally important are efforts to seek out and vaccinate small numbers of people who are defaulters or living in hard-to-reach and/or overlooked areas.

VWA has helped to raise the political priority of immunization, attracting the attention of high level authorities who have participated in VWA launches, including presidents, first ladies and Ministers of Health. The initiative has also drawn media (and the public's) attention to the important work of national immunization programs. In recent years especially, VWA has also morphed into a strategic opportunity to integrate other health interventions with vaccination efforts. The Caribbean has led this charge, turning VWA into a week for health, not only for vaccination, incorporating interventions including chronic health screenings, health education, vitamin supplementation, deworming, vector borne disease control and other activities into their plans and coordinating across health programs and sectors.

In 2015, the theme for VWA revolved around the idea of becoming a superhero through vaccination, with the slogan of "*Boost your power! Get Vaccinated*." A social media campaign using the hashtags #GetVax and #BoostYourPower encouraged people to take photos posing as superheroes and holding #GetVax signs, an effort which reached over three million people. The regional VWA launch was held in Duran, Ecuador and other local, national and international VWA celebrations were also held across the Region.

In the Caribbean, a great variety of activities were carried out during VWA 2015, including efforts to vaccinate children to update schedules, mop-up campaigns for measles and rubella, sensitization of health care workers in preparation for the introduction of IPV, public awareness efforts of revised vaccination schedules for MMR2, social mobilization and public education via the media and outreach activities to capture defaulters and improve coverage.

For VWA 2016, the regional theme will be "Go for the gold! Get vaccinated!" to take advantage of the spirit surrounding the Olympic Games, which will be held in August in Rio de Janeiro, Brazil. Countries are encouraged to liaise with national athletes to serve as ambassadors for vaccination as part of VWA 2016 and to also consider the possibility of a regional launch site in the Caribbean.

PROGRAM ACTIVITIES AND EXPERIENCES: Recommendations:

- Countries should continue to support VWA as a yearly opportunity to "reach the unreached" with vaccination, to highlight the work of the EPI in the media and to place immunization on the forefront of political agendas.

- Countries in the Caribbean have led the charge in integrating other preventative interventions with immunization as part of VWA and these efforts should be continued when applicable.
- In 2016, VWA will overlap with the date for the OPV switch. Countries can take advantage of the initiative to promote the importance of immunization and the eradication of polio in terms that are readily understood by the general public

8.2. MMR vaccination campaign in Jamaica

The Region of the Americas is constantly under threat of the re-introduction of measles as no other region has eliminated this vaccine preventable disease, and as evidenced by the recent outbreaks in United States of America (USA), Brazil and Canada. Additionally, there is continued circulation of the measles virus in other regions of the world including Europe and Asia. In reviewing the immunization statistics for Jamaica, coverage for the first dose of measles vaccination had fluctuated during the period 2009-2014, from a low of 81% in 2011 to a high of 94% in 2013. The coverage for the 2nd dose of MMR was even lower. The target coverage for both doses is 95% or greater, in order to ensure herd immunity. Jamaica had therefore accumulated a significant population of children susceptible to measles who had not received a vaccination, necessitating the implementation of a measles vaccination campaign.

The 2015 measles prevention campaign targeted all children in Jamaica between the ages of 1-6 years with outstanding MMR vaccines over a 16-week period. The objectives of the campaign were to: 1) reduce the measles susceptible population of children 1 to 6 years and 2) improve MMR1 and MMR2 coverage to >95%. Expected campaign outcomes included: 1) an improvement in MMR1 & MMR2 coverage to > 95%; 2) the achievement of greater protection against measles; 3) the prevention of measles outbreaks, in particular among school-aged children.

A combination of vaccination strategies were employed during the campaign including 'catch-up', 'mop-up' and 'follow-up'. To reach all children, employed tactics included the designation of daily vaccination sites, the involvement of private physicians and work with the schools through the Ministry of Education.

The campaign was conducted in phases:

Phase 1: Commenced February 16th 2015 and targeted children attending clinics/health centers for routine immunization services, such as the eighteen-month booster

Phase II: Commenced February 23rd 2015 and targeted basic/infant/primary schools and day care centers by health districts.

Phase III: Commenced on April 27th 2015 and included mop-up' activities for identified dropouts.

At the end of week 16 of the campaign, 100% of schools had been visited. A rapid coverage monitoring survey was conducted in June to assess the coverage for MMR1 and MMR2 pre and post the campaign. This survey concluded that MMR1 had high coverage prior to the campaign

(98.7%) while MMR2 coverage was much lower at 57.7%. Post campaign however, MMR2 coverage had increased by 40.1%.

Monitoring and evaluation activities carried out throughout the campaign included: 1) weekly meetings of the National Planning Committee; 2) an interim review of the campaign objectives, which included reviewing the data for the first 12 weeks of the campaign for both MMR1 and MMR2 and discussing the methodology and logistics for the rapid coverage monitoring survey; 3) a post campaign review to discuss campaign performance and lessons learned.

The primary challenges during the campaign included a deficiency of staff at parish level to conduct clinic vaccination, other routine clinical duties and conduct the school vaccination program; an inadequate level of compliance of parents and principals/teachers with the campaign efforts, especially in the private schools; and an overestimation of the target population due to lack of data from the private practitioners who also vaccinate children within the target population and incomplete administrative data for late vaccinations.

Strategies undertaken to address said challenges included:

1. The formation of temporary health teams of public health nurses, midwives and community health aides (retired health care workers) to assist the field staff. These temporary health teams started to work in week 11 of the campaign and continued into the mop-up phase which ended on June 30th.
2. Continuous follow up with all involved for timely reports and complete information.
3. All information regarding previously vaccinated children was included in the reports to ensure complete coverage data.
4. Letters were dispatched to the Ministry of Education to address the specific challenges being experienced during the campaign in schools. Copies of the correspondence were also provided to the parish teams for local level distribution.
5. Form letters were also done for school principals and private doctors for the Medical Officers of Health to use to update these key stakeholders within their respective parishes.
6. Ongoing review of the campaign data with the National Epidemiologist to address the concern regarding the target population.

8.3. Pertussis Outbreak Control in St. Lucia

On July 4, 2015 the Ministry of Health, Wellness, Human Services and Gender Relations was informed by CARPHA of a confirmed case of pertussis in a 4 weeks female infant. This infant was admitted to hospital in April with clinical features of pertussis - paroxysms of cough with a whoop, post-tussive vomiting and cyanosis. Prior to this there were 3 suspected cases in one community between February and May with similar clinical presentations with diagnosis likely atypical pneumonia/ Pertussis.

As of November 5, 2015 Saint Lucia has recorded 28 cases of suspected pertussis with ages ranging from 4 weeks to 67 years, with 15 cases of children under 1 year. Four (4) cases had been confirmed by PCR from a total of 12 naso-pharyngeal swabs taken. The cases were

identified across the island and not clustered. The likely hypothesis was that it was introduced by a tourist, and not directly as a result of the pentavalent shortage experienced in country from February to May.

Saint Lucia over the past 10 ten years had achieved 95% - 99% vaccination coverage for the primary doses of the pertussis containing vaccine – DPT or DPT/Hib/HepB (pentavalent), and had not had a case of pertussis for decades. However in light of this the Ministry upon the advice of PAHO Advisors has decided to administer the DPT/Hib/HepB vaccine at 2, 4 and 6 months with booster doses of DPT at 18 months and 5 years. Vaccinations in Saint Lucia commenced at 3 months of age and no booster was given at age 5 years. We continue efforts of vaccination of all children from 6 weeks with the 1st pentavalent, identification of defaulters and vaccination and to actively search for possible cases and manage them appropriately.

PERTUSSIS OUTBREAK CONTROL Recommendations:

- It is essential that all countries establish a mechanism for regular contact (weekly) between the EPI Manager, the surveillance officer and the laboratory to ensure that no cases of VPDs are missed.
- In addition to active surveillance, EPI Managers and surveillance officers should also work to develop strong and trusting relationships with key clinicians in county, in order to ensure consistent reporting of any suspected pertussis cases and clear and open communication.
- Countries are encouraged to engage in in-depth data analysis following outbreaks, including comparing attack rates between vaccinated and unvaccinated individuals. PAHO can support this.

9. UPDATE ON NEW VACCINES

9.1. Update on Rotavirus Vaccine Impact Evidence in Latin America and the Caribbean

Rotavirus disease is caused by the rotavirus group A (RVA). It is an important public health problem, associated with severe diarrheas in children aged <5 years at the global level. It affects mostly children aged 3 to 36 months. The clinical spectrum is wide, ranging from asymptomatic infection to severe dehydration, shock and even death. The disease is characterized by sudden diarrhea, vomiting and fever. Rotavirus-related diarrhea, typically more severe than diarrheas caused by other pathogens, is associated with dehydration and hospitalization.

Approximately 95% of children aged 3 to 5 years will be affected by rotavirus. Incidence peaks during the fall and winter months in countries with temperate climates. According to WHO, rotavirus diarrhea leads to 453,000 deaths annually in children aged <5 years. In Latin American and Caribbean countries (LAC), before the introduction of the vaccine, there were 75,000 hospitalizations, 1 million medical visits and 10 million rotavirus diarrhea cases.

As of June 2015, 17 countries (Argentina, Brazil, Bolivia, Colombia, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Nicaragua, Mexico, Panama, Peru, Paraguay, and Venezuela) and one territory (Cayman Islands) in LAC have introduced the rotavirus vaccine, meaning that 92% of the birth cohort live in countries with vaccination schedules that include the rotavirus vaccine. There are two vaccines available: the monovalent human rotavirus vaccine G1[P8] (RV1 Rotarix®, GSK), and the pentavalent bovine-human, reassortant vaccine G1-G4[P8] (Rotateq®, Merck). The monovalent vaccine requires two doses (at 2 and 4 months) and the pentavalent three doses (at 2, 4 and 6 months). The PAHO's TAG recommends completing the schedule and vaccination by the first year of age; however countries should continue making efforts to administer rotavirus vaccines in their routine immunization schedules, at the recommended ages.

A meta-analysis (De Oliveira et al, 2015) found that RV1 vaccine effectiveness varied, depending on the control group, between 63.5% and 72.2%. The effectiveness was higher in children <12 months ranging from 75.4% to 81.8%. In children aged >12 months it ranged from 56.5% to 66.4%. In Brazil, there was an estimated reduction of 130,000 hospitalizations and 1,500 deaths from diarrhea in a period of three years following vaccine introduction (Do Carmo et al). Other impact studies in El Salvador, Nicaragua and Panama showed, respectively, a reduction in hospitalizations for diarrhea by 48% (Yen et al, 2011), 23% (Orozco et al, 2009) and 37% (Molto et al, 2011). There are many rotavirus vaccine effectiveness and impact studies in Latin America and all have consistently shown that the vaccine significantly reduces hospitalizations and death from diarrhea. It is estimated that approximately 8,600 deaths due to rotavirus were avoided in 2013 in the 15 countries that have introduced RVA in LAC.

9.2. RESEARCH AND DEVELOPMENT PIPELINE FOR DENGUE AND CHIKUNGUNYA VACCINES

Dengue vaccines

Over the last three decades, the burden of dengue has steadily increased in the Americas. In 2014, 1,178,506 cases of dengue were reported in 47 countries and territories in the Region. Of these, 16,044 cases (1.4%) were serious and 677 (0.06%) patients died. Reported cases are estimated to represent only one tenth of all clinically apparent dengue virus infections of the Region. In addition to the relevant human suffering that these figures represent, they are also a clear indication of the burden that dengue puts on national health care services and economies. Dengue virus transmission has occurred in all countries of the Americas, except for Canada, continental Chile and Uruguay.

A dengue vaccine is viewed as a valuable additional tool for integrated dengue prevention and control. Five candidate vaccines are currently in clinical development and they are all tetravalent, i.e. intended to protect against the four dengue viruses (DENV1–4). In late 2014 and early 2015, the results of two phase III trials of a live attenuated chimeric tetravalent dengue vaccine (CYD-TDV) carried out in Asia and Latin America were published. These results are the first ever published efficacy data for any dengue vaccine. The two trials include 10,278 children

and adolescents aged 2–14 years of five countries of Asia and 20,875 adolescents aged 9–16 years of five countries in Latin America.

Efficacy outcomes are consistent between the two trials. The overall efficacy for dengue was 57% in Asia and 61% in Latin America; efficacies for severe dengue and dengue hospitalizations were higher. While the CYD-TDV candidate vaccine is immunogenic for all four dengue virus serotypes, efficacy varies by serotype (lowest for DENV2, intermediate for DENV1, and highest for DENV3–4). Also, efficacy was lower for younger participants and for participants without measurable antibody titers before the first vaccine dose was administered. The trials in Asia and the Americas are ongoing with an overall follow-up of 6 years, which is important to validate the results of the first 25 months of the trials. In the Asian trial, an unexplained higher incidence of dengue hospitalization has been reported in the third year (trial months 26–37) among vaccinated children aged <9 years: this observation needs to be carefully monitored during the continued long-term follow-up. As of November 2015, the CYD-TDV has not been licensed in any countries.

As the clinical development of dengue vaccines advances, the strengthening of dengue surveillance is critical. Between November 2013 and June 2015, PAHO –jointly with eight countries and supported by the Sabin Vaccine Institute– developed a generic surveillance protocol intended for implementation in all countries of the Region. This protocol achieves three significant advances: harmonization of the operational case definitions; guidelines for setting up sentinel surveillance in select localities ("sentinel areas") to complement nation-wide, passive surveillance systems; enactment of seven indicators to monitor the performance of the surveillance. The generic protocol is being adapted to the national conditions and is implemented without major constraints in the majority of the eight countries that contributed to its development, including large countries like Brazil and Mexico. This fact indicates that the implementation of the protocol is feasible and that it should be acceptable to all the countries of the Americas. In addition to contributing to dengue prevention and control, the implementation of the protocol will also provide evidence for the decision-making related to dengue vaccine introduction and for the impact evaluation of dengue vaccination activities.

Chikungunya vaccines

The first evidence of autochthonous chikungunya virus transmission in the Americas was recorded in December 2013. Between December 2013 and 2014, over 1.1 million cases were reported in 43 countries and territories of the Region. As of October 23, over 600,000 cases for 2015 were reported in 33 countries. The projected cumulative incidence for 2015 is 72 cases per 100,000 persons, down from 109 cases per 100,000 persons in 2014. While it is being studied, the burden of long-term sequelae of chikungunya infection remains largely unquantified.

Over the years, a few candidate vaccines for chikungunya virus have been tested in pre- and clinical studies. In the 2000s, inactivated and attenuated vaccine candidates showed promising results in Phase I/II clinical trials. More recently, second-generation, molecularly engineered candidate vaccines have had positive results in animal studies. In December 2014, results of a

candidate vaccine based on virus-like particles (VRC-CHKVLP059-00-VP) tested in a Phase I, dose-escalation, open-label clinical trial (25 participants allocated to three vaccine doses) were published. Nonetheless, licensure of a chikungunya vaccine will depend on successful large-scale Phase II/III trials, which need to be realized during epidemic periods and require relevant resources. It is unlikely that, in the near future, a chikungunya vaccine will complete clinical development and be licensed.

RESEARCH AND DEVELOPMENT PIPELINE FOR DENGUE AND CHIKUNGUNYA VACCINES: Recommendations:

- PAHO advises countries to continue strengthening the six components of the Dengue Integrated Management Strategy (Dengue-IMS) in their respective countries to respond concurrently to dengue and chikungunya, while preserving the technical specificities of each disease in the components of patient care and epidemiology.
- While the burden of dengue in the Americas is significant, there is insufficient evidence to make a recommendation on dengue vaccine introduction at this time. New evidence should be evaluated as it becomes available over the next months or years to inform decision-making.

9.3 UPDATE ON PNEUMOCOCCAL VACCINE

There are more than 90 serotypes of *Streptococcus pneumoniae*, 10 of which account for some 62% of the invasive disease burden which includes pneumonia and meningitis. Infections with *Strep. Pneumonia* (Spn) are most common during the winter and early spring months. Spn is considered a major cause of morbidity and mortality in children under 5 globally and is the most important cause of bacteremic pneumonias, meningitis and sepsis in children. Gobally, an estimated 14.5 million episodes of severe pneumococcal infection occur in children aged 1 to 59 months, causing 826,000 deaths annually. The burden of disease is highest in developing countries. The conjugate vaccine has been proven to be safe and effective and produces a herd effect by reducing nasopharyngeal carriage. Studies done in Chile in 2011 on the PCV10 vaccine indicated a significant reduction in disease incidence in children and studies done on the same vaccine in Brazil in 2010 revealed an 83.8% effectiveness against invasive pneumococcal disease caused by the vaccine serotypes and 77.9% effectiveness against invasive pneumococcal disease caused by the non-vaccine serotypes which implies some cross-protection against non-vaccine serotypes.

UPDATE ON PNEUMOCOCCAL VACCINE: Recommendations:

- The decision regarding the vaccine schedule should be based on the epidemiology of the disease in the country. The 3+0 schedule should be used if most cases occur in children under the age of 1 year and the 2+1 schedule should be used if a sufficient number of cases occur in children over the age of 1 year.
- Surveillance for invasive bacterial diseases needs to be strengthened to have a better understanding of the epidemiology of pneumococcal disease in each country.

9.4. UPDATE ON HPV VACCINE EFFECTIVENESS AND SAFETY

In this session, unequivocal evidence of the safety and real life effectiveness of the currently licensed HPV vaccines against HPV infection, warts and CIN2+ cervical lesions was presented. The evidence of a herd immunity effect was quite encouraging from a public health perspective. After a global distribution of more than 230 million doses and population-based assessments showing no increased risk of thromboembolic, autoimmune and neurological diseases, we are confident that the vaccines are very safe.

There is also compelling evidence for the effectiveness and safety of current vaccines from countries with more mature HPV vaccination programs which makes a strong case for countries in the pre-planning and planning phases to consider the available evidence and seek additional guidance from WHO and PAHO as needed. Finally, additional resources to assist countries with implementation and references for further review by the EPI managers and other national technical bodies were provided.

While acknowledging the challenges of rumors and crisis communication, EPI managers were encouraged to educate themselves with the references provided and reach out for technical assistance from PAHO as well as from WHO (ogbuanui@who.int).

9.5. Caribbean Country Reports on HPV Vaccination Introduction Plans

9.5.1 Bahamas

In 2013, the Ministry of Health (Bahamas) conducted an analysis of the feasibility of introducing HPV Vaccine into the national immunization program. Following the recommendations from the study, a decision was made to introduce the quadrivalent HPV vaccine into the schedule to a specific target group.

In May, meetings were held with stakeholders (MCHC TAG Medical Associations, Ministry of Education, among others) and a decision was made to target children in grade 6 (age 9-11 years old). This corresponds to a target population of approximately 5,000 boys and girls. Although the vaccine was not on the PAHO Revolving Fund formulary, the Ministry of Health was able to source the vaccines through a private wholesale company for $9.00/dose. Training of healthcare workers from the public and private sector began in early 2014. Educational materials were also created.

The administration of HPV vaccine commenced in June 2015 and a total of 606 doses have been administered (486 1st dose doses, 99 2nd doses, and 21 3rd doses). There was one reported case in a 15-year-old female who presented with lethargy and limp limbs. She was treated with intravenous fluids. Following treatment there were no further problems with the patient.

Some of the challenges encountered included late training of Family Islands staff which led to the late start of vaccine administration in those islands (it did not start until July 2015), the fact that no vaccines were administered in public schools, and only 6% of vaccines were given.

As the Bahamas continues the work to ensure a successful HPV vaccine introduction and curb the burden of HPV disease, we want to continue the immunization efforts, strengthen PAP smear screening, continue to partner with NGOs, monitor ESAVIs, extend the target population to include all high school children, and continue the education of community and stakeholders.

9.5.2 Bonaire

Bonaire introduced the HPV vaccine into their routine EPI schedule in September 2015. 9 year old girls are the target for the two dose schedule of the vaccine with the second dose being given 6 months after the first dose. Prior to this a catch up vaccination for girls aged 9-12 years was conducted during the period April to June 2015 through the clinics and schools. Training of health care workers was conducted as well as public education targeting parents of children in the age group to be vaccinated. The coverage for the birth cohort of 2005 was 49.1% and this improved for the birth cohort of 2006 to 61.9%.

9.6. HPV Prevalence Studies in the Caribbean

9.6.1 St. Kitts and Nevis

The HPV Prevalence study was conducted in St. Kitts and Nevis in 2014 to understand the burden of high risk HPV disease. This study was a joint collaboration among the Ministry of Health of St. Kitts & Nevis, the Pan American Health Organization/World Health Organization (PAHO) and the Caribbean Public Health Agency (CARPHA). The results of the study will be used to support the development of sustainable cervical cancer prevention and control programs according to new international guidelines. Major financial support was provided by the Albert B. Sabin Vaccine Institute, USA, and ethical approval was received from the Ministry of Health and PAHO.

The study sample comprised of 500 women 30 years and older who completed a questionnaire and gynecological examination during which cervical specimens were collected for Pap Smear and screening for high-risk HPV serotypes. Specimens that were positive on the HPV screening test were further subtyped to identify specific high risk genotypes. Summary of results: There were inconsistencies in knowledge regarding risk reduction for cervical cancer and protective factors. Knowledge of the vaccines administered being beneficial was very high (> 90%). Women were very interested in receiving the HPV vaccine for themselves and for their daughters. The majority of smears was negative (>90%) with the prevalence of abnormal smears (ASCUS or worse) being 3.0%. There was no case of cervical cancer detected and the prevalence of HPV high risk genotypes was 25.2%. Approximately one in every four participants tested positive for at least one high-risk HPV genotype. Overall HPV high risk genotypes 52, 35, 31 and 45 (in descending order) were the most prevalent. Other high risk genotypes identified in the Federation were 51, 16, 58, 18, 59, 33, 39, and 56. Younger women (30-44 years) were twice as likely to have a high-risk HPV infection. Participants with abnormal Pap smears had

twice the prevalence of high-risk HPV infection when compared to those with normal Pap smears.

9.6.2 St. Vincent and the Grenadines

This research was conducted to support the efforts of the countries of the Organization of Eastern Caribbean States to better understand their HPV burden and develop sustainable cervical cancer prevention programs according to new international guidelines which have included HPV DNA testing.

The objectives of the study were to:

- Determine the HPV prevalence of high risk types among women aged 30 years and older
- Describe the HPV high-risk serotype profile of women in St. Vincent and the Grenadines
- Determine the prevalence of pre-cancerous lesions and cervical cancer and the correlation with HPV high risk serotypes and sexual and reproductive health (SRH) risk factors in women aged 30 years and older in St. Vincent and the Grenadines.
- Determine the HPV vaccine acceptability by the persons interviewed.
- Gather information to develop a model for an organized screening program for cervical cancer prevention and control.

The field work for this cross-sectional study was conducted in St. Vincent and the Grenadines from February to November 2014. The sample size was 500 women; these women were recruited through health clinics, selected private doctors' offices and the Planned Parenthood clinic. Eligible study participants were women aged 30 years and older, who were sexually active, not pregnant, and had no history of cervical disease or hysterectomy. A structured questionnaire was administered by trained personnel to collect data which included socio-demographics, potential risk factors, immunization and HPV vaccine acceptability. A gynecological examination was conducted for each participant enrolled in the study and cervical specimens were collected for Papanicolaou test, and HPV DNA High Risk Screening test and subsequent HPV typing for specimens that screened positive. Only the specimens from cases that tested positive on the HPV DNA High Risk Screening test were typed. Women with abnormal or 'positive' Pap smear test results were referred to the specialist clinics or a designated specialist for further evaluation. Any necessary follow-up treatment was delivered at no cost to the women. Women with high-risk HPV serotypes and normal cytology results are being followed-up as per the guidelines used by the gynecologists in the public health sector.

The majority of women participating in the study were in the 30-44 years age category (n = 259 or 52 %). Most of the women initiated sexual intercourse at an early age (adolescent period, i.e., 34.9% around 15-16 years and 33.7% around 17-19 years). They also had inconsistent knowledge of the risk and protective factors regarding cervical cancer prevention. The research findings also showed that women did not perceive themselves to be at risk for cervical cancer if they were in a stable union or had one sexual partner regardless of the lifestyle of their partner. Belief that vaccines are beneficial was nearly universal with only 2-3% disagreement. Over 80% of the participants demonstrated knowledge of all required vaccines, except for 2 vaccines.

Nearly all of the participants indicated that they wanted to be vaccinated against HPV and if they had daughters, they would also want their daughters vaccinated. The majority of cervical smears tested using the Papanicolaou test was negative. Prevalence of abnormal smears (ASCUS or worse) was 6.4% in St. Vincent and the Grenadines. Most infections seen on Pap smear were *Candida Albicans*, and *Trichomonas*. The number of specimens that were inadequate for HPV testing was high, (26%) and HPV high risk types 31, 35, 45 and 52 were the most prevalent types detected.

HPV: Recommendations:

- The countries of the Caribbean should consider the abundance of evidence that demonstrates the safety and efficacy of available HPV vaccines. These vaccines have the potential to address the substantial burden of cervical cancer documented among women in the Caribbean. Therefore, countries are urged to accelerate their national decision-making processes grounded in evidence regarding the adoption of an HPV vaccine.
- Careful preparations in anticipation of HPV vaccine introduction are essential in order to ensure a successful introduction the first time it is done. Health care workers should serve as advocates for vaccination, and communication and sensitization efforts should also target school principals and other educators. Careful sensitization of the public regarding HPV vaccine prior to introduction is also critical. The EPI is urged to seek out important allies in the community to help promote the vaccine, including local level leaders and influential individuals in churches and schools.

10. MATERNAL IMMUNIZATION

10.1 Report on the maternal immunization working group

Maternal immunization refers to immunization prior to pregnancy, during pregnancy, and in the post-partum period (for both the mother and the newborn), in order to provide protection to the mother-child binomial. Maternal immunization has the potential to impact early childhood morbidity, and in some cases, mortality. Infections such as influenza and pertussis are associated with adverse outcomes in young infants – i.e. prior to the commencement or completion of the primary infant immunization series. Gains in reducing global childhood mortality have mostly been outside the neonatal period. Approximately 40% of global childhood deaths occur in the neonatal period. Many of these deaths are due to infections that can be prevented through existing or potential maternal vaccines.

One reason maternal immunization has gained attention in recent years is its potential to leverage the antenatal care platform. It is a core component of the new immunization model, which has transitioned from child immunization to immunization of the whole family. The establishment of a routine maternal immunization platform represents a new paradigm that includes the universal use of influenza, tetanus and pertussis vaccines and consideration of the use of other relevant vaccines in the near future. To date, the tetanus-diphtheria-containing vaccine is recommended for all women of childbearing age in all LAC countries; influenza vaccination is indicated for pregnant women in 29 LAC countries; and the pertussis-containing

vaccine is indicated for pregnant women in 12 LAC countries in outbreak situations. Moreover, 18 LAC countries currently vaccinate newborns against hepatitis B within 24 hours of birth as recommended by WHO. This strategy prevents the likely transmission of hepatitis B virus from mother to child during the prenatal and early post-natal periods, thereby decreasing the risk of developing chronic hepatitis B infections.

In February 2015, PAHO convened a PAHO Maternal Immunization Working Group (PAHO MIG) in Washington, DC with key maternal immunization and infectious disease experts from multiple disciplines and institutions, with the aim of developing a field guide on Maternal Immunization for the LAC region. The PAHO MIG included representatives from WHO, CDC, Emory University, the Latin American Center for Perinatology (CLAP), the Latin American Federation of Societies of Obstetrics and Gynecology (FLASOG), the Expanded Programs on Immunization (EPI) in Honduras and Argentina, Cincinnati Children's Hospital, the Universidade Santa Casa de Sao Pablo and a member of the PAHO Technical Advisory Group on vaccine-preventable diseases. The objective of the field guide is to provide technical and operational guidance to EPI staff and maternal and child health services in planning and implementing maternal immunization. The following components will be addressed in the guide: integration of immunization and prenatal care services, vaccine safety and effectiveness, decision-making for the introduction or expansion of coverage for existing available vaccines (such as seasonal influenza, tetanus and pertussis), monitoring and evaluation, social communication and mobilization strategies and communication tools for different target audiences (e.g. obstetricians, pregnant women, general population, and media). The maternal immunization field guide will also contain a revision of maternal immunization, covering all SAGE and TAG-recommended vaccines (preconception, during pregnancy and postpartum), and the vaccines that could be given to pregnant women in special situations, including travel to areas endemic for specific diseases and in the cases of unexpected exposures and outbreaks. It also includes newborn immunization during the first 24 hours of life (BCG and hepatitis B). All the reviewed recommendations will be compiled into a vaccination schedule. The field guide will be available to LAC countries during 2016 and the PAHO MIG will continue to strengthen collaborative efforts among agencies, universities and institutions related to maternal and child health, including working closely with CLAP to reinforce the surveillance of adverse events following immunization among pregnant women. The group will also create alliances with the media and scientific societies to reach different audiences, promote the integration of immunization with other maternal health services, and promote studies on safety, antibody interference and knowledge, practices and attitudes, among others.

11. Surveillance and Immunization Awards

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

1. Timeliness of reporting
1. Percentage of sites reporting

2. Number 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. Percentage with blood samples
    b. Percentage 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 until a new country is selected to receive the award. For 2015, the surveillance award was presented to Belize. Awards for the second and third places went to Grenada and Jamaica, respectively.

The **Henry C. Smith Immunization Award** is 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. This award is given to the country that has made the most improvement in EPI during the past year. This year the award was presented to Barbados.

Participants at the 31st Caribbean EPI Managers' Meeting sincerely congratulated 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.

Participants at the 31st Caribbean EPI Managers' Meeting, Georgetown, Guyana