

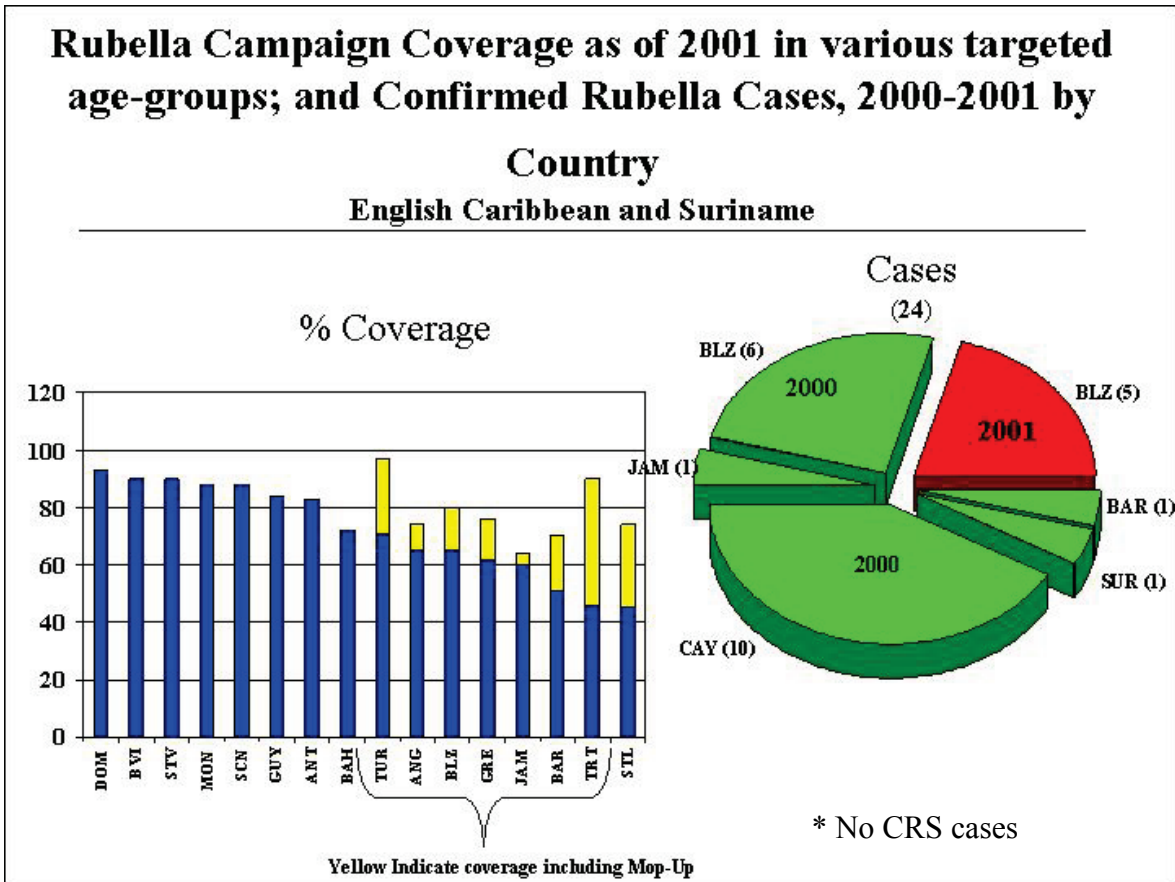


PAN AMERICAN HEALTH ORGANIZATION
Pan American Sanitary Bureau, Regional office of the
WORLD HEALTH ORGANIZATION

DIVISION OF VACCINES AND IMMUNIZATION
(HVP)



EIGHTEENTH CARIBBEAN EPI MANAGERS' MEETING



FINAL REPORT
 Long Bay, Tortola, BVI
 26 - 28 November 2001

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I. Introduction

The Eighteenth Meeting of the Caribbean EPI Managers was held in Long Bay, Tortola, BVI from 26-28 November 2001. Mr C. Lettesome, Permanent Secretary, Ministry of Health, BVI welcomed participants at the Meeting, and the opening address was made by Ms Ethlyn Smith, Minister of Health. Dr. Peter Figueroa, Chief Medical Officer, Ministry of Health, Jamaica, and member of the Technical Advisory Group (TAG) on vaccines and immunization of the Pan American Health Organization (PAHO) chaired the meeting and Dr. Ciro de Quadros, Director of PAHO's Division of Vaccines and Immunization (HVP), served as Secretary.

The Meeting brought together over 70 health officials from 18 countries of the English-speaking Caribbean and Suriname, the Netherlands Antilles (St. Maarten, Curacao, Aruba, St. Eustatius) the French Departments of Guadeloupe, Martinique, French Guyana, plus United States and the US Virgin Islands, Canada, the Children's Christian Fund (CCF) and PAHO staff and consultants from the Caribbean Epidemiology Center (CAREC), the PAHO Caribbean Program Coordination Office (CPC) and its Division of Vaccines and Immunization (HVP).

II. Objectives of the Meeting

In addition to EPI program reviews and development of annual work plans for the year 2002 by each country, the main objectives of the Meeting included:

- Determining the progress towards the CARICOM goal for eradication of rubella/CRS by the year 2000, including status of rubella campaigns;
- Determining the status of measles eradication in each country, maintaining the Caribbean free of measles;
- Reviewing the surveillance of AFP;
- Discussing the status of vaccination and surveillance of yellow fever in relevant countries;
- Vaccination of HIV positive children and other special groups;
- Preparing Plans of Action for 2002.

III Conclusions and Recommendations

Key Points:

Control of vaccine preventable disease remains exemplary in the countries of the sub-Region, and all should be congratulated on their efforts. The strategies for measles eradication and rubella elimination have been developed in the Caribbean and serve as models for many other parts of the world. There continues to be no confirmed measles cases, despite careful surveillance. There were only 19 confirmed cases of rubella in five countries in 2000 and to date only five confirmed Rubella cases in 2001 from Belize, and no confirmed CRS cases.

Some countries still have less than 80% overall coverage from their campaigns, after mop-up activities. In these countries there could be sufficient susceptible to allow rubella transmission, should there be imported cases. In Belize, where only women were targeted, the male population provides a large susceptible pool.

All countries except Bahamas, Suriname and Trinidad and Tobago are due to complete their 'Follow-Up' activities for measles immunization this year. Of the sixteen countries, eight have opted for two dose programs with the second dose given at either two years or before school entry at 4 – 5 years. These countries are reporting second dose coverage in excess of 90%. The remaining countries have opted for campaigns targeted at children 1 – 4 years and their full results are awaited. Whichever approach is chosen, high coverage is essential.

Despite all that has been achieved, there can be no complacency. Coverage for all antigens must be maintained at high levels in new cohorts and efforts must continue to identify and vaccinate any individuals missed from the rubella and measles catch-up campaigns. There needs to be continued, and indeed improved, attention to detail of rash fever and AFP surveillance. This requires audited active searches for cases to ensure that no cases are overlooked. Samples from AFP and rash-fever cases must be taken in a timely fashion, submitted with all appropriate information, and utilizing rapid transport to the appropriate laboratories.

All countries in the sub-Region have made great achievements in their efforts directed towards surveillance, social mobilization, disease control and elimination, and introduction of new vaccines. For some, still to be achieved is the attainment of the highest quality of implementation of quality standards, especially in completion of measles and rubella campaigns, and specimen procedures for AFP and rash/fever cases. Compliance with these high standards is undeniably difficult, but each country needs to set its objectives at these heights so that the gains to date can be consolidated for the future. The key to these achievements is the application of good program management – and this sub-Region has an excellent reputation in this regard.

Although there have been a few occasions when vaccine supplies have been delayed, following global pressures on availability of some antigens, these have been managed by countries using existing stocks or through inter-country transfers of stocks.

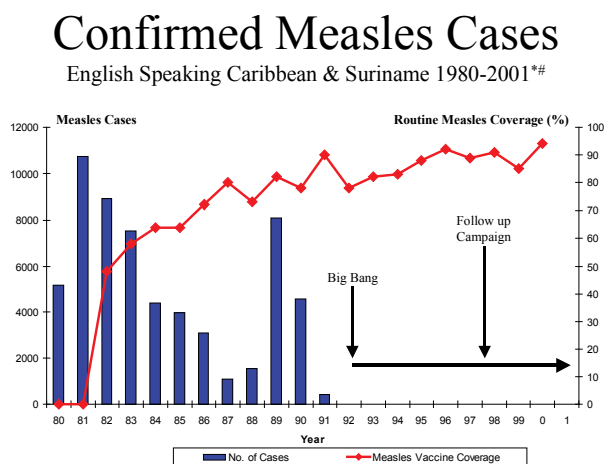
In some countries, health sector reforms continue to shift the balance of management of immunization services from central to peripheral levels, and pressures on resources continue. These particularly apply to the availability of vehicles and cold chain equipment and maintenance.

The regional effort in the Caribbean against vaccine preventable disease would benefit greatly if the Dutch-speaking members of CAREC, in addition to Suriname that already submits

reports, are incorporated into the weekly reporting system for rash/fever and AFP surveillance. The PAHO Secretariat recommends that St. Maarten, St. Eustatius, Saba, Aruba and Curacao explore ways by which they can be incorporated into the PAHO EPI Weekly Surveillance reporting system. PAHO/CAREC is ready to provide technical assistance for installing the software and training their health staff in reporting procedures. In addition, the above-mentioned Dutch-speaking countries should prepare annual Plans of Action so that EPI progress can be measured effectively across all CMC members.

1. Measles Elimination

1.1 Epidemiology in English-speaking Caribbean & Suriname

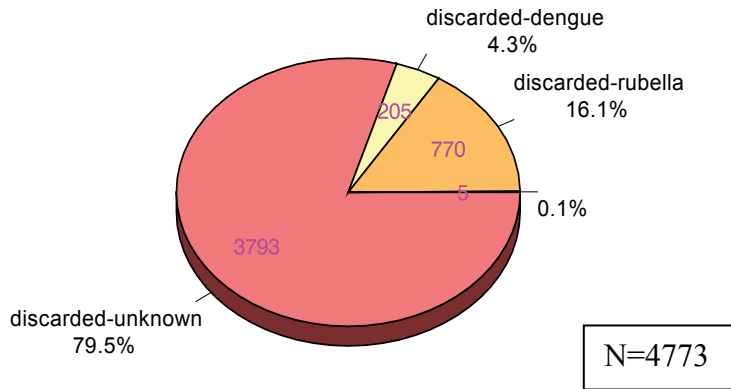


* Cases reported through week 43
1 Confirmed imported case was detected in 1998

The last confirmed case of indigenous measles in the English-speaking Caribbean and Suriname occurred in 1991. Since 1991, surveillance for measles has become more sensitive, with the case definition being less specific. In 1999, rubella surveillance was integrated into the Measles Elimination Surveillance System (MESS) with the case definition being essentially fever/rash illnesses. The total reporting sites of the countries have increased over the years from 468 in 1991, to 620 sites in 1998, and 652 sites in 2001. Ninety-nine percent (99%) of the sites within countries reported weekly for the years 1997 to 2001 (Week 43*).

Four thousand eight hundred and seventy-nine (4,879) cases have been notified between 1991 and 2000 and laboratory testing at CAREC was done for 4,773 cases (97%). Five (5) were laboratory confirmed cases of measles due to importation, seven hundred and seventy (770) were cases of rubella, two hundred and five (205) were cases of dengue and three thousand seven hundred and ninety-three (3,793) cases were neither measles, rubella nor dengue.

**CLASSIFICATION OF SUSPECTED MEASLES CASES
1991-2001***
ENGLISH SPEAKING CARIBBEAN AND SURINAME



Source: MOH Reports to CAREC/HVI/EPI

*Up to Week 43

There have been five (5) laboratory confirmed cases of measles after the implementation of the surveillance system in September 1991 from Barbados, Bahamas, Trinidad and Tobago, and Jamaica.

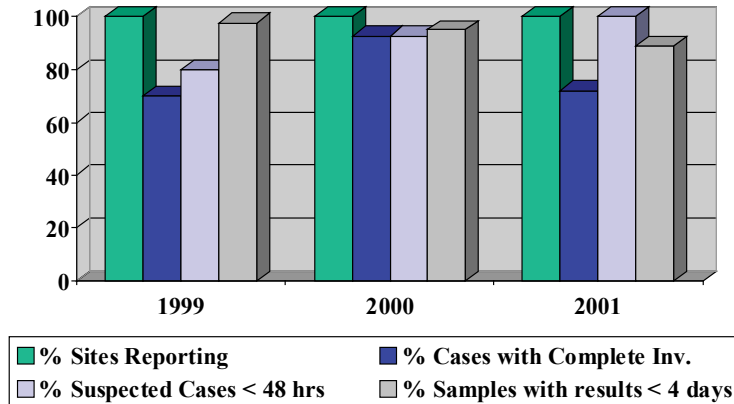
These were all imported cases from North America and Europe. There were no importations detected since 1999.

Of the two hundred and eighty (280) cases reported up to Week 46 in 2001, 250 cases (89%) were discarded without specific diagnoses (that is, neither measles, rubella nor dengue), 5 (2%) of cases were confirmed as rubella, 11 (4%) were confirmed as dengue and 14 (5%) cases are still under investigation.

1.2 Surveillance Indicators

Most of the surveillance indicators between the years 1993-2001 have improved. At present, 100% of sites report weekly and 93% have complete investigation with adequate blood specimen compared to 89% and 13% respectively in 1993. In 1993, 55% of cases were investigated within 48 hours as compared to 84% in 1999 and 100% in 2001 (Week 43). In 1999, 92% of cases had adequate samples and 98% had laboratory results received within 7 days. In 2000, laboratory results were available within four days for 95% of the cases; however in 2001, laboratory results were available in 89% of the cases. In 2001, only 30% of specimens were received within five days after being taken. Timeliness in transportation of specimens still remains problematic.

**Status of Indicators of Measles Surveillance
1999-2001*
English Speaking Caribbean & Suriname**



Source: MOH reports to HVP/HVI/CAREC

* Week 43, 2001

Evaluation of completeness of reporting and investigation of cases (1998-2000) has been undertaken in two countries. There were only two (2) fever/rash cases that were identified and that were not reported to the measles elimination surveillance system (MESS). Evaluating the surveillance system is essential for the sustainability of sensitive and effective systems, particularly for the detection of importation of cases.

Follow-up Campaign

All countries except Bahamas, Suriname and Trinidad and Tobago are implementing measles follow-up campaign activities this year. Of the sixteen countries, eight are routinely administering two (2) doses of MMR vaccines with the second dose administered at 2 years or 4 to 5 years of age. The coverage attained for the second dose in those countries is over 90%. For the countries implementing the campaign, the target population is 1 to 4 years of age. The vaccination activities are almost completed in the countries.

STATUS OF FOLLOW-UP CAMPAIGNS

COUNTRY	C	TARGET POPULATION	AGE - RANGE (TP) (Years)	# VACCINATED	% POPULATION VACCINATED	REMARKS
NG	A	336	4-5	319	95	Administering 2 nd dose
NT	A	1520	4-5	135	90	Administering 2 nd dose
BA	H	Administering 2 nd dose; Follow up due 2001-2002.				
BA	R	12,000	3-5	1200	10	In Progress
BE	R	Administering 2 nd Dose at 4-5 years of age.				
Z	BL	27,75	1-4 yrs	23,7	86	
BV	I	1307	4-5 yrs	123	95	2 nd Dose administered since 1997.
AY	C	Administering 2 nd dose at 4-5 years of age. Coverage over 90%.				
OM	D	6728	1-5 yrs	667	99.9	Now administering 2 nd dose of MMR.
RE	G	7481	1-2 yrs.	658	88	2 dose administered @ 18 months 1
UY	G	38,46	3-4 yrs	26,0	682	In Progress
JA	M	350,1	1-6 yrs	294,	90	In Progress
M	ON	61	Administering 2 nd Dose at Age 4-5 years. Coverage 99%.			
CN	S	3491	2-5 yrs	3,46	9	
L	ST	10,28	2-5 yrs	916	89	Administering 2 nd Dose
ST	V	Administering 2 nd dose at age 4-5 yrs. Coverage over 96%.				
S	UR	Follow up campaign carried out 2001-2001; 1-4 yrs:87%;5-9 yrs. 81%				
TR	T	Administering 2 nd dose at 4-6 years. 80%				
TU	R	1234	4-5 yrs.	103	84	Figure to be updated. Administering 2 nd Dose.

1 Data up to September 2001

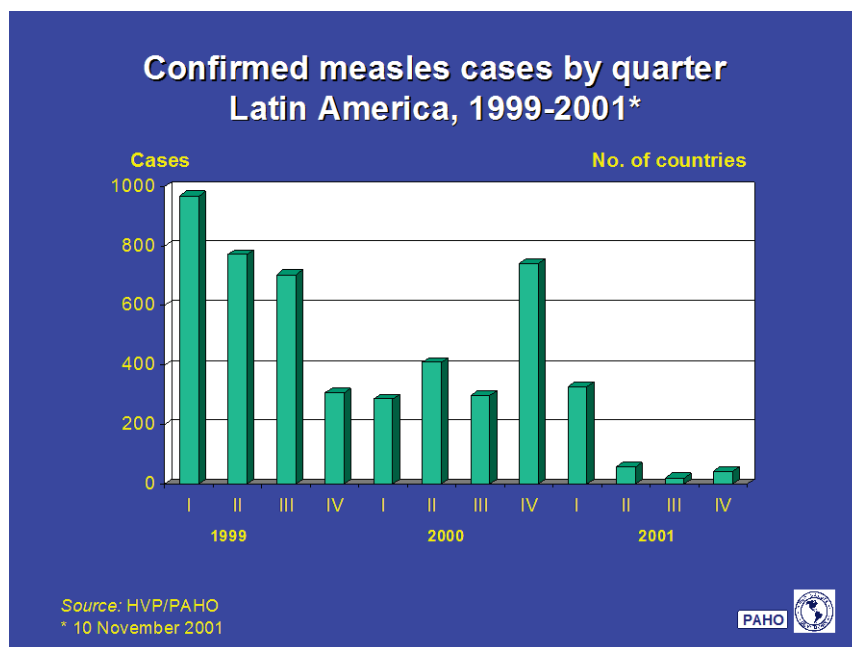
2 Data up to June 2001

1.3 Conclusions and Recommendations:

- **The English-speaking Caribbean have not detected any cases of indigenous measles since 1991.**
- **MMR coverage in the English-speaking Caribbean and Suriname had fallen progressively from 92% in 1996 to 85% in 1999 but is now showing signs of recovery.**
- **Indigenous measles has been eliminated from the Caribbean. Nevertheless, importation of measles remains a significant risk until measles control accelerates in many other parts of the world.**
- **Countries are either providing routine second doses of measles containing vaccine, or carrying out ‘keep-up’ campaigns targeted at children aged 1 – 4 years. Whichever approach is taken, high coverage (90% or more) must be achieved.**
- **At least 95% of each birth cohort must be vaccinated with a measles and rubella containing vaccine at 12 months of age. Highest possible coverage for the first dose of measles containing vaccine remains the first priority.**
- **Compliance with surveillance indicators must be maintained, and the full collaboration of private sector providers must be continued.**
- **Once an outbreak has been established virologically to be due to dengue, further epidemiologically linked cases do not require laboratory samples for measles or rubella serology.**
- **Meticulous attention to detail in completion of investigation forms, timely handling of samples and their transport must be maintained.**

1.4 Latin America

The data from the countries in the Region suggest that the circulation of indigenous measles in Region of the Americas has almost been interrupted. Only 6 out of 12,000 municipalities have confirmed circulation. The figure shows the steep decline in the number confirmed measles cases reported over the last four quarters of this year. Up to week 47 only 43 cases of measles have been laboratory confirmed. Since importation of measles from other areas of the world into the Region will occur, as shown by the recent outbreak in Venezuela (due to an importation from Europe), the greatest threat to the regional eradication efforts will be lack of uniform coverage with a measles containing vaccine in every municipality of the Region. For the past two years, most countries of the Region, including all countries in Central America and Cuba, most Caribbean countries and the majority of South American countries, have reported zero cases.



Venezuela is in the midst of controlling a measles outbreak due to an importation from Europe. The Ministry launched a Follow-up Campaign of November 16th 2001. 30 confirmed cases have been reported thus far.

Measles transmission in the Island of Hispanola was re-established in 1998, but has now appeared to have ebbed. The Dominican Republic reported their last confirmed case in week 22 (June 2001). In Haiti, the last case was reported in week 39 (September 2001).

A total of 434 confirmed measles cases have been reported in the Region to date for 2001, a reduction of approximately 75% in cases when compared to the same period last year. 68% of all cases reported come from Haiti, the Dominican Republic, and Venezuela.

There were importations detected in Canada and Mexico; however there was only very limited spread. In Mexico, there were 3 cases and in Canada 33 cases were reported.

Measles surveillance needs to be strengthened in many countries to confirm that measles transmission has been interrupted. Countries must take specific corrective actions whenever indicators are not at adequate levels. The principal method for assuring that indigenous transmission of measles has been interrupted is to demonstrate that the virus no longer circulates through sensitive surveillance. Virological surveillance, with genotype determination, should be in place. Also, if measles is introduced, even in countries with high coverage, then transmission should be limited by rapid and appropriate control activities.

Achieving and maintaining 'zero measles' in all countries in the Americas will require political will, as well as the sustained commitment of health authorities and health workers, and the support of the international community. At this stage of the eradication initiative, the main objective is to minimize populations that are susceptible to measles by fully implementing the complete measles eradication strategy.

Progress is being made at the global level towards accelerated measles control. These efforts will complement and facilitate the work being carried out by all countries in the Americas.

1.5 United States

The United States continues to maintain elimination of indigenous measles. The United States elimination strategy has four components: 1) maximizing population immunity by delivering the first dose of measles- mumps-rubella vaccine according to the recommended schedule and providing a second doses of measles vaccine to school children; 2) maintaining vigilant surveillance for measles; 3) responding rapidly to measles outbreaks; and 4) promoting improved measles control in other countries and assisting in improved global control of measles whenever possible.

Since 1993 reported measles incidence in the United States has been below 1 case per 100,000 and for the years 1997-2001, incidence was below 1 case per million population. Furthermore, only a few outbreaks occurred during 1997-2001, of which the largest outbreak in this period consisted of 33 cases; all other outbreaks had less than 20 cases. Although the number of imported cases has decreased, the proportion of cases imported increased remarkably in the last decade.

During the measles resurgence from 1989-1992, the same genotype was identified in all cases from which virus was isolated. This D3 virus has only been isolated once in the U.S. since then, in a known imported case. No other virus has been found to be repeating in a consistent pattern suggesting endemicity.

Based on the available information, a panel of experts concluded that measles is no longer an endemic disease in the United States. They agreed that three major factors suggest the surveillance system is currently adequate to document the absence of endemic measles. First, imported measles cases are consistently detected although these cases are more difficult to detect. Second, given the ability of the system to detect single measles cases and small chains of

transmission, it is unlikely that it is missing big outbreaks. Third, there is a high level of diagnostic and investigative effort for measles detection.

1.6 Canada

Canada has achieved their goal to eliminate indigenous measles. As with other countries in the Americas, the Canadian elimination strategy has four components: 1) maximizing population immunity by delivering the first dose of measles- mumps-rubella vaccine according to the recommended schedule, and providing a second doses of measles vaccine at 18 months or to school children; 2) maintaining vigilant surveillance for measles; 3) responding rapidly to measles outbreaks; and 4) promoting improved measles control in other countries and assisting in improved global control of measles whenever possible.

In 1995, Canada reconfirmed its commitment for measles elimination. In 1998, 1999 and 2001, less than 50 cases annually were reported. In 2000, 199 cases were reported; however, 196 of these cases were either imported or linked to an imported cases. Since 1998, measles transmission has been interrupted in the vaccinated population. In outbreaks occurring between 1999 and 2001, limited secondary transmission among members of unimmunized families/communities occurred. Characteristics of the 2000 outbreaks include several generations of transmission, but confined to unimmunized individuals/communities who opposed immunization on religious/philosophic grounds. Sustained transmission occurred because of lack of cooperation, cases bypassed regular medical and school based reporting system, and involvement of large families with unvaccinated individuals.

Support for interruption of transmission includes: almost all cases associated with importation, limited transmission into the unvaccinated population, surveillance system is sensitive enough to detect imported cases, and single cases and small outbreaks and through molecular typing identifying imported measles virus.

1.7 Measles in the European region:

The European Region includes 51 countries, from Vladivostok in the East to Greenland in the West, from Iceland in the North to Israel in the South. The Region has set a target date for measles elimination for 2007. The regional strategy involves the achievement and maintenance of high routine coverage, the identification of susceptible age groups with catch-up campaigns or use of routine second doses, and strengthened surveillance. In order to identify the strategies needed, countries are grouped according to their measles control status. In 1997, three countries (Finland, Hungary, Poland) were considered to have eliminated measles, six countries had good control, and the remainder were categorized as 'poor control'. Surveillance varies between statutory reporting with laboratory confirmation to no measles reporting. Overall incidence in 1999 was 5/100,000 but notable was the decline in the number of countries reporting cases to WHO EURO. In addition to working with countries to undertake supplemental activities, especially in the east of the region, WHO EURO has been developing laboratory-based surveillance working towards the implementation of a network of accredited laboratories.

2. Rubella Elimination and Congenital Rubella Syndrome Prevention

Considerable progress has been made towards achieving the CARICOM goal of eliminating rubella and preventing CRS. Over 75% of the target population of 2.2 million persons has been vaccinated; the number of rubella cases has declined significantly in 1999 and 2000 and there have been no CRS cases detected since mid 1999.

2.1 Background

The Council for Human and Social Development for the Caribbean Community (CARICOM) resolved on April 21, 1998, that every effort will be made to eradicate rubella and prevent the occurrence of cases of Congenital Rubella Syndrome (CRS) in the Caribbean Community (CARICOM) by the end of the year 2000.

In order to stem the occurrence of rubella and prevent further CRS cases, the following initiatives were proposed subsequent to the CARICOM resolution: vaccination of the susceptible population, implementation of a sensitive, simple and effective surveillance system, and maintenance of vaccination of at least 95% of each birth cohort.

2.2 Campaign Implementation

Rubella campaigns have been carried out or are in the process of completion by 18 of the 19 countries. The target population (males and females) with the most frequent age group selected (20-39 years) is approximately 2.2 million. Most of the campaign activities have been implemented between 1998/1999, and have targeted populations up to 44 years in two countries.

STATUS REPORT OF RUBELLA MASS CAMPAIGN

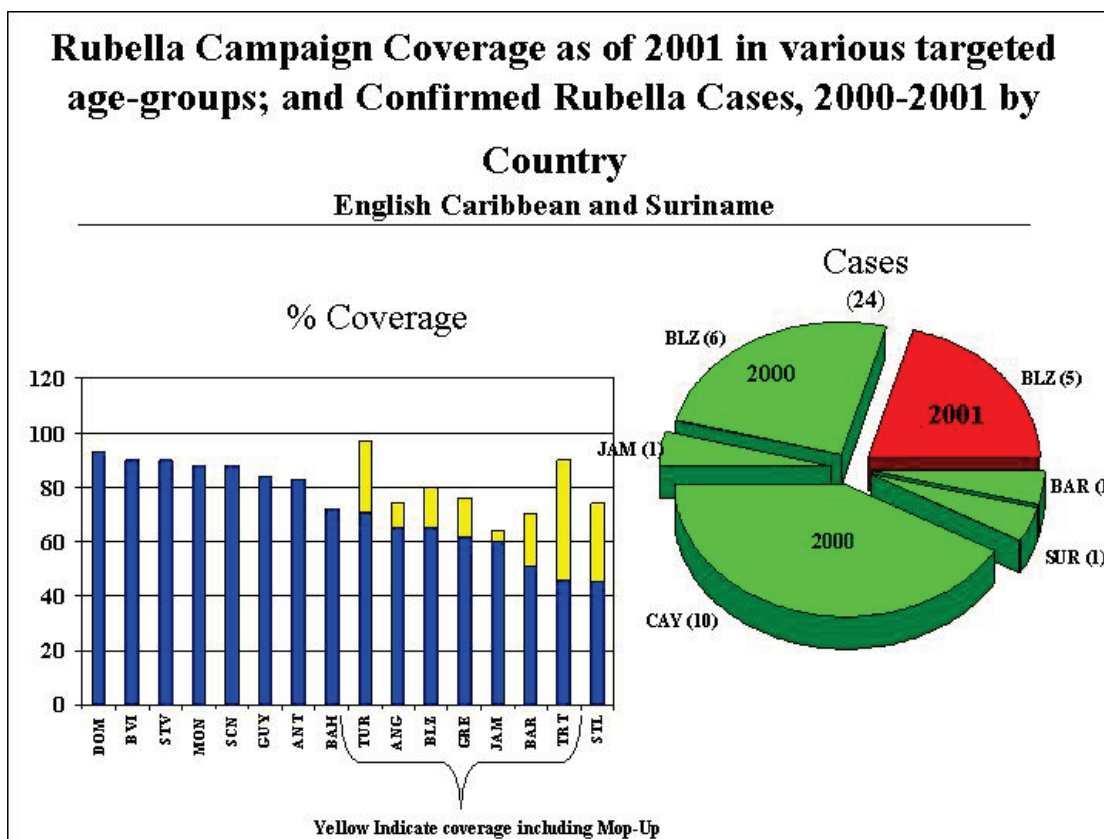
COUNTRY	TARGET POPULATION (TP) (Males/Females)	AGE - RANGE (TP) (Years)	% POPULATION VACCINATED	VACCINE USED
ANG	2,896	22-40	74	MR
ANT	23,673	20-39	84	MMR
BAH	153,180	4-40	73 ¹	MMR
BAR	65,937	21-35	75	MMR
BLZ	58, 295 (females only)	05-35	80	MMR
BVI	3,220	22-40	90	MR
DOM	22,500	12-35	94	MMR
GRE	25,127	21-45	76	MMR
GUY	355,642	06-30	84	MMR
JAM	808,685	13-29	64 ²	MMR
MON	1011	20-45	87	MMR
SCN	16,900	15-39	94	MMR
STL	50,604	11-40	76	MR
STV	22,636	22-40	94	MR
SUR	250,000	1-39	71	MR/MMR
TRT	293,063	20-44	90	Rubella/MMR
TUR	5,041	20-40	97	MMR

Figures updated November 28 20013

1 Bahamas will update figures by Dec. 15th 2001.

2 Previous to the Rubella Campaign 1998, Jamaica vaccinated the cohort of adult population (13-29) with a Rubella containing vaccine. Estimated protective coverage against Rubella in this adult population is 90%.

Seven countries have completed their rubella campaigns. Eight countries conducted mop-up campaigns because of low coverage at their first attempts. Of the countries with less than 80%, 5 have conducted mop-up campaigns. The vaccination coverage of countries ranged from 64% to 97%. Of the total target population of approximately 2.16 million for all countries, over 75% have already been vaccinated.



MMR vaccine (Measles - Schwarz Strain; Rubella - Wistar RA-27/3M Strain; Mumps - Urabe Strain) was used to vaccinate 999,592 (83%) persons of those who were vaccinated.

Surveillance for immunization safety (vaccine adverse events) was established as part of the campaign in all the countries. Four hundred and seventy four (474) complaints re MMR vaccine have been reported so far, that is, a rate of 47.4 per 100,000 vaccinees. Of these, the most reported event was parotid swelling that was 60% of the total complaints.

There were no case reports of anaphylactic reaction. Two cases of aseptic meningitis - a serious adverse event, have been identified so far. The symptoms and signs of these cases were transitory in nature and with no sequelae.

2.6 Vaccination in Pregnancy

A total of 265 women were reported to be vaccinated during pregnancy. These reports came from 11 countries. 86% of these women were reported within the first twelve weeks of

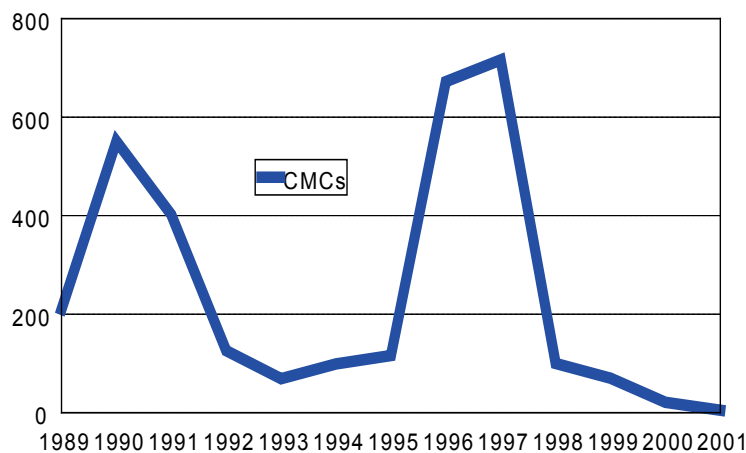
pregnancy with most of the women receiving the vaccination within the first six weeks of pregnancy. All babies were born normal, with the exception of three. Baby 1 had refractive eye problems and Baby 2 had delayed milestones, including mental retardation. Babies 1 and 2 tested negative for Congenital Rubella Infection. The mother of Baby 3 had history of rubella infection in 1990. She was also vaccinated at 20 weeks of pregnancy. This baby had cardiomegaly, palmar creases, bilateral corneal opacities, and rocker bottom foot. Diagnosis was chromosomal abnormality. This data further reinforce previous conclusions that rubella vaccine in pregnancy has not been found to be teratogenic.

2.7 Rubella Surveillance

Rubella has been endemic in most countries and significant epidemics have been documented in the 1980s and 1990s. The Measles Elimination Surveillance System (MESS) instituted in September 1991 revealed laboratory confirmed rubella cases in twelve countries between the years 1992-1997. The MESS started to detect rubella cases since 1992 and from 1995, outbreaks of rubella have occurred in six countries, namely, Barbados, Belize, Guyana, Jamaica, Trinidad and Tobago, and Suriname. The number of rubella cases has decreased markedly.

DISTRIBUTION OF RUBELLA CASES 1989 - 2001*

English Speaking Caribbean & Suriname



Source: MOH Reports to CAREC

*Up to Week 43

There were 70 rubella cases in 1999 (24 laboratory confirmed cases in the MESS), 21 cases in 2000, and 5 cases so far have been confirmed in 2001 (Up to Week 43). The five (5) rubella laboratory confirmed cases were from Belize. Transmission of rubella virus has not yet been interrupted in Belize.

2.8 Results and Challenges that Remain

To attain adult rubella vaccination coverage of at least 90% is feasible for all countries. Eleven countries have already attained vaccination coverage of 80% or greater. These are Turks & Caicos Islands (97%), Dominica (93%), British Virgin Islands (90%), St Kitts/Nevis (90%), Trinidad & Tobago (90%), Montserrat (88%), Antigua (84%), Guyana (84%), Suriname (84%), Belize (80%) and St Vincent/Grenadines (90%). The following countries have coverage below 80: Bahamas (73%), Jamaica (64%) Anguilla (74%), Grenada (76%), Barbados (70%), and St. Lucia (74%). In Belize the coverage refers only to females.

For countries that have not achieved 80% or greater, assessing alternative strategies to improve immunization coverage is encouraged. All of the countries need to ensure that strategies are in place to detect and vaccinate those still requiring vaccination. Some of the strategies should include:

- Reminding all health staff about measles and rubella elimination and screening tools should be in place to detect those that are not vaccinated;
- Screening of antenatal women (asking for proof of vaccination) and vaccinating the unvaccinated post-delivery;

2.9 Conclusions and Recommendations

- **Considerable progress has been made towards achieving the CARICOM goal of eliminating rubella and preventing CRS. Despite difficulties, some countries have done extremely well with full implementation of the recommended strategies. Some countries have clearly found the adult rubella immunisation campaigns to be challenging, imposing considerable burdens on health staff.**
- **There have been 5 confirmed rubella cases in 2001 to date, all reported from Belize. Belize is the only country that did not include males in its campaign. This approach cannot interrupt rubella transmission; the COHSOD policy recommends that both males and females should be immunised.**
- **This is a time of expected low rubella incidence and the next 3 – 5 years will be critical to evaluate the full impact of the program.**
- **Maintaining an effective surveillance system with the ability to detect rubella activity will be of paramount importance, after attaining high coverage in the adult population.**
- **Whenever possible, naso-pharyngeal swabs should be taken from suspected cases so that virus culture can be undertaken, before all opportunities for virus identification are lost.**
- **As observed with the measles eradication programme, importation will still remain the major threat for re-emergence of rubella. Personnel in high-risk areas such as health and tourism should have been appropriately vaccinated.**

2.10 Rubella and Yellow Fever Vaccination Campaign in Suriname

The rubella campaign in Suriname started October, 2000 using both the MMR and Yellow Fever vaccines for people ages 1-39 years old. The objectives of the campaign were to eliminate rubella and CRS, increase MMR coverage in the lower target group, prevent yellow fever and to

introduce yellow fever vaccine in the regular EPI-program. The total population targeted is 308,480 for persons aged 1-39years. The campaign lasted for 5 months. The mean vaccination coverage for total population was 71% (range 57-87) and for persons aged 20-34 was 57.5% (57-58). Only 35 adverse events to MMR/yellow fever vaccine were reported from health facilities and workplaces, (17 per 100,000 persons immunized). Parotid gland swelling most frequently reported event in 48% of cases (n = 35). A mop-up campaign has been planned.

2.11 Rubella Elimination in the United States

The current epidemiology of rubella and congenital rubella syndrome (CRS) reflect the success of the rubella and CRS control and elimination strategies in the United States of America (USA) that date back nearly 31 years to when rubella vaccine became available. The number of reported cases has declined from 57,600 in 1969 to 154 cases in 2000. The number of reported CRS cases have also declined over the same period by 99% with six cases reported in 2000.

Since the beginning of the 1990s, epidemiology of reported rubella cases has changed significantly. In 1991, the proportion of reported cases of rubella among those 20 years and older was 29 percent, rising steadily to around 75 percent in 2000. In 1991, 4 percent of the reported cases in the U.S. were among persons of Hispanic ethnicity, by 1999, 74 percent were among Hispanics. Since 1998, 'country of origin' data show that of the 63 to 79 percent of persons with confirmed rubella and known country of origin, >90 percent were born in Mexico, Central America, and the Spanish-speaking Caribbean.

The goals of the molecular typing of rubella in the USA are 1) to understand the source and spread of rubella outbreaks and CRS cases in the USA; and 2) to determine the rubella strain variations within the United States. Results of the molecular typing on clinical specimens collected from 1996 to 2001 reveal that there are three different genotypic types that have circulated. Molecular typing has revealed two important findings. First, all three genotypes have been identified in outbreaks among persons of Hispanic ethnicity. Demographics of rubella cases alone cannot predict the strain associated with an outbreak. Second, two of these genotypes have been identified in other countries in the Western Hemisphere.

Rubella and CRS have declined dramatically in the 1990's and 2000s and significant progress toward reaching our goal of indigenous elimination has been documented. Strategies that may help in achieving our goal is to identify and vaccinate high-risk populations. In settings where sufficient numbers of susceptible individuals gather, introduction of the rubella virus is all that is necessary for an outbreak to occur. Collaboration with PAHO and countries in the Western Hemisphere will help to reduce the burden of rubella and CRS in the USA.

Rubella Elimination in Canada

The current epidemiology of rubella is a reflection of the initial immunization programs implemented. In the early 1970s, seven of the 10 provinces established routine childhood programs with the other 3 provinces establishing selective vaccinations programs for preadolescent females and women of childbearing age. In 1983, all provinces had established routine MMR programs. In 1996-7, a second dose of MR/MMR was added to the schedule. In

1990, a goal to eliminate indigenous rubella infection during pregnancy was proposed receiving medical/health care community support. In addition, a goal of reaching 97% coverage by 2nd birthday and 99% coverage by school entry was set and over 95% coverage was achieved.

Since the late 1980s, three major outbreaks have been reported in 1989, 1992 and 1997. These outbreaks occurred in provinces that used the selective vaccination strategy initially. The highest incidence occurred among persons aged 15-19 years of age followed with person aged 20-24 years. During these outbreaks, most of the cases were among males.

CRS surveillance was established in 1979. In 1992, an active surveillance system for CRS among tertiary care hospitals was established accounting for 85% of the tertiary hospital beds. Since 1996, 1-2 cases per year have been reported with only 1 per year since 1998. Of the 7 newborns identified since 1996, 2 of the mothers were immigrants, 1 was aboriginal and 2 were non-aboriginal.

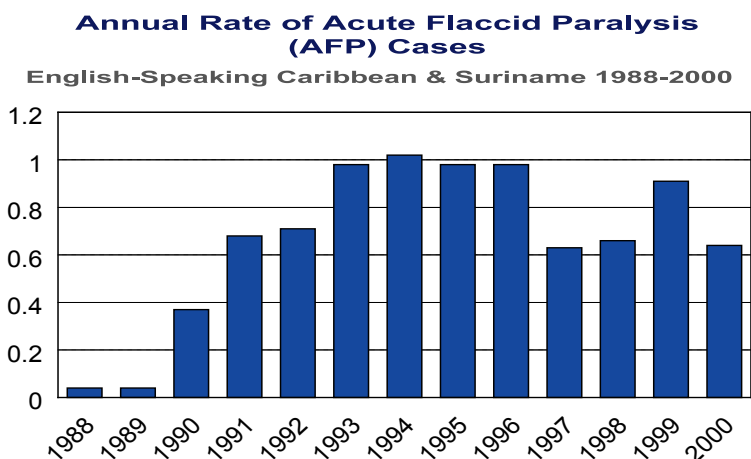
In Nov 2001, the purpose of this rubella expert committee was to set priorities for rubella elimination and surveillance strategies and technical issues.

3. Polio Eradication

3.1 Polio surveillance:

At the 2000 meeting, it was of considerable concern that the sub-Regional AFP rate (to week 43) was lower than at any time in the previous decade. By the year-end, the AFP rate was 0.64 per 100,000 less than 15 years, equal with the lowest reported rate for the decade. During 2001, active surveillance for acute flaccid paralysis continues from four hundred and thirty (430) reporting sites throughout the countries. Ninety-nine percent (99%) of the sites have been reporting weekly up to Week 43 in 2001. Between the years 1994 up to Week 43 of 2001, 142 cases of AFP (less than 15 years of age) have been notified. Ten (10) countries have been responsible for reporting the AFP cases for the period 1990 to the present.

The annual AFP rate has been less than one (0.6) for the years 1997 and 1998 but increased in 1999 to expected rate of 1 case per 100,000 population, and in 2000 was 0.64.



Source: Ministries of Health reports to EPI/CAREC

Up to Week 43 in 2001, twenty-two cases (of all ages) of AFP were reported from five countries. Of the 22 countries, 15 were less than 15 years of age and were notified from 4 countries, namely, Cayman Islands, Guyana, Jamaica, Suriname, and Trinidad and Tobago. The number of reported AFP cases is a slight improvement on 2000.

Trinidad and Tobago met all 4 surveillance criteria, Guyana and Suriname met 3 surveillance criteria, and Jamaica met 3 surveillance criteria. Ninety percent (90%) of all the 15 eligible cases were investigated within 48 hours and 93% of the cases had stool specimens collected.

Validation

The AFP surveillance systems in 2001 were evaluated in five (5) countries – Barbados, Grenada, Guyana, St. Lucia, and Jamaica. The system in Jamaica was validated by the Ministry of Health and that in Guyana by STCs/EPI/PAHO. The surveillance systems for Barbados, Grenada, and St. Lucia were evaluated during country visits. Hospital logs for 1998, 1999, 2000, and 2001 were reviewed. In the majority of the countries, the review found that the data found by the reviews matched that having been reported from the routine AFP system

3.3 Conclusions and Recommendations

- **The previously noted concerning decline of surveillance for AFP with substandard AFP rates and inadequate investigation in both sampling rates and timeliness continues. It remains essential for the Caribbean Sub-Region to demonstrate extra efforts to raise surveillance standards. The greatest efforts will need to come from the large countries.**
- **All countries should embark on active searches for AFP cases using retrospective reviews, regular chart exams, and stimulated negative reporting. Training of appropriate health workers must be continued.**
- **Countries will need to identify the reasons for the decline in AFP rates, and take steps to improve the compliance with surveillance indicators. Despite this recommendation having been made in 2000, there appear to be no good reasons why AFP rates and compliance with surveillance indicators continue to be below acceptable levels.**
- **In the last twelve months, vaccine derived viruses have been responsible for polio outbreaks in Dominican Republic and Haiti. Similar viruses have been found in Egypt and the Philippines. The emergence of these strains, in countries where sanitation is poor and coverage is low, threatens the global eradication initiative. Maintenance of high coverage and high quality surveillance will remain essential until polio is eradicated worldwide and cessation of immunization will only be countenanced when there is absolute certainty that there is no silent circulation of poliovirus.**

4. Immunization Coverage

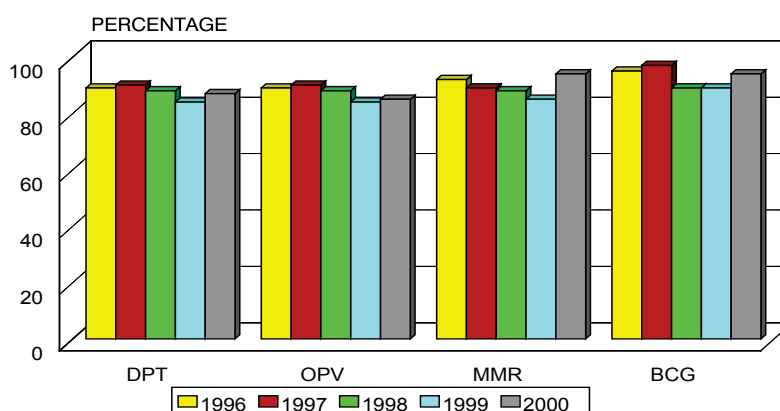
The immunization programs continue to receive very high priority by the governments of the countries. Over 90% of the vaccinations in the childhood population are delivered by the public sector through the network of clinics in the countries. The private sector continues to play

an important role and in some countries, as much as 25-50% of the infant population receive their vaccination through the private sector.

In many countries, the vaccines used in the private sector are provided by the public sector source, sometimes in exchange for data on rash/fever surveillance of children whose care is provided by the private sector. In 2000, the coverage for all 19 countries was – DPT 87%, OPV 85%, MMR 94%, and BCG 94%. The overall coverage of the countries is down slightly when compared with historic highest levels, although 1999 reductions in OPV and DTP coverage appear to have been reversed. MMR coverage has risen to the highest level since 1996, and indeed appears to be the highest on record.

IMMUNIZATION COVERAGE (%) FOR SELECTED ANTIGENS 1996-2000

English Speaking Caribbean & Suriname



Source: MOH Reports to EPI/CAREC

Interruptions of vaccine supply contributed to some reductions in coverage, for example OPV shortages in St. Lucia, Guyana and Suriname.

Coverage rates in 2000 fell in Jamaica and Grenada. Three countries have OPV coverage rates between 70 and 80% and eleven countries have between 90 to 100%. The immunization coverage for MMR ranged from 79 – 100%; twelve countries have coverage between 90% and 100%. Despite these overall figures, there are pockets of low coverage occurring in some districts/regions. In Guyana and Jamaica about 90% of their districts/regions have coverage of OPV less than 90% and about 30% of the districts/regions have less than 80% coverage.

DISTRIBUTION OF OPV COVERAGE BY DISTRICT/REGIONS - 1999/2000

COUNTRY	OPV COVERAGE %		NO. OF REGIONS/ DISTRICTS/ PARISHES	REGIONS/ DISTRICTS COVERAGE <90%		REGIONS/ DISTRICTS COVERAGE <80%	
	1999	2000		1999	2000	1999	2000
Belize	84	89	6 districts	5 districts	3 districts	1 district	1district
Guyana	83	79	10 regions	9 regions	7 regions	4 regions	4 regions
Jamaica	80	86	14 parishes	10 parishes	11 parishes	7 parishes	3 parishes
Trinidad & Tobago	90	90	9 counties	3 counties	2 counties	0 county	0 county

4.1 Conclusions and Recommendations

- **Immunization coverage appears to be improving slightly compared with last year's results. However, in some countries, coverage for DTP and polio remains concerningly low, and special efforts will continue to be needed to bring about improvements.**
- **Additional resources will need to be assigned to increase and maintain coverage especially in hard to reach areas and/or populations.**
- **Countries such as Jamaica and Belize will need to ensure that densely populated districts/regions in particular have coverage greater than 90%, since they are the most likely places where outbreaks will occur. The improvements in OPV coverage in Belize and Guyana are noted.**

5. EPI Reviews – Suriname and Barbados:

The purposes of the EPI reviews were:

- to assess the status of planning, organization and execution of services of the immunization program,
- to define the strengths, weaknesses, and the factors that facilitate and hinder the achievement of objectives of the program,
- and to use the data gathered for timely decision making and development of a five-year plan of action aimed at strengthening the programme.

5.1 Suriname

The evaluation team had members from the Ministry of Health, Suriname, PAHO/CAREC, EPI officers from Barbados and Belize, and EPI officers from PAHO/Guyana and PAHO/Jamaica. Field visits were conducted in all ten districts and 45 health facilities were visited. Interviews were conducted with MOH staff, public and private officials and representatives from multilateral, bilateral and non-governmental organizations. Technical and programme management data were reviewed. It was evident that EPI was given high priority at all levels and staff were dedicated to the programme objectives. There was strong political support for vaccine procurement and programme implementation. This was evidenced by support for measles and rubella elimination strategies. Yellow Fever vaccination was to be introduced

into the infant immunization schedule, and hepatitis B vaccination for high-risk groups. There was good community participation and consumer satisfaction. Vaccination coverage had been sustained at around 80% for the last five years and there had been good efforts made to improve and maintain the cold chain. Surveillance goals for AFP and rash/fever surveillance had been met, there had been significant impact on disease incidence and there were highly qualified laboratory staff.

The team found a number of deficiencies in the cold chain and appropriate recommendations were made to address these. Similarly, weaknesses were noted in training and supervision, surveillance and information systems, organization and coordination, and resource availability. For each, recommendations have been made and these incorporated into a five-year plan.

5.2 Barbados:

The evaluation team had members from the Ministry of Health, Barbados, PAHO/CAREC, EPI Officer from Trinidad & Tobago, EPI Officers from PAHO-CPC-Barbados and PAHO/HPV. 363 interviews were performed involving MOH staff, public and private officials, representatives from multilateral, bilateral, non-governmental organizations and tertiary institutions. 118 surveys assessing the EPI were conducted, and there were 117 surveys to assess the adult MMR campaign. As in Suriname, the technical and programme management data were reviewed: it was evident that EPI was given high priority at all levels and staff were dedicated to the programme objectives. There was strong political support for vaccine procurement and programme implementation, with recent increased resource allocation for vaccine procurement. Overall vaccination coverage had been sustained at around 85% over a period of more than nine years. There had been much forethought in EPI planning, especially in the MR programme between 1983 and 1991. Good efforts had been made to maintain the cold chain, surveillance goals for AFP and rash/fever reporting had been met, and significant impacts on disease incidence had been documented. However, there were still further improvements in cold chain management recommended, more training and supervision of EPI staff was needed, intensification of surveillance was advised – especially involving private practitioners, extra resources were needed for the information systems, an ICC was recommended, along with a technical advisory committee. Interviews with the public showed strong user satisfaction with the immunization service.

6. Yellow Fever

In the past five years, there has been a decline in the number of yellow fever cases reported in the Latin American and Caribbean Region. All reported cases have been laboratory diagnosed and have occurred during the rainy season in areas infested by the *Aedes aegypti* mosquito. Some outbreaks occurred in close proximity to large urban centers. The mortality rate of approximately 50%, remained stable in Peru, Bolivia, and Brazil during the last three years. In Brazil isolated cases and outbreaks were detected outside the traditional enzootic area, consequently the area at risk was recently expanded. The 2000 and 2001 outbreaks in the Brazilian States of Goiás and Minas Gerais, occurred in areas intensely vaccinated during the last three years, although not all sectors in these States had high vaccination coverage. Non-immunized farmers, travelers and immigrants are at high risk, as well as in Brazil, occurrence among those involved in eco-tourism, leisure fishermen, and hikers has increased significantly.

Yellow fever requires mandatory notification according to the International Health Regulations. Peru, Bolivia, and Brazil have established some sentinel sites for syndromic surveillance and send PAHO information regarding the investigation of suspected cases and notification of confirmed cases. However, such information is not provided often enough or in a timely fashion. It is not clear whether the low number of reported cases in Colombia and Venezuela is due to low virus activity or low case-finding sensitivity.

Among the Caribbean countries, Guyana, Suriname, French Guiana, and Trinidad and Tobago lie in the yellow fever enzootic zone. Each of these countries includes yellow fever in their child immunization schedule.

Conclusions and Recommendations:

- Due to the widespread distribution and infestation of *Aedes aegypti* in the Region, there is a risk of re-urbanization of yellow fever.
- In areas where yellow fever is enzootic and in areas where the index of household infestation by *Aedes aegypti* > 5%, (i) those areas must reach vaccination coverage of 100% for all residents, (ii) must incorporate yellow fever vaccination in the routine child immunization schedule (iii) 100% of municipalities have at least one immunization post with vaccine available for domestic travelers to enzootic areas.
- The process of strengthening surveillance for yellow fever must be continued. Countries must standardize surveillance of the febrile icteric syndrome in order to increase the sensitivity for yellow fever surveillance. Countries should start using the following surveillance indicators:
 - *80% of sites reporting weekly.
 - *100% of suspected cases investigated during the first 48 hours after notification.
 - *100% of cases with samples sent to a laboratory during the first 72 hours.
 - *100% of laboratory results during the first 72 hours.
 - *100% of confirmed cases with implementation of control measures (immunization and fumigation when necessary).
 - *At least one sentinel site for surveillance of febrile icteric syndrome per Department or Health Region.
- Where International Health Regulations specify Yellow Fever Vaccination for travelers, all those entering such countries should have a valid certificate indicating that the immunization was given within the last ten years. When Yellow Fever vaccination is advised for those traveling from non-endemic to endemic countries, re-immunization is recommended at ten-year intervals. This is particularly important for eco-tourists visiting from non-endemic zones to endemic zones. Within countries, those traveling into endemic zones for work or for other reasons should be re-immunized at ten-year intervals.
- Populations residing in the enzootic areas should be immunized against yellow fever every ten years.

7. Other topics:

7.1 Hib and pentavalent (DTP/Hib/HepB) immunization:

Hib vaccine has now been introduced into the routine programme in 12 countries, either as a 'stand alone' immunization or as a pentavalent combined product (nine countries). In Antigua, pentavalent vaccine was introduced in 2001 after an extensive training initiative for health professionals. New information was prepared for parents. The introduction of the new vaccine has been uneventful with no adverse events being reported. To date, coverage with the pentavalent vaccine seems a little lower than for the corresponding period of the previous year. BVI introduced pentavalent vaccine also in December 2000. Again a training programme for health professionals was implemented ahead of the introduction of the new vaccine. Public information materials were prepared.

Coverage of Hib ranges from 74 – 100%, usually mirroring the DTP coverage. Since some countries have only introduced Hib containing vaccine in 2001, data is still incomplete. Laboratory based surveillance needs to be developed in all countries using or planning to use Hib vaccine so that the impact of the vaccine can be monitored.

7.2 Surveillance for Invasive Bacterial Infection

Invasive bacterial infections due to *H.influenzae* and *Streptococcus pneumoniae* are the most common and serious illnesses in children less than five years in the English-speaking Caribbean and Suriname. The decision to incorporate Hib vaccine into the infant immunisation schedule by the year 2001 prompted the development of an invasive bacterial infection surveillance system in the English-speaking Caribbean.

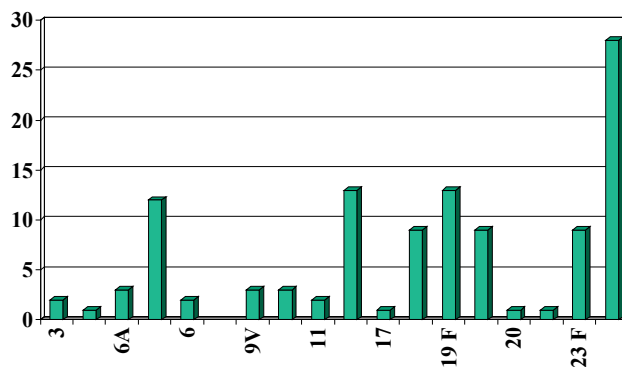
Number of Isolates collected by Age and Type of Organism,
June 1999 to September 2000

Age (yr)	S. pneumococcus	H. influ	N. men	Total
< 1 yr	5 (32)	3 (19)	1 (6)	9 (58)
1-4 yr	5 (7)	6 (8)	5 (7)	16 (22)
5-9 yr	5 (4)	4 (3)	1 (2)	10 (9)
10-12 yr		1	1	2
Total	15 (8)	14 (7)	8 (4)	37 (19)

() incidence per 100,000 population.

The most common serotypes of *S.pneumoniae* identified are shown.

Serotype Distribution *S.pneumoniae* in Selected Countries



Vaccines:

14- valent SP: 1, 2, 3, 4, 6A, 7F, 8, 9N, 12 F, 14, 18C, 19F, 23F, 25

23- valent SP: 1, 2, 3, 4, 5, 6B, 7F, 8, 9N, 9V, 10A, 11A, 12F, 14, 15B, 17F, 18C, 19F, 19A, 20, 22F, 23F, 33F

7- valent Conjugate SP: 4, 6B, 9V, 14, 18C, 19F, 24 F

The rate of penicillin and ceftriaxone resistant *S.pneumoniae* (PRSP) was 9 percent.

7.3 Pneumococcal Vaccines:

Invasive pneumococcal disease causes significant mortality with over 1.2 million deaths worldwide. In the U.S., 500,000 cases of invasive disease including 3,300 cases of meningitis occur annually, resulting in 120,000 hospitalizations. In addition, over 6 million cases of otitis media occur annually in the U.S. Several risk factors identified for invasive pneumococcal disease include age, race, recent use of antibiotics, attendance at daycares and passive exposure to tobacco smoke. Breast feeding has been shown to be protective. In 1977, a polysaccharide pneumococcal vaccine was developed that included 14 serotypes and subsequently a 23-valent vaccine was developed. These vaccines are indicated for children 2 years and older. In a retrospective study conducted in Jamaica, evaluating 80 episodes of invasive pneumococcal infections in 68 children with sickle cell disease, the vaccine was associated with improved outcome. In 2000, a 7-serotype pneumococcal conjugate vaccine was licensed. This vaccine has been shown to be safe and highly immunogenic. The recommendation schedule in the US is a three-dose course, given at 2,4,6 months, and a booster dose at 12-15 months of age. In a randomized control trial, there was a 94-97% reduction in invasive disease; however, for otitis media, the reduction was 6.4%. The cost of a dose of vaccine in the Caribbean is \$47, so to fully immunize the child, the total cost for vaccines would be \$188. Because of the cost of the vaccine, the recommendation for Caribbean countries is to vaccinate children at high risk for invasive pneumococcal disease. The high-risk groups include children with Sickle Cell Disease, congenital heart disease, HIV infection and immunodeficiency.

7.4 Update on Meningococcal C Vaccine programme in UK

A new conjugated meningococcal Group C vaccine became available for introduction in the UK in November 1999. A nationwide campaign was launched at that time with available vaccine supplies being targeted to age groups according to their risks of morbidity or mortality. Thus, children <1 year and young people 15 – 17 years were the first to be immunized with a

rolling programme thereafter that included all children up to 18 years of age. The programme was completed by January 2001 with 15 million children targeted. Since that time, the programme has just involved children having meningococcal C conjugate vaccine at the same time as their routine DTP/Hib/OPV vaccines at 2, 3 and 4 months.

The impact of the new vaccine has been evident as each age group was immunized. Compared with the year before the campaign started, there has been a reduction of around 80 – 90% according to age group and reduction of 90 – 95% for deaths. Routine coverage in infants is around 90% and vaccine efficacy for three doses in infants is 90 – 95% also. The UK has been the first country in the world to use this new vaccine; it has been introduced in Spain and Ireland, some states or provinces in Canada and Australia, and certain other European countries are introducing this vaccine in 2002.

7.5 Reviews of MMR and autism:

Despite the absence of any evidence that supports an association between MMR immunization and autism, there continues to be media support for this hypothesis, and concern amongst some parents. Extensive reviews were published in 2001, principally from the US Institute of Medicine, the American Academy of Pediatrics, and the Irish Parliament. A review of the causes of autism and the research needs is expected from the UK Medical Research Council in late 2001, and the Scottish Parliament will have a review published in early 2002. All reviews, and recently published articles, come to the same conclusions that available evidence does not support a causal association between MMR, autism and bowel disease, and there should be no changes in national policies because of unsubstantiated safety concerns.

7.6 Immunization of HIV positive children and other special groups:

Several presentations were given regarding Immunization of HIV positive children and one country discussed immunization of children with Sickle Cell Disease. All countries conduct antenatal testing and for all HIV+ women, AZT or Nevarapine treatment is offered to all HIV + mothers and their children. Key immunization issues related to HIV infection included the provision of BCG vaccine and whether to use OPV or IPV immunization. Only one country was using IPV only. Those with high risk diseases including Sickle Cell disease should be immunized with pneumococcal vaccine, and preferable with the newer conjugate vaccine. Ideally, the conjugate vaccine should be given to children less than two years of age who should be boosted after two years with the 23-valent polysaccharide vaccine.

Conclusions

In the Caribbean BCG and OPV should be used in asymptomatic HIV positive infants. If a child is symptomatic, the current recommendations are to use only IPV and not BCG.

8. Pertussis:

Pertussis outbreaks have been documented in Guyana and Suriname. In the Guyana outbreak, pertussis was imported from Brazil in October 2000 into a remote community most of whom developed symptoms of pertussis. One infant died. A visitor to that community then exported pertussis back to his own village. In all, there were 144 epidemiologically linked cases.

Once the outbreak had been reported, erythromycin was provided to cases and contacts. Later in 2001, a further cough outbreak occurred in a different remote locality involving a village of 260 people. These were not typical pertussis cases and those who were investigated microbiologically were not confirmed as pertussis.

The Suriname outbreak occurred again in a remote area, close to French Guiana. Thirty-three cases and one death occurred in seven villages. Cases and contacts were treated with erythromycin and vaccine given to unimmunised children.

Each outbreak occurred in remote localities. In the Guyana outbreak, erythromycin was not provided early in the outbreak (not until three months after the first cases) although once the outbreak was detected, efforts were made to immunize unprotected children.

These outbreaks serve as important reminders that remote communities are particularly vulnerable to importations, especially when coverage is low. Pertussis outbreaks are particularly difficult to interrupt because of the non-classical symptoms in adults, and lack of efficacy of antibiotics unless given early, and the lack of effect of immunization in stopping transmission.

9. Computerized Immunization Registries:

A presentation was made regarding computerized immunization registries. Such registries can be used to supplement other strategies for improving immunization coverage. The increasing complexity of immunization schedules makes screening more time consuming and difficult for health staff. There are clear benefits to Providers, Patients, and Public Health Agencies, some of which include reminder-recall, vaccine inventory, record keeping, less excess immunizations given, higher coverage rates. Systems may be implemented in several ways including: Web-based, Wide Area Network, Stand-Alone, or a combination of these.

Those countries thinking of developing computerized immunization registries, need to take into consideration the financial, time, and staff commitments required to successfully implement such a product. In addition, there are a large number of confidentiality and legal issues that will need to be addressed prior to implementation of any registry.

10. Rabies:

Selected Caribbean states are at risk of rabies and both urban and sylvatic types exist. However, data in the Caribbean is neither reliable nor adequately available and the PAHO Regional Information System on Rabies in the Americas has been designed to capture animal and human data from within the Caribbean and the wider Americas.

Grenada, Guyana, Suriname, Trinidad and Tobago are known to be rabies infected – in Trinidad & Tobago and Suriname vampire bat-transmitted rabies affects mainly cattle. Free-tailed and frugivorous bats are affected in Grenada. The small Indian mongoose is the vector in Cuba, Dominican Republic, Grenada, Puerto Rico and the Virgin Islands. Rabies control is implemented through annual mass animal vaccination (dogs, cats and livestock), mongoose reduction, and human pre and post-exposure management. It is most important that countries have clear guidelines for pre and post-exposure prophylaxis.

The challenges that remain include the need for reliable epidemiological and surveillance data, forecasting mechanisms to determine the annual needs for serum immunoglobulins as well

as vaccines, and establishment of clear areas of responsibility within countries and among donor or technical cooperation agencies.

IV. Financial Analysis of 2001/2 National Work Plans

All countries have presented and discussed their 2002 National Work Plans, outlining all the technical components and activities, including the cost per activity and area of action. The total cost for the EPI in the English-speaking Caribbean and Suriname for 2002 is in the order of US\$ 5,174,550; 89% of which will come from national budgets.

The following is the distribution of these funds by source of funding, as requested by the national representatives. It may be noted that funds from the external agencies were not committed as of the meeting; this will require further negotiations at the country level. Countries did a better job estimating their operational costs, nevertheless EPI managers should consider carefully salaries of personnel for the routine delivery of immunization services in their estimates. There is a 60% decrease in recurrent costs associated with the purchase of vaccine and other related supplies. In the 2001 Plans of action more than US\$ 3,5 million dollars worth of vaccine were programmed by the national governments; however, the estimated cost of vaccine and related supplies for 2002 Plans of Action are US\$1.4 million dollars. EPI managers should carefully review this budget item and advise CAREC if the figures provided are correct for the year 2001 by December 31, 2001.

National funds	US\$
PAHO - Regional	US\$
PAHO – Country	US\$
UNICEF	US\$
OTHER	US\$
<hr/>	
TOTAL	US\$

The funds from external agencies are being requested for the following areas of action:

Biological and Logistics	US\$
Cold Chain	US\$
Training	US\$
Social Mobilization	US\$
Operating Costs	US\$
Supervision	US\$
Surveillance	US\$
Research	US\$
Evaluation	US\$
<hr/>	
TOTAL	US\$

V. Caribbean Surveillance Award

An annual Surveillance Award has been established to recognize countries that have performed outstandingly in their surveillance component of the program during the previous year. The Award is based on two main criteria: on time reporting and percentage of sites reporting, and the analysis was based on data received at CAREC.

The Award consists of a certificate and the inscription of the name of the country on a plaque that will be kept by the winning country during the following year and until a new country is selected to receive the award. The Award is announced during the annual Manager's Meeting.

For 2001, the country receiving the Award was Trinidad and Tobago. Awards for second and third place went to Barbados and Anguilla respectively. In addition, the following countries received special recognition awards for their efforts in improving different aspects of their fever and rash surveillance system: Grenada and Guyana for maintaining surveillance indicators, and Jamaica for improvement in MESS.

Participants at the 18th Caribbean EPI Managers' Meeting congratulate these countries for being the recipients of awards and extend their compliments to all its health workers for such outstanding performance.