



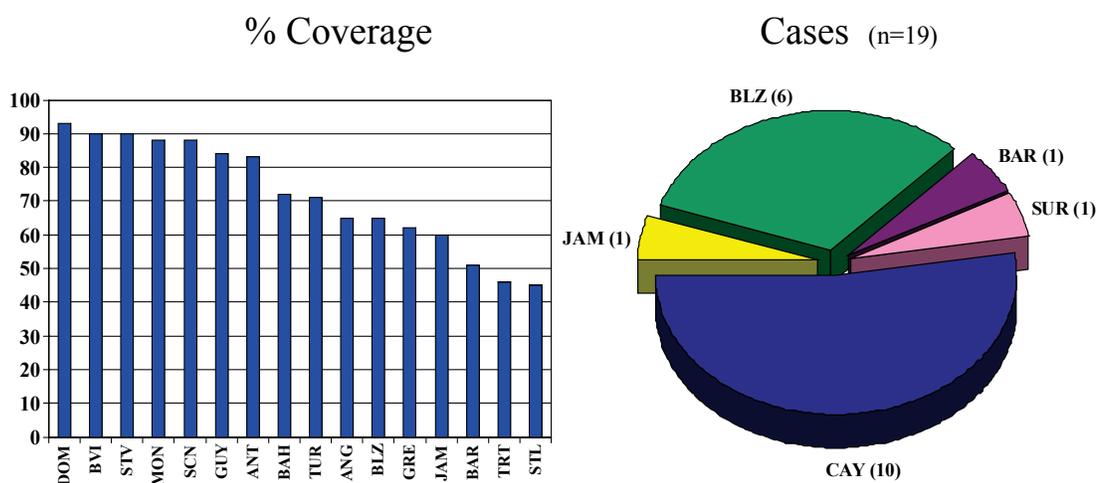
PAN AMERICAN HEALTH ORGANIZATION
Pan American Sanitary Bureau, Regional office of the
WORLD HEALTH ORGANIZATION

DIVISION OF VACCINES AND IMMUNIZATION
(HVP)



SEVENTEENTH CARIBBEAN EPI MANAGERS' MEETING

Rubella Campaign Coverage, 1997-2000 and Confirmed Rubella Cases, 2000 by Country English Caribbean and Suriname



FINAL REPORT
Trois Ilets, Martinique
13-15 November 2000

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I. Introduction

The Seventeenth Meeting of the Caribbean EPI Managers was held in Trois Ilets, Martinique from 13-15 November 2000. Participants at the Meeting were welcomed by Dr. Guy Lajoini, Prefet of the Region of Martinique, Madame Christine Dorléans, of the Agence régionale d'hospitalisation, Dr. George Buisson, representative of the Regional Council, and Madame Olga Delbois, Vice President of the General Council. 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 Mr. Peter Carrasco, of PAHO's Division of Vaccines and Immunization (HVP), served as Secretary. Dr. Bernard Buchot of the American Association of Microbiologists attended the meeting.

The Meeting brought together over 70 health officials from 18 countries of the English-speaking Caribbean and Suriname, St. Maarten, Curacao, Aruba, and the French Departments of Guadeloupe, Martinique, and French Guyana. Bahamas was unable to attend. Also present were representatives from CARICOM, UNICEF, the PAHO's Caribbean Epidemiology Center (CAREC), the Children's Christian Fund (CCF), the United States' Centers for Disease Control and Prevention (CDC), Atlanta, the Department of Health, London, United Kingdom, as well as technical staff from PAHO's Divisions of Vaccines and Immunization (HVP) and from the PAHO Caribbean Program Coordination Office (CPC).

II. Objectives of the Meeting

In addition to EPI program reviews and development of annual work plans for the year 2001 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;
- Reporting on status and improvements of surveillance of vaccine safety;
- Discussing the status of vaccination and surveillance of yellow fever in relevant countries;
- Discussing the status of implementation of the Invasive Bacterial Infections Surveillance (IBIS) system in selected countries;
- Preparing Plans of Action for 2001.

III Conclusions and Recommendations

Key Points:

It was clear that much has been achieved for which the countries should be congratulated; notable was progress towards the CARICOM goal of rubella elimination and CRS prevention, as well as the maintenance of freedom from measles. Eighteen of 19 countries have implemented rubella campaigns targeted at adults of both sexes. Although some countries have reached very high coverage, these adult campaigns have been less successful in some countries, especially the larger ones. Here, further efforts will be needed to ensure that the strategy recommended has been fully implemented. The last confirmed case of rubella occurred in July 2000. Until these countries achieve high vaccination coverage in their adult populations with a rubella containing vaccine, there remain risks of rubella virus circulation. There continue to be no cases of measles, except in Venezuela, Dominican Republic and Haiti, in the face of sensitive surveillance. However, concern was expressed that overall vaccination coverage was falling, especially in the largest countries. Countries that are completing catch-up campaigns and countries using two dose MMR schedules must ensure coverage of at least 95% in appropriate cohorts. Indicators for AFP surveillance were considerably below target levels. If the present rates of AFP detection are correct, then cases that were not truly AFP may have been included in the past. If cases were correctly reported when the AFP rate met indicators in the past, then cases are being missed now. Thus, despite all that had been done, there were no grounds for complacency. The focus of the 2001 work plans was to be the identification of strategies to regain lost ground on coverage, surveillance, and implementation of the rubella elimination strategies.

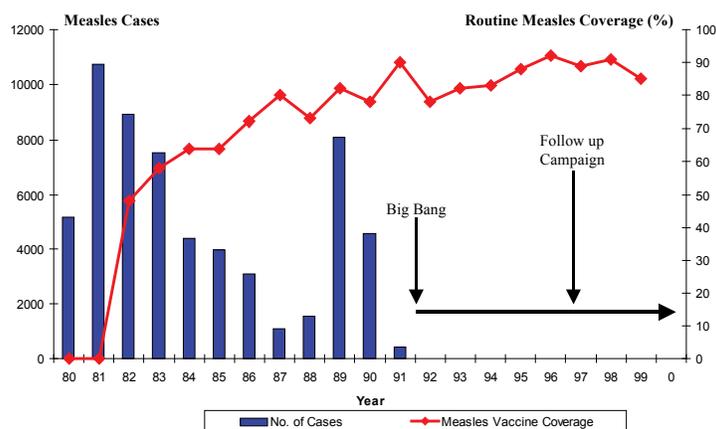
1. Measles Elimination

1.1 Epidemiology in English-speaking Caribbean & Suriname

The last confirmed case of indigenous measles in the English-speaking Caribbean and Suriname occurred in 1991.

Confirmed Measles Cases

English Speaking Caribbean & Suriname 1980-2000*#

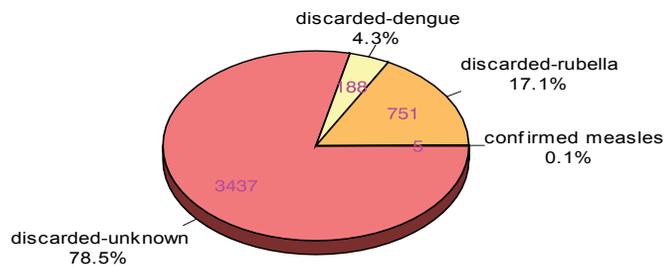


* Cases reported through October 2000
1 Confirmed imported case was detected in 1998

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 2000. Ninety-nine percent (99%) of the sites within countries reported weekly for the years 1997 to 2000 (Week 43*).

Four thousand four hundred and ninety (4,490) cases have been notified between 1991 and 2000 and laboratory testing at CAREC was done for 4,371 cases (97%). Five (5) were laboratory confirmed cases of measles, seven hundred and fifty-one (751) were cases of rubella, one hundred and eighty-eight (188) were cases of dengue and three thousand four hundred and thirty-seven (3,437) cases were neither measles, rubella nor dengue.

**CLASSIFICATION OF SUSPECTED MEASLES CASES
1991-2000***
ENGLISH SPEAKING CARIBBEAN AND SURINAME



Source: MOH Reports to CAREC/HVI/EPI n=4490 * 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 in 1999 and 2000.

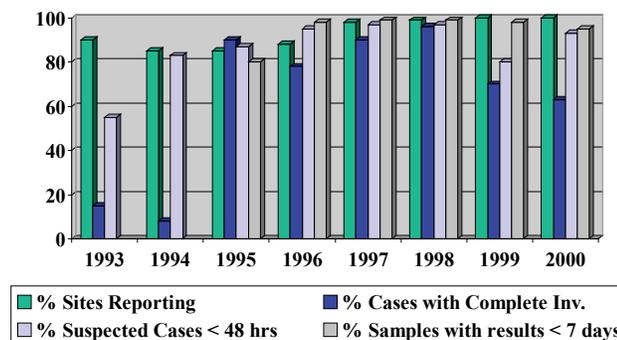
Of the three hundred and eight (308) cases reported up to Week 43 in 2000, 253 cases (82%) were discarded without specific diagnoses (that is, neither measles, rubella nor dengue), 7 (2%) of cases were confirmed as rubella, 30 (8%) were confirmed as dengue and 18 cases are still under investigation. Thirty percent of cases under 5 years were shown to have HHV6 infection.

1.2 Surveillance Indicators

Most of the surveillance indicators between the years 1993-1999 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. Eighty-four percent of cases in 1999

were investigated within 48 hours as compared to 92% in 2000 (Week 43) and 55% in 1993. Also 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, timeliness in transportation of specimens still remains problematic.

Status of Indicators of Measles Surveillance
1993-2000*
English Speaking Caribbean & Suriname



Source: MOH reports to HVP/HVI/CAREC

* Week 43, 2000

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.

In French Guyana, there is no reporting for measles. In order to ensure that French Guyana is not providing a focus for measles that could spread within and outside of the country, good surveillance is essential. The support of PAHO will be especially welcomed in assisting with the development of surveillance.

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 has fallen progressively from 92% in 1996 to 85% in 1999.**
- **Whilst indigenous measles has been eliminated from the Caribbean, importation of measles remains a significant risk until measles control accelerates in many other parts of the world. Those countries that are now conducting their follow-up campaigns must complete them successfully. It is of the utmost importance that high coverage is maintained in all age groups, either through routine services or follow-up campaigns.**

- **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.**
- **Focused mop-up activities should be targeted to specific populations with less than 95% coverage, for example schools, workplaces and specific communities. Efforts must be made to reduce missed opportunities e.g. vaccinating children brought for other reasons.**
- **All Health Workers should be vaccinated against measles: nosocomial transmission has been documented elsewhere and health workers may be the first to be exposed to cases should they occur.**
- **Compliance with surveillance indicators must be improved, and the number of surveillance sites increased, ideally to include more private sector providers.**
- **To reach the immunisation targets in children and older groups, funds must be provided to continue social mobilization.**
- **Dengue IgM negative samples should continue to be tested for measles (and rubella).**
- **Completeness of laboratory forms must be maintained; in some countries there continue to be absent EPI numbers.**

1.4 Latin America

Most countries have already interrupted measles virus transmission as a result of the full implementation of the vaccination strategy recommended by PAHO. Measles is currently affecting only 55 out of 12,000 municipalities. 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. As of 5 November 2000, there had been only 1,306 confirmed measles cases. There were importations detected in Canada (128), United States (66), Peru (1), and Costa Rica (1); in these countries with high coverage there was only very limited spread. In Mexico, there were 28 cases for which no primary source could be identified.

Transmission of measles was re-established in the Dominican Republic in 1998 and it has continued to spread. By September 2000, 187 confirmed measles cases were reported. In March 2000, measles was detected in Haiti and there have been 626 confirmed cases to date. Cases had also been reported from Bolivia (119), Brazil (48) and Argentina (6); there have been none recently. Virologic surveillance since 1997 has suggested that D6 is the only genotype circulating in the Region of the Americas.

Haiti and the Dominican Republic deserve special attention. Despite repeated vaccination efforts, both countries have been unable to stop measles transmission. Problems have included: failure to fully implement the measles eradication strategy, deficient supervision of vaccination campaigns, inadequate and delayed monitoring of vaccination coverage, and severe logistical obstacles. As a result, many municipalities have failed to reach >95% coverage with measles vaccine, thereby leaving pockets of susceptible populations.

Measles surveillance needs to be strengthened in many countries to ensure that measles transmission has been interrupted. Countries must take specific corrective actions whenever indicators are not at adequate levels.

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.

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 system. Virologic 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.

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 shares the Pan American Health Organization goal to eliminate measles as an endemic disease by the end of the year 2000. 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 1997-1999, incidence was below 1 case per million population. Furthermore, only a few outbreaks occurred during 1997-2000, 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. Over the years 1997-1999 imported cases accounted for roughly a third of total cases, 116 imported cases of measles were reported from 77 counties in the United States. The average number of reported cases spread from known imported cases is only one import-linked case per imported case. This equates to an effective reproductive rate (R) of less than 0.5 and suggests high population immunity.

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.

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 60% 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. Much remains still to be done.

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 CAMPAIGN

Country	Target Population (TP) (Males/Females)	Target Age Group (years)	% Population Vaccinated	Vaccine Used
ANG	3,000	22-40	65	MR
ANT	23,673	20-39	83	MMR
BAH	153,180	4-40	72	MMR
BAR	65,000	21-35	51	MMR
BLZ	58,295	05-35	65*	MMR
BVI	3,220	22-40	90	MR
DOM	22,500	12-35	93	MMR
GRE	26,863	20-44	62	MMR

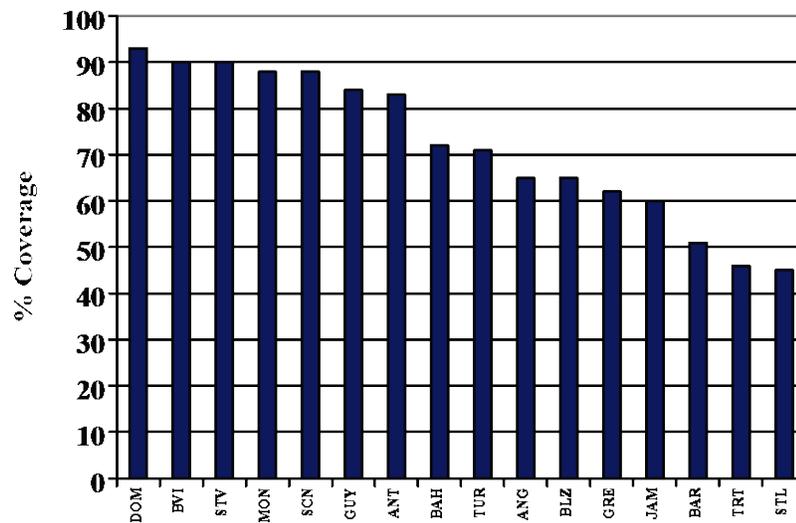
GUY	349,987	06-30	84	MMR
JAM	808,685	13-29	60	MMR
MON	969	20-39	88	MMR
SCN	16,900	15-39	88	MMR
STL	50,000	19-40	45	MR
STV	24,834	22-40	90	MR
TRT	469,948	20-44	46	Rubella
TUR	5,180	20-40	71	MMR

Suriname, St Lucia, Anguilla and the Cayman Islands will be conducting their campaign activities in the last quarter 2000

* Females only, campaign still ongoing.

Nine countries have completed major vaccination activity. Mopping up activities are still occurring in those countries, and others are in the process of completing their activities. The vaccination coverage of countries ranged from 46% to 93%. Fifty nine percent of the target population of approximately 2.2 million have already been vaccinated.

***Rubella campaign coverage, 1997 – 2000
English speaking Caribbean and Suriname.***



In all the countries, more females were vaccinated than males; the female to male ratio was 5 to 3. The population targeted for vaccination was generally very cooperative; whilst most men did accept vaccination, there were some men who did refuse vaccination.

MMR vaccine (Measles - Schwarz Strain; Rubella - Wistar RA-27/3M Strain; Mumps - Urabe Strain) was used to vaccinate 999,592 (83%) persons. Rubella vaccine was used in one country, MR in three, and MMR in ten countries.

2.3 Social Mobilization and Implementation

The initial social mobilization for the vaccination program was very effective in the countries and the response of the public and workplaces was very good. In some countries, this resulted in the inability of the health services to cope with the demands from the workplaces and

communities. Rescheduling of dates for visits and vaccination at workplaces had to be done. The management at workplaces, especially in the hotel sector and the manufacturing industries must be commended for being very cooperative and accommodating to the health teams. They also ensured that their workers had appropriate information to accept vaccination. Supervisors at the industrial sites ensured that workers not immunized on site had available time to go for vaccination.

Vaccines and logistics were always available in most countries. The programme was interrupted or momentum decreased in some countries due to Hurricane Lenny, carnival festivities, and industrial tensions. The social mobilization effort in most countries could not be sustained for the length of the vaccination activities due primarily to the cost of advertisements. There were not enough health personnel to adequately manage the regular health services and simultaneously facilitate the vaccination activities.

2.4 Safe Immunization Practices in Campaigns

Guidelines for safe immunization practices in the campaign included information such as safe handling of syringes and needles, setting up an adverse events registry and its management, and surveillance for needle stick injury. Single use disposable syringes were and are being used during the vaccination activities. Accidental needle stick injuries were reported from only one country. These occurred to persons who were handling boxes of used needles. No recapping of needles is the usual policy of the programs. Used syringes and needles were mainly destroyed by incineration but some were disposed of by burying.

2.5 Adverse Events

Surveillance for immunization safety (vaccine adverse events) was established as part of the campaign in all the countries. Four hundred and seventy four (474) adverse events to MMR vaccine have been reported so far, a rate of 47.4 per 100,000 vaccinees. Of these, the most frequently reported event was parotid swelling at 60% of all adverse events (32 per 100,000 persons vaccinated). Pruritic skin rash and fever were the next two common adverse events. The frequency of parotitis as an adverse event differed most widely in two countries, Jamaica and Bahamas, where the rate per 100,000 vaccinees was 120 in Bahamas and 4.2 in Jamaica.

FREQUENCY DISTRIBUTION OF ADVERSE EVENTS

MASS MMR CAMPAIGN BAHAMAS - 1997

TYPES OF ADVERSE EVENTS	FREQUENCY OF ADVERSE EVENTS	RATE PER/100,000 VACCINEE	AVERAGE TIME BET. VACC. AND EVENT (DAYS)
Parotitis	123	120	14
Rash/Itching	41	40	6
Fever	28	27	13
Headaches	25	24	6
Resp. Symptoms	19	19	10
Fever/Rash	15	15	5
Malaise/Myalgia	15	15	6
G.I. Symptoms	11	11	1
Arthralgia/Arthritis	9	9	4
Orchitis	3	3	17
Aseptic Meningitis	1	0.96	29

Source: Reports to MOH

FREQUENCY DISTRIBUTION OF ADVERSE EVENTS

MASS MMR CAMPAIGN JAMAICA - 1999

TYPES OF ADVERSE EVENTS	FREQUENCY OF ADVERSE EVENTS	RATE PER/100,000 VACCINEES	AVERAGE TIME BET. VACC. AND EVENT (DAYS)
Parotitis	19	4.2	15
Rash/Itching	13	2.9	2
Weakness/drowsnes	9	2	2
Fever/headache/vomitin	6	1.3	2
Allergic type reaction	5	1.1	1
Arthralgia	4	0.9	3
Nausea/dizzines	4	0.9	1
Pain/swelling in the arm	4	0.9	1
Lymphadenopathy	2	0.4	2
Testicular pain	1	0.2	1
Numbness	1	0.2	1

Source: MOH, Jamaica

Bahamas used mostly Leningrad mumps strain vaccine; in Jamaica, Urabe strain mumps vaccine was used.

Age and gender distribution was reviewed for four countries (68% of all reactions reported), with 42% of the cases in males and 58% in females. Because the most frequent age range for vaccination was 20 to 40 years, 66.7 % of the cases were 20 years or older.

There were no reports of anaphylaxis. However, six cases of an “allergic type reaction” (fever, skin rash - wheals, swollen hands, arms, and face) were reported; these signs occurred within 24 to 48 hours post vaccination.

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

Data was received on eighty-six (86) women who were inadvertently vaccinated during the first trimester of pregnancy. They were followed up by the health system. Seventy-one pregnant women have already given birth to babies of normal health status. Information is not yet available on three of the babies. Six (6) pregnant women had termination of pregnancy on the advice of their health practitioner. One stillbirth was reported. However, there are substantial data showing the absence of any risk from rubella vaccination in pregnancy. For women who are vaccinated and then subsequently found to be pregnant, abortions are not recommended. It is not necessary to counsel women to avoid pregnancy following rubella vaccination, because there is no known risk of adverse fetal outcomes.

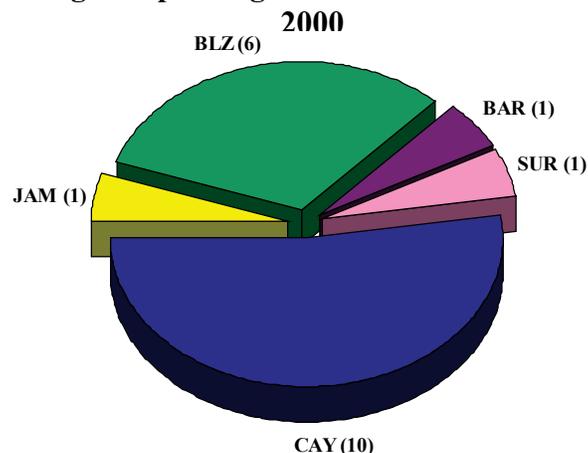
2.7 Rubella Surveillance

Rubella has been endemic in most countries and significant epidemics have been documented in the 1980s and 1990s in six (6) countries, namely, Barbados, Belize, Guyana, Jamaica, Trinidad and Tobago, and Suriname.

The Measles Elimination Surveillance System (MESS) instituted in September 1991 revealed laboratory confirmed rubella cases in twelve countries between the years 1992-1997.

In 2000, there have been only 19 rubella cases confirmed to date. Ten occurred in the Cayman Islands, following an importation from the Philippines. The index case was in a woman >60 years, and most of the contact cases were of the same age – above the upper age limit for the campaigns. There has been no confirmed rubella case in the nine countries (Antigua, Bahamas, British Virgin Islands, Dominica, Guyana, Montserrat, St. Kitts/Nevis, St. Vincent/Grenadines, and Trinidad and Tobago) that have completed their campaigns. Seven (7) further rubella cases have been confirmed: Belize (4), Suriname (1), Barbados (1), and Jamaica (1).

Confirmed Rubella Cases by Country English-speaking Caribbean & Suriname



2.8 Results and Challenges that Remain

To attain adult rubella vaccination coverage of at least 90% is feasible for all countries. Seven countries have already attained vaccination coverage of greater than 80%. These are Dominica (93%), British Virgin Islands (90%), Montserrat (88%), St Kitts/Nevis (88%), Antigua (83%), Guyana (84%), and St Vincent/Grenadines (90%). The following countries have coverage below 80: Bahamas (73%), Turks & Caicos Islands (71%), Jamaica (60%) Anguilla (65%), Belize (65%), Grenada (62%), Barbados (51%), St. Lucia (45%), Trinidad & Tobago (46%). In Belize the coverage refers only to females. St. Lucia and Anguilla are currently conducting their major vaccination activities.

However, 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;
- Implementing policies such as appropriate vaccination of persons being employed in the government services, other industries, (tourism, health), and persons in educational institutions. Emphasis should be placed on measles and rubella vaccination.

The vaccination coverage of all districts/parishes or other geo-political areas should be evaluated. Areas of low coverage should be targeted for extensive social mobilisation and field activities.

Vaccination coverage at work sites, especially in urban, peri-urban areas, and/or areas with dense population should be evaluated and priority given to re-visiting these sites or other large workplaces for vaccination.

The special vaccination effort that will be required by these countries to attain high coverage of greater than 90% should not exceed a period of four (4) weeks. Therefore, a detailed situational analysis, together with planning, should precede the implementation of this vaccination effort.

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. Countries that have not yet reached the program objectives (Jamaica, Barbados, Trinidad & Tobago) must continue their efforts to complete the immunisation of the target groups.**
- **There have been 17 confirmed rubella cases in 2000 to date, and some cases have occurred in individuals who should have been immunised. Nevertheless, 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.**
- **Experience gained so far in vaccination of the adult population, has indicated that the adverse reactions have not been severe. Contrary to some expectations, immunisation of adult males has generally not been difficult.**
- **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.**
- **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. In addition, PAHO should facilitate cross-border co-operation efforts between Guatemala and Belize.**
- **PAHO will be reporting the results of the rubella initiative to CARICOM in February. By the end of December 2000, countries should have sent an analysis of their campaigns to PAHO, including a breakdown of the populations immunised, according to community, school and workplace coverage.**

2.10 Rubella and Yellow Fever Vaccination Campaign in Suriname

The rubella campaign in Suriname started on July 15, 2000 using both the MMR and Yellow Fever vaccines for people ages 1-39 years old. The target group is 250,000. The campaign is anticipated to be completed by February 2001. The campaign is being conducted by the Regional Health Service, which consists of 65 clinics and health centres, and by the Medical Mission, which provides health services in the interior in collaboration with the Bureau of Public Health. An estimated 50,000 people have already been vaccinated in the schools, workplaces and the interior. People in the coastal area and other districts will be vaccinated by the Regional Health Service.

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 267 cases in 1999. The number of reported CRS cases have also declined over the same period by 99% with seven cases reported in 1999.

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 75 percent in 1999. 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 2000 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.

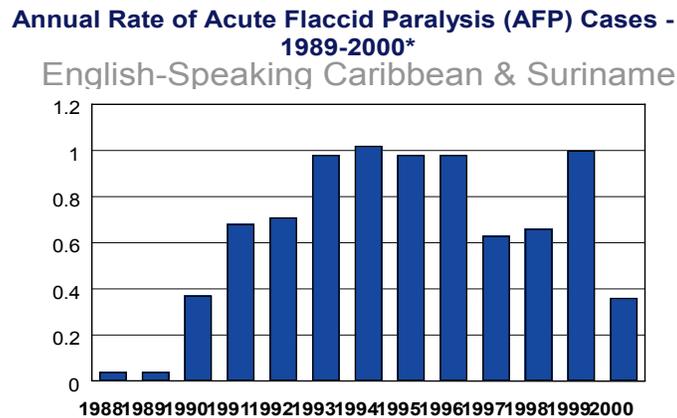
Though rubella and CRS have declined dramatically in the 1990's and year 2000, it will be challenging to reaching our goal of indigenous elimination. Strategies that may help in achieving our goal is to identify and vaccinate high-risk populations. In settings where sufficient numbers of susceptible 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.

3. Polio Eradication

3.1 Polio surveillance:

Active surveillance for acute flaccid paralysis (AFP) continues from four hundred and thirty (430) reporting sites throughout the countries. Between ninety-nine and one hundred percent (99-100%) of the sites have been reporting weekly up to Week 43 in 2000. From 1994 up to Week 43 of 2000, 121 cases of AFP (less than 15 years of age) have been notified. Ten (10) countries have been responsible for reporting the cases for the period 1990 to present.

The annual AFP rate has been less than one (0.6) for the years 1997 and 1998 but had increased in 1999 to 1 case per 100,000 population. However, to date this year, there have been far fewer AFP cases reported than at any time in the last decade, with low compliance with all of the AFP surveillance indicators.



Source: MOH Reports to EPI-CAREC

*Up to Week 43

Although twenty-three (23) cases were reported from the countries in 2000 (to Week 43), only eight (36%) were less than 15 years of age. These 8 cases were reported from 4 countries - Guyana, Jamaica, Suriname, and Trinidad and Tobago. The cases from Trinidad and Tobago met all 4 surveillance criteria, Guyana and Suriname cases met 3 criteria, and Jamaica cases met 2 criteria.

3.2 Validation of AFP Surveillance

The surveillance system for AFP was evaluated in three countries - Jamaica, St. Kitts/Nevis, and Antigua & Barbuda. Hospital records for three years were reviewed in the latter two countries. It was reassuring to note that these countries' surveillance system has detected 95-100 % of the AFP cases.

3.3 Conclusions and Recommendations

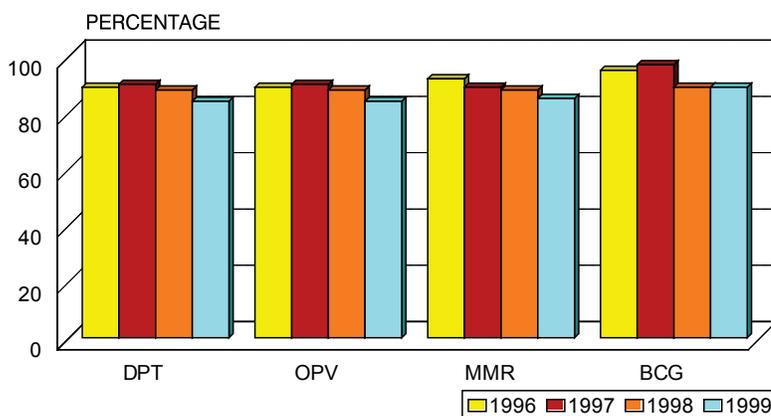
- There has been a concerning decline of surveillance for AFP with substandard AFP rates and inadequate investigation in both sampling rates and timeliness. There will be a review by the Regional Commission in January 2001 and it will be essential for the Caribbean Sub-Region to demonstrate extra efforts to raise surveillance standards. The greatest efforts will need to come from the large countries.
- Countries will need to identify the reasons for the decline in AFP rates, and take steps to improve the compliance with surveillance indicators.
- There are four remaining major polio reservoirs - India, Pakistan, Bangladesh and Nigeria. Remaining polio foci are in African and Eastern Mediterranean countries that are affected by civil unrest, severe economic hardship, or both. Thus, until transmission is interrupted worldwide, importation remains a risk.
- Surveillance that matches the required indicators will be essential until and beyond global eradication. Cessation of immunisation will only be countenanced when there is absolute certainty that there is no silent circulation of poliovirus.

4. Immunization Coverage

The infant vaccinations in the countries continue to be given by the public health sector through their network of clinics. In most of the countries the vaccines used in the private sector are provided by the public sector. In 1999, the coverage for all 19 countries was – DPT 84%, OPV 84%, MMR 85%, and BCG 89%. It is concerning to note that overall coverage of the countries has decreased in all antigens except BCG, when compared to that of 1998.

IMMUNIZATION COVERAGE (%) FOR SELECTED ANTIGENS 1996-1999

English Speaking Caribbean & Suriname



Source: MOH Reports to EPI/CAREC

The coverage figures for countries ranged from 81 to 100%. Nine countries still have rates between 80 and 90% and six have rates between 80 to 85%. The immunization coverage ranged from 81% to 100% for DPT while that for MMR being 82% to 100%. Countries such as Jamaica and Guyana have decreased their coverage rates in 1999. When the vaccination coverage of the more populated countries are reviewed according to their health regions or districts, there

are pockets of low coverage occurring in some districts/regions. In Guyana and Jamaica, 40% of the districts/regions have less than 80% coverage; only 10% have above 90% coverage.

Compared with 1998, polio immunization coverage has fallen and special effort has to be made and strategies implemented to increase coverage. In 1999, there have been more regions/districts with OPV coverage <80% compared with 1998, as shown in the following table.

DISTRIBUTION OF DISTRICT/REGIONS WITH OPV COVERAGE - 1998/1999

COUNTRY	OPV COVERAGE %		NO. OF REGIONS/DISTRICTS/PARISHES	REGIONS / DISTRICTS COVERAGE <90%		REGIONS/DISTRICTS COVERAGE <80%	
	1998	1999		1998	1999	1998	1999
Belize	87	84	6 districts	4 districts	5 districts	1 district	1 district
Guyana	90	83	10 regions	5 regions	9 regions	2 regions	4 regions
Jamaica	85	80	14 parishes	13 parishes	1 parish	3 parishes	7 parishes
Trinidad & Tobago	91	90	9 counties	5 counties	3 counties	0 county	0 county

Source: MOH Reports to HVP/EPI/CAREC

4.1 Conclusions and Recommendations

- **Immunization coverage appears to be falling, especially in the larger countries. In some countries, coverage for DTP and polio is now concerningly low, and special efforts are needed to bring about improvements.**
- **Special efforts have to be made and strategies implemented to increase 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.**

EPI Evaluation and GAVI Application - Guyana

One of the main activities in Guyana in the year 2000 has been formulating an application to the Global Alliance for Vaccines and Immunisations (GAVI) for support. The GAVI application required that Guyana include the findings of a recent EPI evaluation that the Ministry of Health and PAHO arranged. The evaluation took place from April 29–May 13, 2000. The evaluation highlighted achievements in planning, central processing of immunization data and surveillance and concluded that the Government of Guyana has shown commitment to the advancement of the immunization program. It found that the EPI Surveillance system had met the indicators for diseases identified for eradication. However, the evaluation also highlighted the inability of public health staff to function effectively because of inadequacies in transportation, communication, cold chain infrastructure and financial resources. Two critical support areas were identified as having major deficiencies: the general epidemiological surveillance system that supports the surveillance for EPI diseases, and the laboratory services that have minimal capacity to confirm most vaccine-preventable diseases, although skilled technologists are available. The evaluation made the following recommendations to address some of these issues:

- The cold chain infrastructure needs improvement.

- An updated epidemiological surveillance manual is required and periodic evaluation and validation of the surveillance system should be conducted.
- EPI staff in each health facility should be provided with adequate transportation and communication equipment. All equipment must have regular maintenance and repairs.
- Financed annual plans for social mobilization must be developed. These should include plans to increase community participation at the regional level.
- A plan to address biosafety issues must be developed.
- These recommendations have been incorporated into a five-year plan of action beginning in the year 2001. GAVI has approved the application for support.

5. Yellow Fever

Yellow fever is enzootic in northern South America and the Island of Trinidad of Trinidad and Tobago. In the last decade human cases have been reported in Brazil, Peru, Bolivia, Ecuador, Colombia, Venezuela and French Guyana. Although Guyana and Suriname have not reported cases, both countries gather all the ecological conditions to support the yellow fever virus transmission. The widespread *Aedes aegypti* dissemination in the Region and the increasing travel communication between the enzootic and non-enzootic areas increase the risk of its re-urbanization. French Guyana, Guyana, and Trinidad and Tobago already have immunization against yellow fever as part of the infant immunization schedule of the public sector.

Yellow Fever Surveillance in Guyana

Surveillance for yellow fever began in January 1999. Today there are 105 reporting sites that provide weekly reports (both positive and negative) to the Ministry of Health. Since surveillance began, there have been no reported cases of yellow fever in Guyana.

Yellow Fever Surveillance in Suriname

Suriname has not yet introduced yellow fever vaccine in the routine immunization schedule, although yellow fever is endemic in South America. In Suriname, yellow fever vaccination is only administered to people traveling to yellow fever endemic zones where vaccination is required.

Due to the high index of the *aedes aegypti* mosquito in the coastal area of Suriname and because of the yellow fever outbreak in the neighbouring country (Brazil), Suriname has also set other strategies to prevent the re-emergence of yellow fever in urban settings. The strategies include:

- Strengthen the *Aedes aegypti* control measures
- Introduce yellow fever vaccination in the infant immunization schedule.
- Use yellow fever vaccine in the rubella vaccination campaign (ages 1–39 years)

- Establish an active surveillance for suspected cases of yellow fever, using the WHO case definition.

In 1998 the Epidemiologic Unit sent an alert letter to the 4 hospitals in Paramaribo, the capital of Suriname, for the pediatricians and internal medicine specialists to report all suspected cases of yellow fever that are admitted to hospital. The Medical Mission in charge of health care services in the interior is also involved in the yellow fever surveillance. All patients from the interior are however admitted to one of the four hospital mentioned above.

The weekly surveillance of the hospitals is done by the nurses of the Epidemiologic Unit who visit these hospitals weekly. The yellow fever surveillance is not yet fully incorporated in the system and additional efforts must be made to achieve this objective.

Suspected Yellow Fever Cases in Suriname 1998 – 2000 *

	1998	1999	2000
Total number of reporting sites	4	4	4
Total number of suspected yellow fever cases.	10	1	10
Total number of laboratory-confirmed yellow fever cases	0	0	0
Dengue confirmed	2	1	0
Leptospirosis	0	0	2

○ As of 31 October 2000

5.1 Conclusions and Recommendations

To prevent the re-emergence of yellow fever in urban settings additional measures are recommended:

- **Suriname should introduce routine yellow fever vaccination as part of the immunization schedule as soon as possible.**
- **All Caribbean countries in the enzootic belt (Guyana, French Guyana, and Trinidad and Tobago) should establish an active surveillance for suspected cases according to the WHO case definition and implement the surveillance of febrile icteric syndrome in sentinel sites.**
- **The countries in the enzootic area should also plan to stockpile vaccine to control outbreaks.**
- **All the other countries in the Caribbean region, outside of the enzootic area, should implement the febrile icteric syndrome surveillance.**
- **All the countries should strength the *Aedes aegypti* control measures not only to prevent the re-urbanization of yellow fever but also to prevent dengue virus outbreaks.**

6. Injection Safety and Adverse Events

6.1 Injection Safety

WHO and its partners make several recommendations to ensure safe injection practices. First, countries should plan and budget for all aspects of injection safety. Second, compliance with safe injection practices must be monitored. Third, Auto Disable (AD) syringes should be employed to prevent reuse of injection equipment. Fourth, countries should educate their health workers about the dangers of recapping. Finally, adequate safety boxes should be used and must be properly collected and disposed of.

In light of these recommendations, the injection practices employed in the Caribbean during eighteen recent rubella campaigns were reviewed. It was concluded that standardized guidelines for safe immunization practices were available in all relevant countries. Single use disposal syringes were used in all campaigns rather than AD syringes. There was no recapping of needles. Used injection equipment was placed in commercial biohazard containers, carton boxes, and large plastic bottles. These containers were mainly disposed of by incineration but burning and burying also took place. Accidental needle stick injuries were reported from only one country. These injuries occurred in people who were handling boxes of used needles.

6.2 Thimerosal

Since there has been no evidence of harm from exceeding some recommended cut-off levels, WHO will continue to recommend thimerosal-containing vaccines until adequate supplies of thimerosal-free vaccines become available.

6.3 Adverse Events

Despite the enormous contribution that vaccination has made to world health, and continues to make, the safety of vaccines is increasingly being called into question. Scares about vaccine safety have the potential to cause rejection of vaccination by health professionals and the public, and these scares have the potential to travel rapidly from one part of the world to another. Often vaccine scares start from some scientific basis that may then be misinterpreted in the wider public domain. With the availability of the internet, anti-vaccine groups are becoming increasingly better able to share their views, and make these available to the public, who may not have the skills to separate fact from fiction.

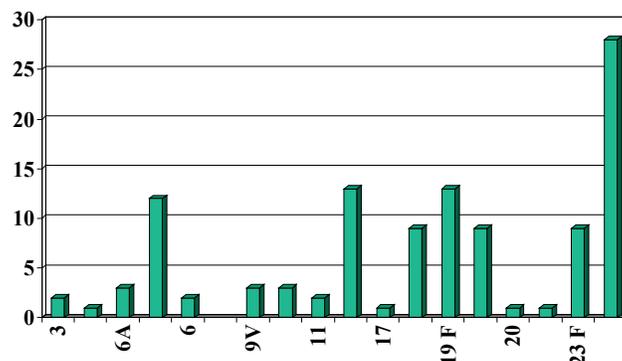
Serious adverse events occur rarely, but must be fully investigated to identify, if possible, if the event is coincidental with an alternative cause, or caused by the vaccination. Parents need to feel secure that any significant risks from vaccines are clearly explained, and that they are informed about actions to take in the case of minor but relatively common reactions such as fever.

7. Other topics:

7.1 Surveillance for Invasive Bacterial Infection and Pneumococcal Vaccines

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. The surveillance of meningitis, septicemia and pneumonia due to *H.influenzae* and *S.pneumoniae* and other bacterial agents was established in five countries (Barbados, Guyana, Jamaica, St.Vincent, Trinidad & Tobago). 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 resistant *S.pneumoniae* (PRSP) was 8 percent and Serotypes 14, 9V and 23F were found to be resistant to penicillin, cefclor and Co-trimoxazole. Penicillinase producing *H.influnzae* type b is low in Trinidad and St.Vincent.

7.2 Introduction of Meningococcal C Vaccine into UK

A programme of accelerated development of Group C meningococcal conjugate vaccine was implemented in the UK between 1994 – 1999 because of increasing numbers of cases of Group C meningococcal disease. As a result, vaccine became available for introduction 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 immunised. Over the last 12 months there has been a rolling program to immunise children either in school or through primary care. The target population was 15 million children and the program is on course for completion within 12 months. The goal is to prevent the 1,500 cases and 150 deaths that have occurred annually.

The impact of the new vaccine has been evident as each age group is immunised. In the first groups immunised, cases of Group C meningococcal infection have all but disappeared. Reductions of 50 – 70% are being seen in the recently immunised groups. The full impact is expected to be seen over the forthcoming winter meningococcal ‘season’.

Although minor adverse events such as pyrexia or injection site reaction have been fairly common, serious adverse events have been extremely rare. Convulsions have occurred at a rate of 1/100,000; anaphylaxis at a rate of 1/400,000 doses.

The UK has been the first country in the world to use this new vaccine; it has just been introduced in Spain and Ireland, and other European countries may well follow shortly.

IV. Financial Analysis of 2000 National Work Plans

All countries have presented and discussed their 2001 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 2001 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 2000 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 2001 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, 2000.

National funds	US\$ 4,592,300
PAHO - Regional	US\$ 318,500
PAHO – Country	US\$ 114,600
UNICEF	US\$ 144,150
OTHER	US\$ 5,000
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TOTAL	US\$ 5,174,550

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

Biological and Logistics	US\$	30,500
Cold Chain	US\$	129,650
Training	US\$	96,350
Social Mobilization	US\$	127,500
Operating Costs	US\$	75,300
Supervision	US\$	12,000
Surveillance	US\$	55,200
Research	US\$	37,250
Evaluation	US\$	18,500
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TOTAL	US\$	582,250

V. PAHO Immunization Award and Caribbean Surveillance Award

Nurse Josephine Ramsamugh from Jamaica and Nurse Maria Isobel Nogueira do Nascimento from Brazil were awarded the Fourth PAHO Annual Immunization Award, which recognizes outstanding contributions to a national immunization program and to a country's efforts in controlling and/or eliminating vaccine preventable diseases. The award includes a certificate and a monetary gift of \$US 3,000 which was shared between the two awardees.

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 2000, the country receiving the Award was St Kitts and Nevis. Participants at the 17th Caribbean EPI Managers' Meeting congratulate this country for being the recipient of the award and extend their compliments to all its health workers for such outstanding performance.

VI. Future Meeting Plans

The venue for the next meeting will be decided shortly.