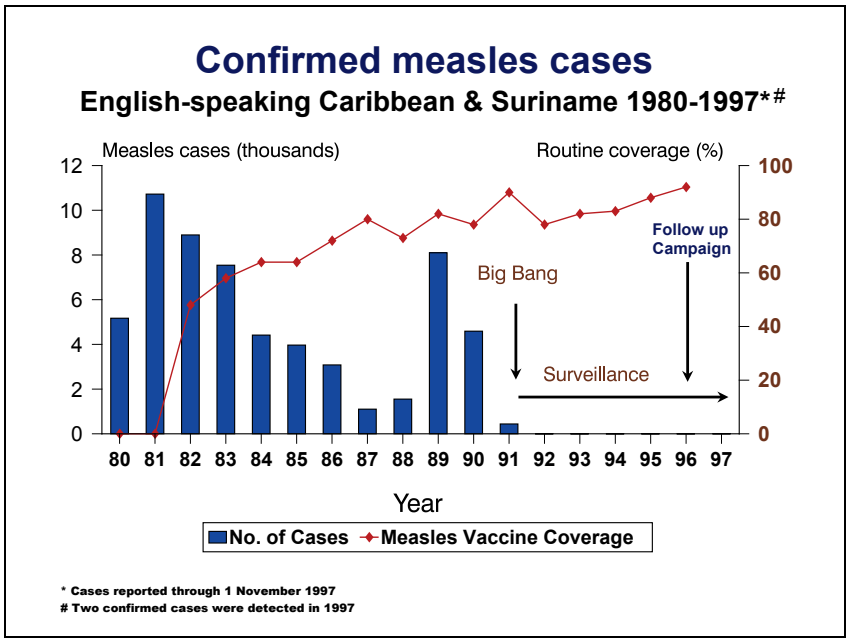
Special Program for Vaccines and Inmunization

Fourteenth Meeting of Caribbean EPI Managers

Final Report



Castries, Saint Lucia
18 to 20 November 1997

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I. Introduction

The Fourteenth Meeting of the Caribbean EPI Managers was held in Castries, Saint Lucia, from 18-20 November 1997. The Meeting was officially opened by Her Excellency the Governor General of Saint Lucia, Dr. Pearlette Louisy, and The Honorable Minister of Health, Ms. Sarah Flood delivered a keynote address. Dr. Peter Figueroa, Chief Medical Officer at the Ministry of Health in Jamaica chaired the plenary sessions, and Dr. Ciro A. de Quadros, Director of PAHO's Special Program for Vaccines and Immunization, served as Secretary.

The Meeting brought together over 70 health officials from 20 countries of the English-speaking Caribbean, Aruba, Suriname, Haiti, and the French Departments of Guadeloupe and Martinique. Also present were representatives from the Laboratory Center for Disease Control (LCDC), Ottawa, Canada, the United States' Centers for Disease Control and Prevention (CDC), PAHO's Caribbean Epidemiology Center (CAREC), UNICEF, the Children's Christian Fund (CCF), as well as technical staff from PAHO's Special Program for Vaccines and Immunization (SVI).

The English-speaking Caribbean still holds the longest record in the Western Hemisphere of six years without indigenous measles transmission, although two recent importations into the Bahamas and Trinidad and Tobago stressed the danger of importations and the need for adherence to the measles elimination strategies, particularly the maintenance of high levels of immunization coverage and the periodic implementation of *follow-up* campaigns, as recommended by PAHO. The large outbreak in Guadeloupe, due to a direct importation from France in late 1996, illustrates the vulnerability of countries to measles transmission if the strategies are not fully implemented. Presentations on the maintenance of the Region's polio-free status emphasized the importance of continuing the countries' high degree of political commitment to surveillance and vaccination activities to keep the region polio free. The Bahamas implemented a major campaign with MMR targeting all individuals 4-40 years old to interrupt rubella transmission. The lessons from this initiative will be extremely useful for all other countries that are planning to eliminate rubella and congenital rubella syndrome (CRS). Although progress is being made towards the global eradication of poliomyelitis, importations still represent the biggest threat to the Caribbean's polio-free status. The efforts of the countries towards the introduction of new vaccines into national immunizations programs was updated.

II. Objectives of the Meeting

The main objectives of the Meeting included the review of the EPI program in the participating countries to identify obstacles which might impede achieving program targets. As performed every year, country reports and the 1997 National Work Plans were reviewed and analyzed and the 1998 National Work Plans were elaborated including its cost components. The epidemiological situation and control/eradication activities related to poliomyelitis, measles, rubella and that of congenital rubella syndrome (CRS) in the Caribbean were thoroughly reviewed by meeting participants.

III. Conclusions and Recommendations

1. Rubella and CRS Control/Elimination Strategies in the Caribbean

Significant rubella virus activity has been recorded in many CAREC-member countries since 1982, and cases of congenital rubella have been documented as sequelae to these outbreaks. Subsequent to the "BIG BANG" *catch-up* measles vaccination campaign, which was conducted in the sub-region during 1991, very low rubella incidence rates—fewer than 2.0 cases per 100,000 population—were recorded between 1992 and 1995. Beginning in 1995 and continuing through 1997, sizable outbreaks of rubella have occurred in Jamaica, Barbados, Trinidad and Tobago, Guyana, and Belize. Rubella incidence rates of 10.3 cases per 100,000 population were recorded in 1996.

A prototype surveillance system for CRS, including case definitions, case investigation forms and reporting algorithms was developed and disseminated in 1996 to all CAREC-member countries. Not unexpectedly, cases of CRS have occurred in Jamaica, Barbados, Trinidad and Tobago, Belize, Guyana and Suriname, for a total of 20 cases to date in 1997. The epidemiological details related to these cases have been captured through the newly introduced surveillance system. Subsequent to the cost-benefit and cost-effectiveness analyses undertaken at the 1996 meeting of the Caribbean EPI Managers, preliminary studies were conducted in Guyana, Trinidad and Tobago, Barbados and Jamaica to document the cost burden of CRS in the populations. The direct costs associated with CRS, which include acute care for physician and hospital services; long-term care; institutional care; and special educational care are much higher than the cost of prevention. For example, in Guyana, it has been estimated that the lifetime cost for prevalent and incident cases of CRS between 1992 and 1997 is US$ 1.9 million. Barbados estimated that the cost of treating CRS cases in the next 15 years would be US$ 5.5 million, compared with US$ 1.1 million for an elimination initiative. Such costs are eminently avoidable if the populations were protected against rubella.

In response to the emerging rubella situation and within the context of already planned *follow-up* measles vaccination campaigns, and following recommendations of the 13th Meeting of the Caribbean EPI Managers held in 1996, the Bahamas initiated a MMR vaccination campaign for its population aged 4 to 40 years aimed at the interruption of rubella transmission. Although this campaign is still ongoing, coverage rates to date are in the order of 78%, representing a first in the world effort. Trinidad and Tobago and Barbados are initiating plans to vaccinate both males and females between the ages of 15 and 45 years and 20-39 years.

Technical officers responsible for the EPI within Ministries of Health together with national epidemiologists should collate and analyze relevant epidemiological data related to rubella and CRS morbidity and mortality, present levels of vaccination coverage stratified by age; direct and indirect costs related to CRS, and the real as well as the opportunity costs of adopting different vaccination strategies. Such findings should be presented to the political directorate so that they can be appropriately informed and sensitized to the situation, in order to adopt a national policy.

Participants at the Meeting concluded:

- ***It is imperative that Ministries of Health discuss and arrive at a consensus position with regard to the objective of rubella elimination.***

- ***There is overwhelming evidence, both from estimated figures as well as from data collected over the last year, particularly in Guyana, Barbados and at a regional review presented by CAREC, that the burden of rubella and its cost, both in financial terms and human suffering, warrants efforts towards its elimination.***

- ***The last Technical Advisory Group Meeting that met in Guatemala in September, 1997 outlined the strategies for the elimination and control of rubella and CRS. These include a one-time mass vaccination of all individuals—male and female—within a certain age range that will vary from country to country, but will have to cover necessarily up to 35 year olds. The lower level age group will be defined by previous vaccination activities that included rubella-containing vaccine.***

- ***During 1998, senior MOH officials and political leaders in all countries should define a national policy regarding rubella and CRS elimination, aiming at a Pan-Caribbean initiative in this regard. The conference of Ministers of Health, in April 1998, their Caucus in September 1998 and the current revision of the Caribbean Cooperation in Health (CCH) represent excellent opportunities for achieving consensus on this issue.***

Rubella and CRS elimination in the United States

The United States has established a goal to eliminate indigenous rubella and CRS by the year 2000. The incidence of rubella and CRS has decreased by more than 99% since the introduction and application of rubella vaccine. While the incidence of rubella has decreased for all age groups, the decrease has been more pronounced in preschool and school-aged children. As a result, the proportion of cases reported among adults has increased, although the actual incidence among adults continues to decrease.

Rubella surveillance is critical for the elimination effort. Currently, demographic information, vaccination status, transmission setting, case classification, laboratory results and pregnancy status are requested for each case. The proportion of cases for which all information is available (as stated above) and the proportion of cases that are laboratory confirmed will serve as surveillance indicators. The indicators have shown progressive improvement, with 80% of requested information reported and more than 90% of cases laboratory confirmed in 1996.

Recently, molecular epidemiology has begun to be used as a tool for rubella surveillance, as it has been for measles surveillance. The goal is to use molecular epidemiology to identify the different rubella virus strains associated with each outbreak or isolated case and attempt to determine the usual geographic spread of each strain. Determining the spread of each strain will

help in improving strategies for rubella elimination in the United States and other interested countries.

2. Measles Elimination

2.1 English-speaking Caribbean & Suriname

The "Big-Bang" measles *catch-up* campaign was conducted in 1991 throughout the English-speaking Caribbean and Suriname. Vaccine coverage in this campaign was over 92%. 1991 has been the year of highest MMR/measles vaccine coverage, and except for a decrease in 1992 (See Graph in cover page), there has been a steady increase.

Follow-up campaigns, a critical component of PAHO's measles elimination strategy have been conducted in most countries since 1995. The purpose of these campaigns is to reduce the number of susceptible pre-school-age children. In total, 15 countries have completed their *follow-up* campaign. The age range of the target population was 1 to 5 years in nine (9) countries. The target population ranged from age 1-6 years in Trinidad and Tobago to 4-40 years in the Bahamas, where a campaign was conducted for both measles and rubella elimination (Table 1).

Table 1
Status of *Follow-Up* Campaign 1995-1997
English-speaking Caribbean and Suriname

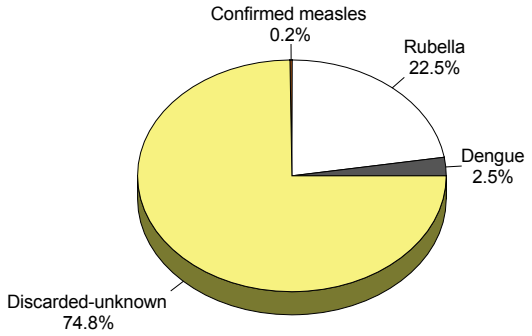
Country	Year of campaign	Target pop.	Age range target pop.	% Population vaccinated	Vaccine used
Anguilla	1996	1,097	1-15 yrs	100	MMR
Antigua	1996	6,208	1-2 yrs	92	Measles
Bahamas	1997	100,000	4-40 yrs	78	MMR
Barbados	1996	19,054	1-5 yrs		Measles
Bermuda	**No Campaign**				
Belize	1995	25,258	1-5 yrs	85	Measles
British Virgin Islands	1996	292	4-15 yrs	90	MR/MMR
Cayman Islands	**No Campaign**				
Dominica	1996		2-10 yrs	≅ 100	MMR
Grenada	1996	10,620	1-5 yrs	81	MMR
Guyana	1996	84,839	1-5 yrs	90	MMR
Jamaica	1995-6	497,009	1-10 yrs	95	MMR
Montserrat	1996	735	4-10 yrs	100	MMR
St. Kitts & Nevis	1996	3,060	1-5 yrs	100	MMR
St. Lucia	1996	9,000	2-5 yrs	85	Measles
St. Vincent	1995	10,860	1-4 yrs	84	MMR
Suriname	**Campaign Slated for December, 1997**				
Trinidad & Tobago	1997	120,000	1-6 yrs	96	MMR
Turks & Caicos	1996	1,410	1-5 yrs	95	MMR

In Suriname, a *follow-up* campaign has started in the interior, and one is scheduled for the coastal area in December 1997.

Measles Surveillance

Careful measles surveillance is another critical component of PAHO's measles elimination strategy. Measles surveillance was implemented in the countries since 1991. The reporting sites in countries increased gradually from 468 in 1991 to over 600 in 1997. The system has been functioning well and the classification of over 3,000 suspected cases reported since then is shown in Figure 1.

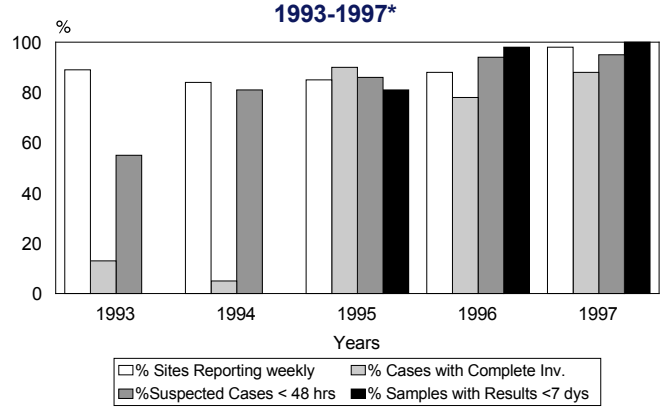
Figure 1. Classification of Suspected Measles Cases in the English-speaking Caribbean, 1991-1997



Source: MOH Reports to CAREC/SVI/EPI
*As of 25 October 1997 (Epidemiological week 43)

In order to monitor and assess the surveillance system, a set of indicators were designed. During 1993-1997, there has been steady improvement in the performance of these indicators (Figure 2).

Figure 2. Status of Indicators of Measles Surveillance in the English-speaking Caribbean and Suriname 1993-1997*



Source: MOH Reports to EPI/CAREC
* Data as of 25 October 1997 (Epidemiological week 43)

Presently, over 90% of sites report weekly, and 89% of all suspected cases have complete investigation with an adequate blood specimen collected. The "first contact" strategy has been implemented by most countries. Many health providers have been sensitized and trained, resulting in an improvement of case investigation activities, and therefore in the surveillance

indicators. Ninety-five percent of cases in 1997 have been investigated within 48 hours, compared to 79% in 1996, and 65% of investigation forms have been complete in 1997.

Three thousand one hundred and twenty-five (3,125) suspected measles cases were reported during 1991 to 1997 (week 43). Of these, 2,202 cases were discarded with four laboratory confirmed cases of measles (two in 1991 and two in 1997), all due to importations, and 57 classified as clinically confirmed. The clinically confirmed cases represent a failure of the surveillance system.

In 1996, four hundred and seventy-one (471) suspected measles cases were notified. As of week 43 (25 October) in 1997, 862 suspected cases have already been notified. The suspected cases range from 2 months to 50 years of age, with 61% between the age of 2 months to 14 years, and 38% between 15 and 50 years.

The first confirmed case was reported from the Bahamas. The patient, a young adult, had rash onset in March, but a blood specimen was not received at CAREC until a month after being collected. Direct source of transmission was not identified, however, it is strongly suspected that the patient contracted measles from a tourist. A search was carried out in the country to identify any additional measles cases. This involved a review of over 80,000 diagnoses from health facilities in the country.

The second case was reported from Trinidad and Tobago, which occurred in a young-adult Italian sailor who had rash onset in April. The patient had acquired measles in Italy. The patient received care in a private sector clinic, and it was this provider who made the preliminary diagnosis and notification. A specimen was collected and tested positive for measles IgM at CAREC. No spread cases were identified despite a careful investigation.

Laboratory Support

The measles laboratory at CAREC provides laboratory confirmation for suspected measles cases. The laboratory is able to test for IgM antibodies for measles, rubella and dengue. Through week 44 of 1997, a total of 874 specimens were submitted for laboratory confirmation. Of these, 2 (0.2%) were positive for measles, 276 (31.5%) were positive for rubella and 11 (1.3%) were positive for dengue. All specimens were tested and reported back to countries within seven days of receipt.

Measles Outbreak in Guadeloupe

Between October 1996 and May 1997, a large measles outbreak occurred in the French department of Guadeloupe. This island had not implemented PAHO's measles elimination strategy. A total of 128 confirmed measles cases were reported. The majority of cases occurred in unvaccinated persons 12 to 18 years of age. The source of the outbreak was thought to be an unvaccinated 10 year-old child visiting from Europe. Moreover, genetic analysis of measles virus obtained from the outbreak revealed that the virus circulating in Guadeloupe is very similar to virus circulating in Europe. In response to the outbreak, the Ministry of Health conducted a mass vaccination campaign in affected schools, reaching 3,000 students. Efforts were made to provide measles vaccine to all students without documentation of having received two doses of the vaccine.

Measles Outbreak in Brazil

Information from the current measles outbreak in Brazil was presented and discussed. As of November 15, over 17,000 measles cases were confirmed. The largest number of cases have been reported from Sao Paulo. Most cases are occurring among unvaccinated young adults and infants under 12 months of age. Measles virus has spread from Sao Paulo to other states in Brazil and several other countries in the Region.

A detailed investigation of measles in young adults in Rio de Janeiro county found that the majority of cases were occurring in members of certain risk-groups including: young adults, particularly men, who recently migrated to urban areas from rural areas to work on construction projects, students, health care workers, persons working in the tourist industry, and military recruits.

The outbreak appears to be waning, following the implementation of an aggressive response, which included a *follow-up* campaign targeting all children 1-4 years old, and *mop-up* vaccination in all schools aimed at unvaccinated students and high-risk adult groups.

It must therefore be emphasized once again that:

- ***MR or MMR are the vaccines of choice for measles and rubella elimination.***

- ***Countries that are instituting a two-dose schedule should be aware that even with such a regimen, susceptibles will accumulate because coverage with two doses will never achieve 100% and some children will remain without any dose. Follow-up campaigns are necessary to maintain interruption of transmission.***

- ***To maintain the English-speaking Caribbean and Suriname free of measles, high vaccination coverage must be maintained. Efforts need to be made to ensure that at least 95% of each birth cohort is vaccinated with measles-containing vaccine at 12 months of age.***

- ***The possibility of combining measles and rubella surveillance should be explored.***

- ***To prevent the accumulation of susceptible preschool-aged children from reaching dangerous levels, follow-up campaigns should be conducted among children 1-4 years every four years. Countries should plan on conducting follow-up campaigns in the year 2000.***

- ***The Brazil experience suggests that certain young adults may be at risk for measles. Efforts are needed to assure measles vaccination in young adults in high-risk groups, which include students, migrant workers, health care workers and the military.***

- ***As long as measles circulates anywhere in the world, the English-speaking Caribbean will be at risk for measles importations. Measles surveillance systems will need to detect these importations in a timely manner and respond accordingly when they occur.***

2.2 Measles Elimination in Canada and the United States

a. Canada

Despite 97% measles vaccine coverage of 2 year olds, the number of measles cases reported increased significantly in 1995, due mostly to an outbreak in Ontario. It was estimated that over 20,000 cases might have occurred in 1996 if no action was taken, and without a *catch-up* program, giving a second dose of measles containing vaccine would not eliminate measles outbreaks for another 10-15 years. In August 1995, the National Advisory Committee on Immunization strongly recommended the routine administration of a second MMR dose, as well as the implementation of school *catch-up* campaigns to administer a first or second doses of measles vaccine to all children and adolescents. Subsequently, all provinces/territories have now introduced a routine second MMR/MR vaccination at either 18 months or 4-6 years. Also six provinces/territories representing 80% of the population completed a mass *catch-up* program for all school-aged children. A more limited *catch-up* program was also started in two other provinces. Finally, a *catch-up* program involving all children in grades 1 through 9 was started in April 1997 in Alberta. Altogether, over 4 million children have been immunized through these campaigns. In the three provinces (representing 7% of the population) that have not yet implemented *catch-up* campaigns, there still remain school-aged susceptible populations in sufficient numbers to fuel outbreaks through importations.

For 1997, as of mid November, 577 cases of measles were reported. As a result of importation, an outbreak started to develop in the adult population in British Columbia which had completed its school *catch-up* campaign in 1996. This outbreak spread to school aged children in Alberta before this province had started its catch up campaign.

As a result of importations, other sporadic cases or small clusters have occurred in Canada mostly among adults. Since 1996, a total of 17 importations were documented, mostly

from Europe and Asia. Since the end of July, 1997—for the last 15 weeks—no measles case has been detected and transmission seems to have been interrupted.

b. ***United States***

As of November 7 of 1997, 124 confirmed cases of measles have been reported in the United States, an annual incidence of less than one case per two million population. This is the lowest ever in the United States, and is well below half the previous record low incidence. Almost half of these cases are documented importations. Although there are roughly as many importations in 1997 as in 1996, the overall number of cases has markedly decreased. In 1996, importations resulted in several moderate outbreaks especially among school children who had not received a second dose of measles vaccine. In 1997, spread from importations has been limited, and the largest outbreak has eight cases. In 1995 and 1996 there were no importations from Latin America or the Caribbean. There were four confirmed imported cases from Brazil in July of 1997, and one imported case from Brazil in August 1997 is under investigation.

The reasons for decreased incidence are the increased on-time delivery of the first dose of measles vaccine, increased coverage with two doses of vaccine among school children and decreased importations from the Americas. Following the resurgence of measles in 1989-1991 in the United States, which resulted in over 55,000 cases and 120 deaths, immunization programs began to focus intensively on on-time delivery of the first dose of measles vaccine. Several major changes were implemented including a vaccine funding program which allowed federal funds to pay for vaccines administered in the private sector, linking of vaccination status with social welfare programs, measuring coverage at the clinic level and promoting systems to identify and contact defaulters. This has resulted in the highest-ever measles vaccine coverage with a first dose by two years of age which has remained at 90% since 1994.

Measles surveillance is a critical component of the United States Measles Elimination Strategy. To continue improving the surveillance system, key surveillance indicators are monitored for each state immunization program.

In summary, the United States is committed to continue working towards the elimination of measles by focusing on the timely delivery of the first dose of measles vaccine, accelerating second dose coverage of school children, vaccinating adults in high-risk settings, continually improving surveillance systems and working with other countries to promote global measles eradication.

3. Polio Eradication

The expected rate of AFP cases was deemed at 1 case per 100,000 population of children less than 15 years of age. To maintain this rate, the countries of the region need to report 26 cases annually. A total of 26 cases were reported in 1995, 25 in 1996, and 12 by week 43 in 1997.

Systematic reporting has been sent in from all the countries. In 1996, all countries except Dominica reported weekly. The 26 cases were notified from 7 countries. Antigua and Bahamas met all four criteria and Guyana and Trinidad and Tobago met three.

In 1997 as of week 43, 12 cases were reported from six countries. All countries reported. Two countries met all four criteria—Belize and Guyana, while the other four countries met two criteria. The indicator that seems most problematic is investigation within 48 hours. This indicator is crucial and needs to be met.

The age range of cases was five months to 43 years in 1996, while in 1997, it was nine months to 32 years. Most cases (88%) in 1996 and 1997 were less than 15 years of age. This means that about three cases are older than 15 years.

- ***It is commendable that all cases with stool specimens are sent for laboratory testing. However, the other three critical surveillance indicators are not consistently being met from countries notifying cases. At week 43 -1996, 16 cases were reported compared to the present 12 cases.***

- ***Periodic evaluation of surveillance for AFP is necessary at all major health facilities to see if cases are being missed.***

4. Immunization Coverage

One of the main priorities of the EPI has been to assist countries in establishing immunization programs that can deliver the primary immunization series to over 95% of the birth cohort, and hence reduce the health burden of vaccine preventable diseases. Countries initially focused on vaccination for six diseases, however in the past few years additional vaccines are being added to the same schedule. The vaccines presently being used in the countries are stated in Table 2.

Average coverage rates for all 19 countries were: DPT 89%, OPV 89%, MMR 92%, and BCG 95%. Over 90% of infant vaccinations in the countries are given by the public health sector through their network of clinics. Vaccination figures from the private sector are routinely collected from private practitioners in most countries (Figure 3).

However, not all countries have been able to attain very high coverage, and some still show rates between 80-85%. Immunization coverage ranged from 80% to 100% for DPT, and 78% to 100% for MMR. Eight of the 19 countries accomplished coverage rates of 100% with DPT, TOPV, and nine for MMR vaccines. Although the less populated countries (populations

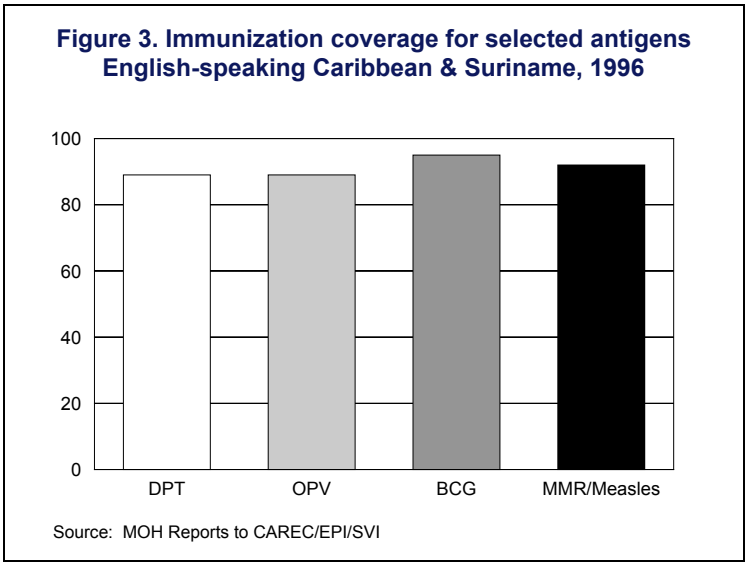
less than 100,000) tend to achieve full birth cohort coverage, the larger ones have also been achieving increased coverage.

- ***The review of coverage data for the countries for the period 1994-1996, indicates that special activities have to be implemented especially in Suriname, Grenada, Guyana, and Belize to increase coverage above 90%.***

Table 2.
Vaccines Included in Immunization Schedules by Country - 1997

Vaccine	Public Sector	Private Sector	Remarks
DPT/OPV/MMR	Yes	Yes	All countries
BCG	* Yes (in 9 countries)	Yes	*ANG/BLZ/CAY/DOM/GUY/JAM/ MON STV/STL/TUR
HEP B	**Yes (in 5 countries)	Yes	**ANG/BER/SCN/STV/ CAY
Hib	+ Yes (in 2 countries)	#Yes (in 5 countries)	+ BER/CAY #BAH/BAR/CAY CAY/JAM/TRT
DPT + Hib	No	Yes (in 2 countries)	BAR/BAH

Sources: MOH Reports to CAREC



5. Introduction of New Vaccines

Many effective vaccines such as hepatitis B, *Haemophilus influenzae* type b, varicella, hepatitis A and acellular pertussis are available for introduction into the EPI schedule. Two vaccines currently being discussed for introduction in the English-speaking Caribbean—hepatitis B and *Haemophilus influenzae* type b (Hib).

These two vaccines are being administered by the private sector in many countries of the English-speaking Caribbean. In 1996, 42,208 20 mcg adult-dose vials of hepatitis B were bought

by the private sector. Pediatric doses accounted for about 6,000, which could fully immunize only 1.4% of the birth cohort of the CMCs (Table 3).

Whereas four countries are using Hepatitis B vaccine in the public sector (1.7% of sub-region total birth cohort) only two are using Hib vaccine. The uptake in the private sectors is 28,128 doses of Hib vaccine which will only vaccinate 5-9% of the region's infants (Table 4). The birth cohort for 1996 was 140,311.

In spite of the progress achieved in high coverage rates in most countries, there are pockets of low coverage occurring in certain geographic areas, e.g., remote rural areas and dense urban areas.

Table 3
Hepatitis B Vaccine Procurement (No. of Doses) 1996
English-speaking Caribbean

Country	Ministry of Health	Private Sector	Total
Antigua	-	60	60
Barbados	271	1,129	1,400
Bahamas	-	3,204	3,204
Bermuda	-	1,335	1,335
Cayman Islands	-	801	801
Grenada	-	810	810
Jamaica	20,000	1,360	21,360
St. Kitts & Nevis	3, 000	-	3,000
St. Lucia	-	75	75
St. Vincent	-	1,200	1,200
Trinidad & Tobago	4,000	8,263	12,263
TOTAL	**27,271**	**18,207**	**45,508**

These high-risk areas will need special activities to increase coverage. Countries with borders such as Belize and Suriname face special problems in defining the target population of their border areas, and in reducing their attrition rates. Border meetings have been instituted in one of the countries and this is proving effective.

Sustainability of vaccine supply is still an issue for some countries. However, this should not deter discussions about the potential introduction of new vaccines. Various creative methods will have to be employed to finance immunization programs.

Table 4
Hib Vaccine Procurement (No. of doses) 1996
English-speaking Caribbean (Private Sector)

Country	Hib	DPT + Hib	Total
Aruba	216	-	216
Bermuda	2,255	-	2,255
Curacao	976	530	1,506
Trinidad & Tobago	6,548	-	6,548
Barbados	1,020	1,730	2,750
Jamaica	8,674	-	8,674
Bahamas	5,326	1,900	7,226
Cayman Islands	2,930	-	2,930
TOTAL	**27,945**	**4,160**	**32,105**

National program managers now face a wide array of new vaccines, either already available or shortly to be available. These vaccines include new multivalent combination products such as DTP-Hib, combinations which include hepatitis B vaccine, and DTP vaccines where the pertussis component is based on acellular pertussis vaccine. In a number of countries, hepatitis A vaccines are licensed, as is varicella vaccine. In the near future, there are likely to be safe and effective vaccines available to prevent meningococcal C infections in young children, as well as conjugate pneumococcal vaccines. In the longer term, it can be expected that vaccines against rotavirus infection, herpes viruses, respiratory syncitial virus, and even vaccines to prevent malignant and chronic diseases will become available.

- ***The introduction of new vaccines into a national immunization program should not simply reflect their availability, but should follow a careful investigation of their appropriateness to that particular epidemiology and whenever possible, evidence that their introduction into routine use would be a cost-effective use of resources.***

- ***Once that case has been made and resources identified, an introduction/implementation plan needs to be developed.***

- ***Topics that will need to be considered include: vaccine studies, disease surveillance, supply arrangements, immunization scheduling, coverage measurements, communications strategies, professional training materials and surveillance for impact assessment.***

- ***The implementation of new vaccines is a complex, multi-faceted task that requires the coordination of policy makers and program managers, public health experts, advertising and marketing experts, researchers, manufacturers, regulators, and parents and health professionals.***

- ***The extensive experience in the Caribbean with implementation of immunization campaigns will be invaluable in the introduction of new vaccines into routine use, therefore, all countries in the region should strive to introduce these vaccines in the public sector within the next three years.***

6. Vaccine Logistics and Procurement

During 1997, over 90% of the countries were able to benefit from a steady supply of vaccines, syringes and needles. Countries should consider the purchase of new vaccines, e.g. hepatitis B and Hib through the PAHO/EPI Revolving Fund to take advantage of economies of scale, which may result in lower prices for these relatively expensive vaccines.

7. Booster Dose Policy

A panel discussion revealed a great variety of schedules for booster doses in children, adolescents and adults. These differences also exist with respect to immunization of health workers. Most countries give at least 3 booster doses between 1 year and end of school. Also, several booster doses are administered to pregnant females. In some countries, the schedule is further complicated by the fact that some private practitioners do not follow public-sector recommendations. Critical is the inconsistent use of Td instead of TT in adults from one country to the other. With a very marginal added cost, countries should consider using the Td vaccine to improve herd immunity against diphtheria. Of concern is also the refusal of some health workers to be immunized against hepatitis B despite a national policy of providing such vaccine in some countries. It was noted that booster doses may provide an additional opportunity to review primary immunization.

The discussion also highlighted that in many instances too many unnecessary booster doses were administered, particularly for TT. Booster schedules have experienced little review over the last few years.

- ***It is extremely important that a thorough review of schedules and real need for boosters be conducted quickly in the Caribbean. The removal of unneeded boosters would result in savings that could be reallocated to the introduction of new antigens or strengthening of existing routine programs. Finally, when booster doses are needed, it is important to consider schedules that make it easier for parents to comply.***

8. Surveillance of Adverse Events

Most adverse events reported after vaccine administration are coincidental due to the large number of vaccine doses administered. The number of adverse events detected may be particularly high in the context of campaigns when large number of doses are administered over a short period of time. This does not necessary indicate a rate of adverse events in excess of what would be expected.

The thorough surveillance of vaccine-associated adverse events conducted during the recent mass MMR campaign in the Bahamas has provided reassuring results about the safety of the vaccine when used in older age groups. These results may help other countries gain better acceptance of similar campaigns aimed at the elimination of CRS.

Draft guidelines developed by PAHO for implementing a surveillance system for adverse events following immunizations were presented. The purpose of these guidelines is to help countries implement a reporting system for adverse events following immunization, and give general principles that even countries with currently existing monitoring programs might find useful to improve their system. It is hoped that prompt feedback from countries on the content of the document will help to finalize it within a year. International collaboration and exchange of information is extremely important. Proper training of health care providers and communication with the public and the media are important elements of a surveillance system.

- ***It is extremely encouraging to see that many Caribbean countries have already developed such surveillance systems (some of which were presented at the Meeting) and that there is a general interest for their establishment. Many of the currently established systems, however, could benefit from improvements and fine tuning.***

9. Safe Syringe Practices

A panel of three countries presented procedures for safe syringe practices for single-use disposable syringes. The purpose of the panel was to remind countries to routinely review the safe use and disposal of syringes within their health services and to make sure that EPI syringes are not reused. The panel presentations confirmed that in all three countries, procedures are in place for the safe collection and disposal of single-use syringes. The moderator also confirmed that in these countries, health workers responsible for immunization do not recap needles before depositing them in a container, which is then collected and then taken for incineration or burial. The panel moderator emphasized that the PAHO/WHO recommendations for safe disposal of used syringes calls for incineration—burial is no longer acceptable. At the conclusion of the panel discussions, the moderator called on all countries to routinely review safe syringe practices with health services during 1998 to assure that safe procedures are in place and documented during supervisory visits.

IV. CAREC Surveillance Priorities

The countries of the English-speaking Caribbean have widely varying levels of development and per capita GDP, as well as small population sizes. Most depend on a few key people for surveillance. As a tourist attraction, the region has an intense and ever-increasing movement of people: in 1996, there were over 14 million stay-over arrivals and 7 million cruise ship arrivals, with implications for the introduction and transmission of diseases, including measles, polio and rubella.

In the face of this complex situation, CAREC has redefined its communicable disease priorities, which will continue to include measles, polio, rubella/CRS, diphtheria, pertussis, tetanus and tuberculosis. In addition, CAREC will work with the EPI to develop a surveillance system for other diseases that are becoming target of national immunization programs, such as *Haemophilus influenzae* type b and hepatitis B.

CAREC will also continue fostering partnerships with the private sector to strengthen their participation and use of disease data, including the establishment of a private physician sentinel surveillance system. Surveillance units will be established in hospitals to improve the detection of problems that result in hospitalization, (e.g. haemorrhagic fevers and meningitis) and a laboratory surveillance network is being established to monitor enteric organisms. Establishment of an Internet-based network to link countries to each other and to CAREC will be developed, while molecular epidemiology work started at the Center during 1997.

V. Financial Analysis of 1998 National Work Plans

All countries have presented and discussed their 1998 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 1997 is on the order of US$ 8,983,780, 92% 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.

National funds	US$ 8,228,580
PAHO	US$ 397,050
UNICEF	US$ 175,950
OTHER	US$ 182,200
TOTAL	**US$ 8,983,780**

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

Biological and Logistics	US$ 2,009,150
Cold Chain	US$ 357,540
Training	US$ 279,000
Social Mobilization	US$ 256,600
Operating Costs	US$ 5,629,800
Supervision	US$ 100,650
Surveillance	US$ 170,640
Research	US$ 107,900
Evaluation	US$ 72,500
TOTAL	**US$ 8,983,780**

Of note during 1997 was the strong bilateral support of the **Government of Japan**, which provided approximately US$1 million dollars to nine countries, including MMR vaccine, vehicles, cold chain equipment, autodestruct syringes and safety boxes. It is expected that this collaboration will continue during the coming years.

Statement by UNICEF

UNICEF/CAO based in Barbados is commencing a new 5-year program cycle in 1998. As part of the program development process, situation analyses were prepared and this was followed by extensive consultations with governments and NGO counterparts to determine priority areas for action. Governments generally felt that they had made excellent progress in the area of health as evidenced by low IMR, high immunization rates, low levels of under nutrition and, with the exception of Suriname and to a lesser extent Trinidad and Tobago, it was generally felt that health issues were under control in relation to UNICEF support.

New priority areas identified for UNICEF assistance included adolescent concerns (physical and mental health, sexuality, education), pre-primary and basic education, establishment and monitoring of social indicators, child abuse prevention and management, violence in homes and parenting. In those communities where health indicators fell below the national average and there was an identified need for UNICEF support this would be continued.

This revised mandate and approach of necessity has implications for the continued UNICEF support in the traditional form.

The UNICEF offices in Guyana, Belize and Jamaica will continue to provide support to immunization programs based on the agreements reached with the governments in these countries.

VI. Future Meeting Plans

The next meeting will be held in November, 1998.