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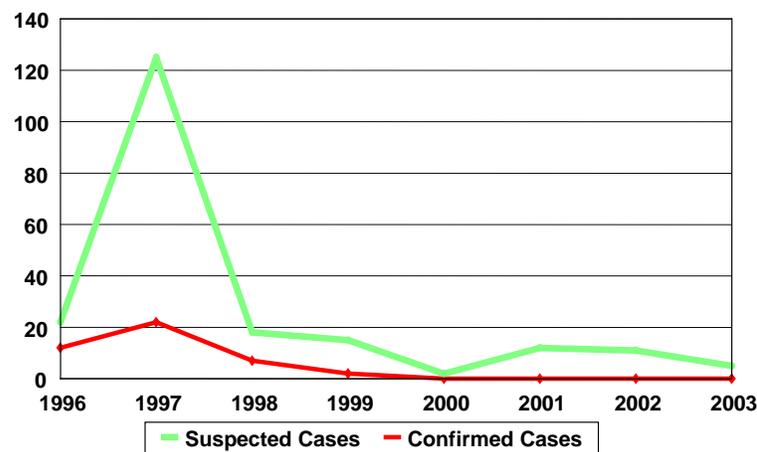


FAMILY AND COMMUNITY HEALTH AREA
IMMUNIZATION UNIT

**TWENTIETH CARIBBEAN
EPI MANAGERS' MEETING**

FINAL REPORT

**Reported Suspected and Confirmed Cases of CRS
English-speaking Caribbean and Suriname, 1996-2003***



Source: MOH Reports to EPI-CAREC

* Week 43

**Curaçao, Netherlands Antilles
17-20 November 2003**

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Executive Summary

Control of vaccine-preventable diseases remains exemplary in the countries of the sub-Region, and all should be congratulated on their efforts. No measles cases were confirmed up to Week 43 2003 - despite careful surveillance, and there were no confirmed rubella cases for 2002 and 2003 to date. The last case of CRS occurred in 1999 in Suriname.

More than 90% of the countries in the sub-Region are providing a two-dose MMR strategy. Those countries must measure coverage of each dose, and calculate the number of children who have received two doses, one dose or no doses of vaccine. Coverage for the second dose of MMR must be 95% or greater to prevent the accumulation of susceptibles. If there are significant numbers of susceptible children who have not been protected by the second dose, then a further catch-up campaign must be implemented. For both measles and rubella, importation still remains the greatest risk for re-emergence.

Integrated measles and rubella surveillance must be strengthened, especially for women who acquire rubella in pregnancy. The proportion of clinical specimens that were received within 5 days is still very low and must be improved. If the first specimen is taken within the first three days of the appearance of rash in a pregnant woman or in cases from clusters of fever/rash, and is negative by IgM testing, second specimens should be obtained.

Each specimen sent for measles and rubella IgM testing must have an epidemiologic case identification number. Evaluation reveals that some countries have no funding or mechanism in place for in-country transportation of specimens. Every effort is being made to encourage countries to ship specimens to the CAREC laboratory as quickly as possible and have in-country mechanisms for specimen transportation. Molecular typing of rubella virus isolates will facilitate better understanding of the source of rubella outbreaks, CRS cases and of rubella strain variations. To date, few virologic specimens are submitted for molecular typing. Countries embarking on rubella elimination must document strains to determine whether cases are indigenous or imported.

The immunization program in the Caribbean faces major challenges in achieving and sustaining high vaccination coverage in a climate of reform and economic difficulties in the health sector. In larger countries, overall immunization coverage needs to be increased. In addition, pockets of low immunization coverage exist in some countries.

Seventeen of 21 countries have completed and submitted laboratory inventories, and only one (CAREC) holds material potentially infectious for wild polioviruses. AFP rates have remained constant and there has been improvement in indicators such as timeliness and completeness of specimen collection. These improvements must be maintained.

The invasive bacterial infection surveillance system implemented in five countries -Barbados, Guyana, Jamaica, St. Vincent and Trinidad and Tobago- requires additional technical support to be sustainable.

Governments must ensure that invoices for vaccine supplies are paid in a timely way, within the 60 days allowed. Failure to pay for supplies jeopardizes maintenance of routine immunization and may lead to widespread rather than localized shortages.

Effective management and supervision of the implementation of EPI country Plans of Action remains the backbone of the Caribbean program.

The EPI managers participating in this meeting should be congratulated for their tireless efforts to reach all children and protect them from vaccine-preventable diseases. Governments must continue to keep immunization high on their lists of priorities.

I. Introduction

The 20th Meeting of the Caribbean EPI Managers was held in Curaçao, Netherlands Antilles, from 17-20 November 2003. Dr. Peter Figueroa, Principal 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. Dr. Jon Andrus, Chief of PAHO's Immunization Unit (IM), served as Secretary. Dr. Andrus asked that the meeting acknowledge the enormous contribution, since the beginning of the annual Caribbean meetings, of Mr. Peter Carrasco, who after 24 years of exemplary service to the countries of the Americas will be leaving PAHO for WHO, Geneva. Mr. Carrasco was unable to attend the meeting due to illness.

Participants were welcomed by Mrs. Jacinta Constanca, Commissioner of Health of Curaçao, who informed them that this was the 50th anniversary of Public Health in Curaçao, and the 20th anniversary of the EPI Caribbean meetings. The high priority that the Government of Curaçao gives to public health, and immunization in particular, was noted. The Minister of Health and Social Development for the Netherlands Antilles, Dr. Joan Theodora Brewster, also welcomed participants and acknowledged the contribution of immunization programs and individuals who contributed to them. Notable were the efforts of pioneers such as Albert Sabin who gave oral polio vaccine to the children of the world. Dr. Brewster highlighted the importance of safe and effective vaccine programs, and the importance of assuring equity for all children, that surpasses the barriers of poverty. Dr. Paulo Froes, on behalf of UNICEF, reminded participants of the long partnership between WHO, UNICEF and other health agencies, and reaffirmed UNICEF's commitment to the prevention of infectious diseases through immunization. Dr. Mary Feliz (Curaçao) gave the Vote of Thanks.

The Meeting brought together over 60 health officials from 25 countries of the English-speaking Caribbean, Suriname, the Netherlands Antilles, Aruba, the French Departments of Guadeloupe, Martinique and Guyana, the United States and U.S. Virgin Islands, Canada, and the United Kingdom. Netherlands Antilles representatives came from Curaçao, Bonaire, Saba, St. Eustatius and St. Maarten. PAHO/IM staff and consultants as well as staff from the Caribbean Epidemiology Center (CAREC) and the Caribbean Program Coordination Office (CPC) also attended.

II. Objectives of the Meeting

In addition to EPI program reviews and development of annual work plans for the year 2004 by each country, the main objectives of the Meeting included:

- Analyzing the status of measles eradication with emphasis on follow-up campaign activities and integrated fever/rash surveillance system;
- Evaluating the status of rubella/CRS elimination in the countries;
- Sustaining the eradication of wild poliovirus in each country;
- Analyzing the status of the EPI in each country;
- Discussing status/improvement of surveillance of adverse reactions, Hepatitis B,

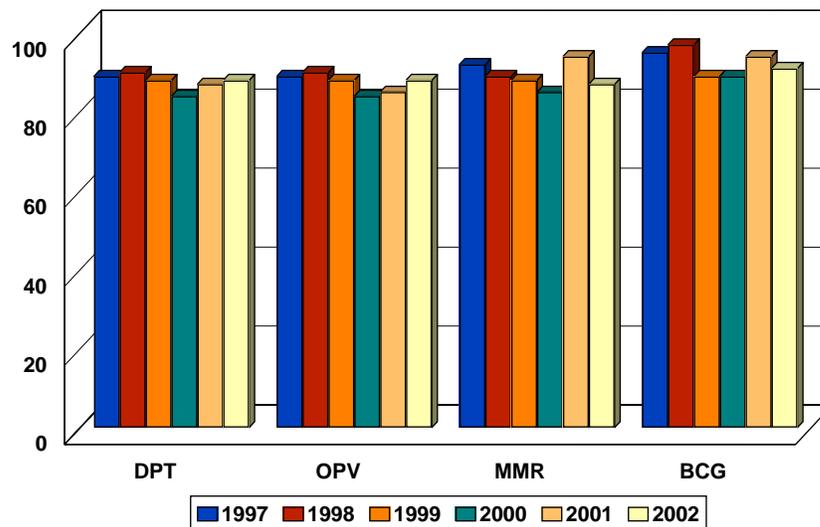
- and *Haemophilus influenzae* type b infections;
- Discussing the status of implementation of the Invasive Bacterial Infections Surveillance (IBIS) system in selected countries.
- Setting the targets and objectives of each country with respect to immunization coverage and reduction of morbidity and mortality from the EPI diseases for the year 2004;
- Updating information on selective scientific topics of common interest including immunization, delivery service and surveillance of measles/rubella and other EPI diseases; and
- Developing country action plans with specific budgets for each activity in order to achieve the targets and objectives set for 2004.

III. Immunization and Vaccine-preventable Diseases

1. Immunization Coverage

Childhood vaccinations are delivered by the public sector through networks of clinics in the countries. The private sector continues to play an important role in EPI and is becoming more involved in some countries. In countries implementing health reform, some private health sector clinics are being offered service agreements that include vaccination. The public sector is being encouraged to share vaccine supplies with the private sector. Auditing and monitoring the cold chain status in the private sector is the responsibility of the EPI of the Ministry of Health (MOH). Immunization data of the private sector is usually sent to the MOH in most countries. In 2002, coverage for all 19 countries was DPT 88%, OPV 88%, MMR 87%, and BCG 91% (Figure 1).

Figure 1. Immunization Coverage (%) for Selected Antigens, 1997-2002



Source: MOH Reports to FCH/IM/CAREC

Overall, coverage has remained relatively constant in most countries. Twelve countries have sustained greater than 95% vaccination coverage for all antigens. The countries with the larger populations and/or land masses, such as Suriname and Jamaica, need to increase vaccination coverage. For example, vaccination coverage in Suriname is 73% for all administered antigens. In addition, further analysis of the coverage situation is required to more accurately define the reasons why some children are not vaccinated. In selected countries, there are pockets of low coverage occurring in some districts/regions (Table 1). In Jamaica, four parishes have MMR coverage less than 80%, and 8 parishes have MMR coverage between 80 and 90% (2002). In Guyana, there are some areas that had coverage of less than 80% for most antigens in 2002.

Table 1. Distribution of MMR coverage (12-23 months) in Districts of selected countries, 2002

COUNTRY	TARGET POP. 2002	MMR COVERAGE (%)		# ADMIN. AREAS	ADMIN. AREAS MMR % COVERAGE 2002				POP. NOT REC'D MMR 2002
		2001	2002		50	50-79	80-94	95	
GUYANA	18286	92	93	10 Regions	0	0	7	3	1344
JAMAICA	51947	85	86	14 Parishes	0	4	8	2	7010
TRINIDAD/TOBAGO	18096	91	87	9 Counties	0	0	8	1	2357

Source: MOH Reports to EPI/CAREC

Haemophilus influenzae type b (Hib) vaccine is part of the public sector infant immunization schedules in all countries except Dominica and Suriname. Fourteen countries are using pentavalent vaccine (DPT/Hib/Hep B) and it is envisaged that two more countries will introduce the vaccine in 2004/2005. Jamaica and St. Vincent and the Grenadines introduced pentavalent vaccine in 2003.

The surveillance system for reporting Hib disease is in place. In 1998, 50 cases of Hib meningitis were reported from 2 countries, while in 1999, 80 cases were reported from five countries. In 2002, 50 cases were reported from Jamaica where Hib vaccination was introduced in 2003. All countries are already reporting cases of Hepatitis B infection as part of their national weekly surveillance reports to CAREC.

The invasive bacterial infection surveillance system (IBIS) implemented in five countries –Barbados, Guyana, Jamaica, St. Vincent, and Trinidad and Tobago- requires additional technical support to be sustainable. Between 1999 and 2002, 114 pneumococcal isolates were referred to CAREC for serotyping. The most frequent serotypes identified were 14, 6B, and 6A. Of the confirmed cases, 63% with known ages were less than 2 years old.

2. Measles and Rubella Eradication

Sustaining the **measles elimination** strategy is a key priority of the governments of the Caribbean Region. Although the economic climate has presented many

challenges to countries, committed health practitioners have continued to ensure that conditions for elimination are maintained. Importation continues to pose the greatest risk for re-emergence of measles.

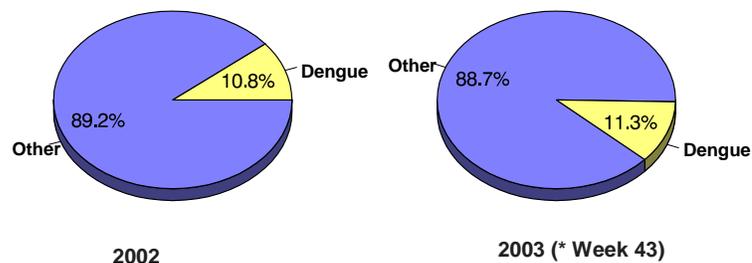
Many of the countries are now providing two-dose MMR programs, and are monitoring the accumulation of susceptible children. Measurement of coverage by two doses, one dose and no doses is essential to accurately forecast the size of the pool of susceptibles. Where two-dose programs have not protected sufficient children, additional catch-up campaigns are needed, as established in the PAHO measles strategy. If inadequate coverage of two-dose programs occurs, and catch-up campaigns are still needed, then this is not a cost-effective use of resources.

As of 2003 (Week 43), there were over 660 fever/rash reporting sites, 90% of which are public health facilities.

All private hospitals within the countries are reporting. Most private health facilities also report cases of fever/rash to the MOH, even though they are not designated reporting sites. In 2003 (Week 43), 99% of sites reported weekly, 99% of cases were investigated within 48 hours, 95% had an adequate sample taken and 100% received laboratory results in less than 4 days.

A total of 287 fever/rash cases were reported in 2003 (Week 43): 32 cases were laboratory confirmed as dengue; and 259 cases (87%) were determined not to be measles, rubella or dengue (Figure 2). Therefore, so far in 2003 there have been no laboratory-confirmed cases of rubella or measles.

Figure 2. Classification of Suspected Measles/Rubella Cases English-speaking Caribbean & Suriname , 2002-2003*



Source: MOH Reports to EPI/FCH/IM/CAREC

Of the 5,676 cases of fever/rash that were reported between 1991 and 2003 (Week 43), laboratory testing was conducted in 97%. Five cases of measles, 771 cases of rubella, and 292 cases of dengue were laboratory confirmed and 4,516 cases tested negative for measles, rubella and dengue; some of these cases were identified as human herpes virus 6 (HHV-6), scarlet fever, and allergic reactions. Five cases are still pending investigation. The five laboratory-confirmed measles cases (reported from Barbados, Bahamas, Trinidad and Tobago, and Jamaica respectively) were all imported

from North America and Europe. The last laboratory-confirmed case of measles occurred in Jamaica in 1998. It was an imported case from Europe.

An attempt has been made to monitor the accumulation of susceptibles in Jamaica. The number of susceptibles was calculated after the measles vaccination campaign from April 2000 to December 2001, which targeted children ages one to six years of age.

Of the target population of 350,161, 328,099 (93.7%) were vaccinated with two doses of MMR. In 2002, a second dose of MMR vaccine was added to the immunization schedule, but monitoring of the coverage of this dose did not begin until June 2003. It is estimated that 48,274 susceptibles have accumulated in Jamaica based on:

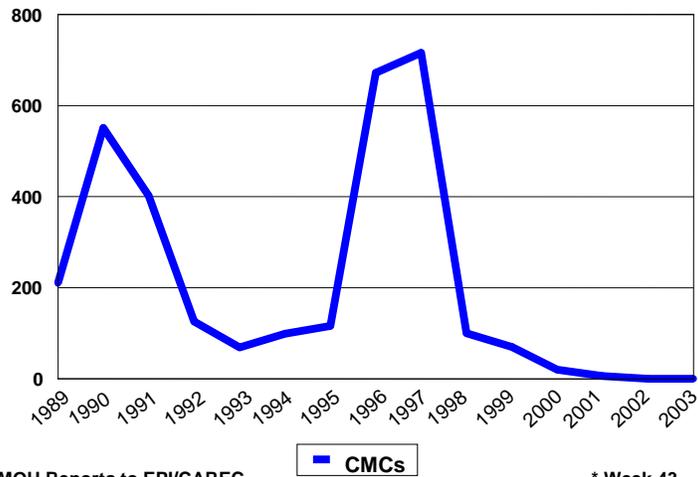
- 1) 22,062 children remained unvaccinated from the above campaign;
- 2) With 85.7% immunization coverage for the 2001 birth cohort, 7,428 children remained unvaccinated;
- 3) An estimated 15% of the 2001 birth cohort did not seroconvert, leaving 6,675 children unvaccinated; and
- 4) By August 2002, 8,104 children in the 2002 birth cohort remained unvaccinated, and (based on a 15% non-seroconversion rate) 4,005 children did not seroconvert.

Future plans are to closely monitor coverage of the second dose and the number of susceptibles. These analyses will help to determine the optimal strategy for measles vaccination. Plans for a second campaign are being considered, timed for when the number of susceptibles is equivalent to a full birth cohort.

Since the implementation of the resolution of the Council for Human and Social Development for the Caribbean Community (1998), cases of rubella have markedly decreased. This reduction is due to the mass vaccination activities that were conducted. Between 1992 and 1997, rubella infection was confirmed in twelve countries. Outbreaks of rubella also occurred in six countries during the years 1995 to 1998, peaking in 1997 in which the highest incidence rate (10.3 per 100,000 population) occurred since 1984.

There were 70 rubella cases in 1999 (24 laboratory-confirmed cases in the MESS), 21 cases in 2000, and 6 cases in 2001 (Figure 3). The six rubella laboratory-confirmed cases were from Belize. Belize initially targeted its vaccination activities towards females. So far, there have been no confirmed rubella cases in 2002 or 2003 (through week 43). In Belize, the MOH has decided to complete the rubella vaccination of males in order to reduce the pool of susceptibles and minimize the adverse consequences of future importations of rubella viruses.

**Figure 3. Distribution of Rubella Cases
English-speaking Caribbean & Suriname, 1989-2003***

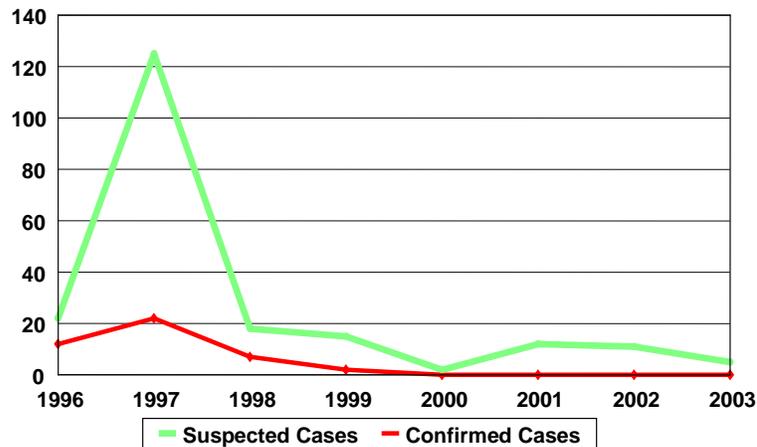


Source: MOH Reports to EPI/CAREC

* Week 43

The number of confirmed cases of CRS has decreased significantly as well (Figure 4). In 1996, samples from 16 suspected cases of CRS were tested by CAREC, of which six were confirmed to be CRS. However, an additional six confirmed CRS cases were reported by Jamaica. In the Caribbean, there have been no laboratory confirmed cases of CRS since 1999. However, between 2000 and 2003 (Week 43), 30 suspected CRS cases were reported from 7 countries. As of Week 43, 2003, five suspected cases of CRS have been reported of which all were tested at CAREC Laboratory. All of these cases tested negative for rubella IgM.

**Figure 4. Reported Suspected and Confirmed Cases of CRS
English-speaking Caribbean and Suriname , 1996-2003***



Source: MOH Reports to EPI-CAREC

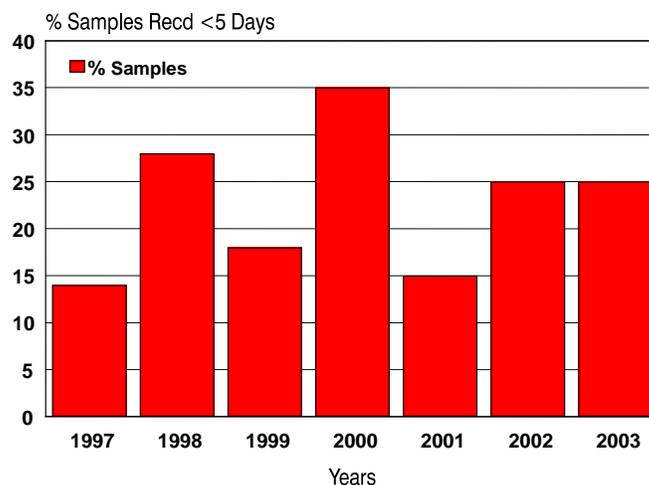
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Overall between 1997 and 2003 (Week 43), 176 suspected cases of CRS from 10 countries were reported to CAREC. Laboratory testing was conducted for 165 (94%) of these cases and 31 (18%) of them were laboratory-confirmed as CRS. In the absence of confirmed cases of CRS, the continued referral of suspected cases demonstrates that the CRS surveillance system is still functioning effectively.

◆ Shipment of Specimens:

The percentage of diagnostic specimens collected from cases of fever/rash which reach the laboratory in less than 5 days continues to be below acceptable standards. Up to Week 43, 2003, only 25% of specimens arrived in the laboratory within five days (Figure 5). While this is a modest progress over the 1997 proportion (14% of timely arrivals), it still requires considerable improvement. Over 40% of samples from Grenada, Guyana, and Trinidad and Tobago have consistently arrived at CAREC's laboratory less than five days after being taken. Some countries do not have funding or mechanisms for in-country transportation of specimens. Countries are encouraged to make every effort to ship specimens to the CAREC laboratory as quickly as possible and to develop in-country mechanisms for specimen transportation.

Figure 5. Percentage Samples received in CAREC Lab <5 Days after being taken. English-speaking Caribbean and Suriname, 1997-2003*



Source: MOH Reports to CAREC/MESS

*Week 43

Some specimens arrive in the laboratory without the epidemiologic case identification number. This makes linking of the laboratory results to the patient and the geographic location difficult, and in some cases impossible.

◆ Validation of Surveillance:

Validation of surveillance systems was conducted in Belize and Jamaica. In those countries, only two cases of fever/rash were identified that were not captured by

the surveillance system. Validation activities should be continued next year in the larger countries, such as Guyana and Trinidad.

◆ Measles - Regional Overview:

Confirmed measles cases in the Region of the Americas have decreased 99%, from 53,683 in 1997 to 541 in 2001. The transmission of the D6 measles virus genotype was interrupted in September 2001, the same month that the D9 genotype was introduced into Venezuela by a traveler returning from Europe. The resulting outbreak included 2,501 cases in Venezuela and 140 cases in Colombia; however, vaccination efforts by both countries stopped further transmission of the virus. As of 17 November 2003, the Region has been free for one year from known indigenous circulation of the D9 measles virus.

New measles cases were reported to the Fever Rash Illnesses (FRIs) Epidemiological Surveillance System in Mexico between April and August 2003. The first known case of this outbreak occurred in Mexico City, the most populated urban area of the Americas, and had onset date of 13 April 2003; the last case had onset date of 25 August. Forty one cases were laboratory confirmed. H1 virus was isolated (currently circulating in Asia).

Activities in affected areas have been implemented in a coordinated fashion among federal, state and local levels with participation of all health institutions.

These activities have specifically included: 1) clinical and epidemiological case studies; 2) active case search, search around homes of confirmed cases, at job sites, day-care centers, mobile markets, and schools; 3) vaccination of susceptible population and children aged 6-11 months; 4) retrospective case-finding in health units; 5) rapid coverage monitoring. Additional vaccination activities in at-risk areas and among at-risk groups are being carried out.

As a result of the high population immunity and effective implementation of the above activities, there was minimal spread of infection. However, despite the successes already achieved throughout the Region, important challenges remain. Measles is still endemic in other regions, and sporadic cases continue to occur in the Region of the Americas because of importation.

◆ Measles Elimination in the United States and Canada:

Based on the available information, a panel of experts concluded that indigenous measles transmission has been eliminated in the United States. Since 1997, the incidence of measles is extremely low, less than 1 case per 1,000,000 population. The majority of cases are imported. The surveillance system is sufficiently sensitive to allow detection of imported cases.

Canada has achieved their goal to eliminate indigenous measles. Since 1998, measles transmission has been interrupted. In 2002, 7 cases were reported—all imported or linked to imported viruses. Since 2002, three different genotypes of measles virus were identified and associated with importation (D3, D4, and D5).

◆ Measles in the United Kingdom and Western Europe:

In the United Kingdom, there has been intense media pressure over safety issues surrounding MMR, especially links with autism. As a consequence, coverage has fallen nationally, with regions such as London especially affected. However, over the last few months, there has been a change in the way the media have been reporting MMR issues and they have given more positive support to the program. It is also encouraging that over the last six months, sentinel surveillance data show coverage increases of 6-7%. Since 1998, when measles cases (and mumps and rubella cases) were at their historically lowest levels, there have been increases in numbers of measles cases and numbers of outbreaks. In 2002, there were 300 confirmed cases, and there are 350 confirmed cases in 2003 to date (0.18/100,000 <15 years). These cases need to be seen in context with measles cases in some other Western European countries. This year, Switzerland has seen around 650 cases (5.4/100,000 <15 years), Ireland 560 cases (3.3/100,000 <15 years) and last year, in the Campania region of Italy, there were an estimated 41,000 cases (1,088 – 5,592/100,000 by age).

The occurrence of measles in European countries does pose risks for importation into measles-free countries, such as those of the Caribbean.

◆ Rubella and CRS elimination - Regional overview:

During its September 2003 session, PAHO's 44th Directing Council endorsed the goal of rubella and CRS elimination by 2010 and urged countries to draft national plans of action within one year. It also requested that a regional plan of action be developed and resources in support of the rubella/CRS elimination goal mobilized. These recommendations were based on the rapid reduction in disease burden from the implementation of an accelerated rubella control strategy, the extensive experience gained by the Region in vaccinating large and heterogeneous population groups, the vital information provided by the elimination initiative of English-speaking Caribbean countries on the cost-benefit of immunizing against rubella infection, the availability of a safe, affordable and efficacious vaccine, and the ample support provided by the public and health authorities from countries.

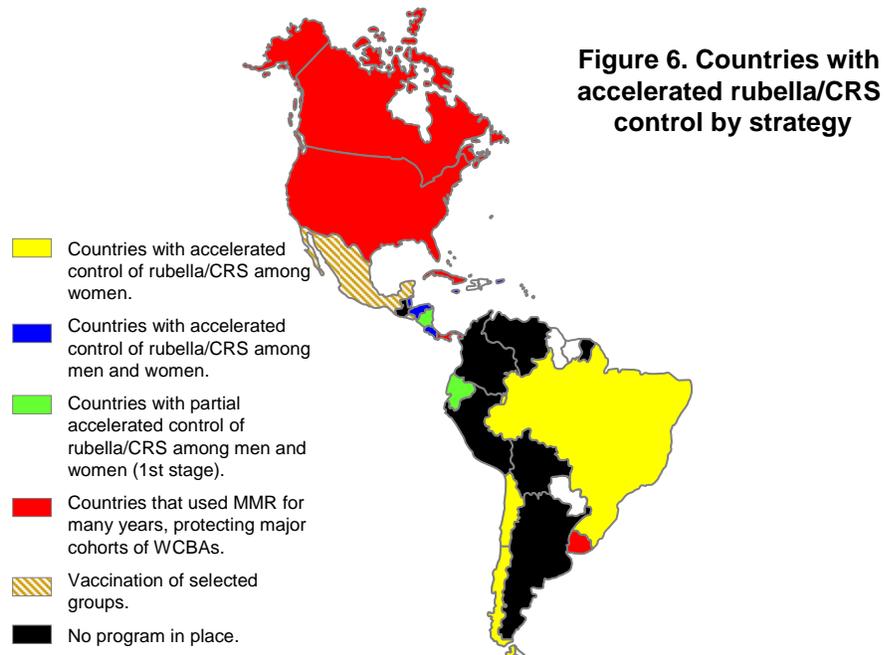
By November 2003, 42 countries and territories in the Americas have introduced rubella-containing vaccine in their national childhood immunization program. The remaining two countries, Haiti and Dominican Republic, plan to introduce a rubella-containing vaccine in their national schedule starting in 2004 and 2005 respectively. Currently, 97% of children aged 1 year in the Americas are receiving MMR vaccine.

Countries in the Americas are at different stages of rubella and CRS elimination strategies: some like the USA, Canada, Cuba, Uruguay, and Panama introduced rubella-containing vaccines more than 25 years ago and included women of childbearing age in their strategies. Other countries, for example Brazil and Chile, have conducted campaigns among adult females only, while the English-speaking Caribbean, Costa Rica and Honduras have carried out campaigns among men and women. Some countries, such as Nicaragua and Ecuador, have been implementing their elimination strategies in two phases due to limited budgets.

The impact of the rubella vaccination strategies is already evident in the rapid reduction of morbidity in the countries with accelerated rubella control initiatives. Since 1998, there has been a significant decrease in the number of reported rubella cases in the Americas, from 135,947 to 11,244 in 2002. The last confirmed CRS case in the English-speaking Caribbean occurred in 1999, in Chile in 2000, in Costa Rica in 2001, and Brazil and Honduras in 2002.

The next steps for CRS and rubella elimination include the preparation of technical documents and the Regional Plan of Action for Rubella Elimination, and a PAHO meeting to review technical issues.

Nicaragua and Ecuador will complete mass vaccination campaigns from 2004 to 2006, and in 2004 both countries will implement the second phase of their campaigns targeting adults aged 20–39 years during the Regional Vaccination Week.



◆ Rubella in the United States and Canada:

Since 2001, less than 25 rubella cases have been reported annually in the United States. Only 18 cases were reported in 2002. Subsequently, there has been only one reported outbreak resulting from an imported case. A majority of the rubella cases still occur among adults. Since 2001, less than half of the reported cases were of Hispanic origin, compared to more than 70% of cases previously. No cases of CRS have been reported from 2002.

In Canada in 2002 and 2003, only 17 and fewer than 10 cases of rubella, and 0 and 2 cases of CRS, respectively, were reported. These data suggest that Canada is getting closer to achieving the goal of eliminating indigenous rubella virus transmission.

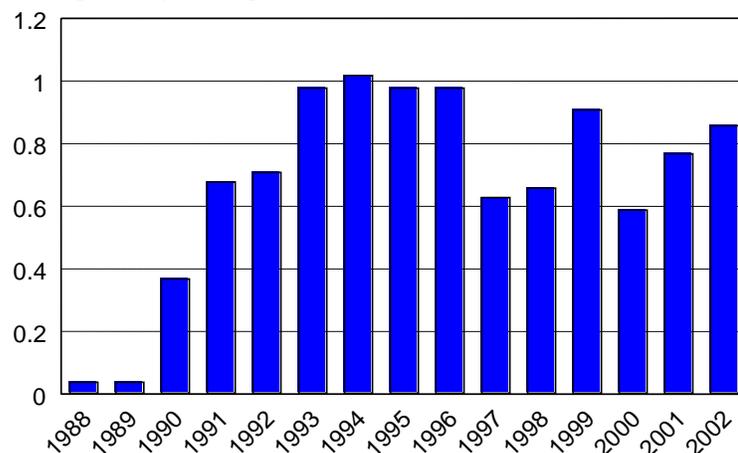
3. Polio Eradication

The last cases of poliomyelitis caused by wild poliovirus in the region of the Americas occurred in 1991 and the last case in the Caribbean community occurred in 1982. The strategies for eradication have to be sustained, including an effective and timely surveillance system for acute flaccid paralysis (AFP) and attaining and maintaining >95% vaccination coverage for polio vaccine in each birth cohort.

Factors such as risk of importations, disease burden, perception of risk, and opportunity costs, make OPV the vaccine of choice for preventing polio in the countries of the Caribbean and Latin America.

Surveillance for AFP continues with weekly reporting from 507 reporting sites in the Caribbean region. Between 1994 and 2003 (Week 43), 179 cases of AFP (in children less than 15 years of age) were reported from over ten countries. The annual AFP rate per 100,000 population aged <15 years has ranged from 1.0 per 100,000 in 1994 to 0.86 in 2002 (Figure 7).

Figure 7. Annual Rate of Acute Flaccid Paralysis (AFP) Cases English-Speaking Caribbean and Suriname, 1988-2003*



Source: MOH reports to EPI-CAREC

In 2003 (through week 43), 17 AFP cases (less than 15 years of age) were reported from 4 countries (Guyana, Jamaica, Suriname, and Trinidad and Tobago), resulting in a non-adjusted AFP rate of 0.77 per 100,000. All cases were investigated within 48 hours and all had stool specimens collected within 2 weeks after paralysis onset. Thus far in 2003, Suriname, Jamaica, and Guyana, have met all 4 surveillance criteria for AFP, while Trinidad and Tobago have met 3 of the 4. This situation represents an improvement over 2002 when only 16 of 19 reported cases were investigated within 48 hours, and only two countries met all four criteria.

In 2003, the surveillance systems for AFP in Belize and Jamaica were evaluated by external consultants. The consultants reviewed hospital logs in both countries. In Belize, hospital data correlated well with the reported surveillance information. In Jamaica, one case of AFP was identified that was not previously reported to the Ministry of Health. The hospital logs for the University of the West Indies still need to be reviewed.

◆ Polio Containment:

Laboratory containment of wild polioviruses remains a priority of the Global Polio Eradication Initiative in the Americas. PAHO conducted a survey of countries to evaluate the status of laboratory containment. Survey forms were sent to the following 21 countries: Anguilla, Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, British Virgin Islands, Cayman Islands, Dominica, Grenada, Guyana, French Guyana, Jamaica, Montserrat, Netherlands Antilles, Saint Lucia, Saint Kitts and Nevis, Saint Vincent, Suriname, Trinidad and Tobago, and Turks and Caicos. Health officials in the four non-responding countries were contacted by telephone and electronic mail. The Chief Medical Officer, National Epidemiologist, Permanent Secretary or Laboratory Director of the 17 countries completed the inventory. The results indicate that no laboratories contain infectious or potentially infectious material for wild polioviruses. In addition, four countries submitted a line-listing of laboratories. The laboratory at CAREC was the only one identified to have potentially infectious material; this material has not yet been destroyed.

The polio eradication initiative of the Americas is on track with the Global Strategic Plan for 2003-2008. In the Americas, the strategies of eradication -high vaccination coverage and high-quality surveillance- must be sustained in all countries until certification of global eradication is achieved. The greatest risk to the Global Polio Eradication Initiative at this time is sustaining adequate funding.

4. Yellow Fever

With the recent rise in the number of cases of yellow fever in 2003, there is a need to ensure that adequate surveillance and vaccination are practiced in high risk areas. In 2003 alone, nine outbreaks of sylvatic yellow fever occurred in Bolivia, Peru, Brazil, Venezuela, and Colombia. These outbreaks predominately affected males and persons aged 15 to 45. In order to prevent the emergence of disease in urban areas, routine vaccination will be required in high risk areas. Guyana and Suriname are 2 countries which fall into this category. Guyana has integrated the yellow fever vaccine into its routine immunization schedule and Suriname plans to introduce this vaccine for routine administration in 2004.

The PAHO technical advisory group recommends routine vaccination for all individuals living in enzootic areas, all travelers to enzootic areas, and those individuals living in urban areas where the household infestation of *Aedes aegypti* is greater than 5%. Early detection of virus circulation and vector control of *Aedes aegypti* mosquitoes is also emphasized.

Immunization programs will need to ensure that staff are adequately trained in surveillance to prevent missed cases and ensure proper reporting and outbreak containment.

5. *Other Vaccine-preventable Diseases*

There were no cases of neonatal tetanus or diphtheria reported in 2003. Fewer than ten cases of pertussis and non-neonatal tetanus were reported.

◆ Tetanus:

Dominica conducted a study of tetanus among the farming communities to identify practices that increase the risk of developing tetanus, the level of perceived risk, and immunization coverage within this group. The results of the study indicated that there was a need to conduct outreach education programs and increase tetanus vaccination.

The augmented policy for prevention of neonatal tetanus in Suriname was implemented after 3 cases occurred in 2002. Although routine vaccination in the hinterland began in 1995, it was evident that more efforts would be needed. Specific actions taken included intensifying active surveillance in hospitals, staff retraining, promoting awareness of neonatal tetanus via talk radio shows, ensuring adequate supply of DT vaccine, and incorporating immunization of pregnant women into routine immunization schedule. Since these measures have been instituted, there have been no further cases of tetanus identified.

◆ Rotavirus:

Rotavirus is an important cause of diarrhea in infants and children worldwide including the Caribbean. Studies in four Caribbean countries found that rotavirus was isolated in 11-23% of diarrheal cases. Surveillance data in the Caribbean indicate that diarrhea due to rotavirus peaks between January and March. However, a recent outbreak in Jamaica with 10,000 reported cases and 12 deaths occurred between the end of May and August 2003.

A surveillance project to estimate the incidence of rotavirus diarrhea is being established in four Caribbean countries.

The Rotashield rotavirus vaccine (reassortant vaccine) was introduced in the USA in August 1998, but withdrawn in October 1999 because of its association with intussusception. Given the high burden of diarrheal disease due to rotavirus, the availability of a suitable vaccine is desirable and vaccine trials are being conducted in several countries, including Jamaica.

The role and use of oral rehydration therapy in diarrheal management must be re-emphasized, as well as the on-going training of health workers, especially those who work in the Accident and Emergency Departments of health facilities.

6. Hib, meningococcal and pneumococcal surveillance

Routine immunization against Group C meningococcal disease was introduced into the UK program in 1999 with a simultaneous catch-up campaign to offer vaccine to all under 25 years of age. There has been a reduction of cases of more than 90% and deaths have fallen by around 95%. There is emerging evidence of herd immunity with reductions in invasive disease in unvaccinated groups and reduction in carriage of meningococcal C organisms.

Hib vaccine was introduced into the routine immunization program in the UK in 1992 with doses given at 2, 3 and 4 months of age, and no additional boosters. This strategy was augmented with a catch-up campaign targeting all children less than four years of age. There was a dramatic effect with virtual disappearance of invasive Hib disease in all ages. However, starting in 1999, there has been an increase in invasive Hib infections, especially in vaccinated children aged 1–4 years and in adults of all ages. The increase in Hib cases appears to have been exacerbated by the use a diphtheria-tetanus-acellular pertussis/Hib vaccine combination, used because of shortages of the routinely used whole cell pertussis vaccine product. As a consequence, a catch-up campaign has been implemented, giving an additional dose of Hib vaccine to all children 6 months to 5 years, irrespective of their previous vaccinations. Early indications point to cases of Hib disease in children less than five years now falling. The most important message from the UK experience is the need to maintain long-term surveillance for Hib and other vaccine-preventable diseases, since resurgences can occur many years after apparent disappearance of the target diseases.

A national epidemiology surveillance pilot program was introduced in 1999 to monitor *Haemophilus influenzae* type b and *Streptococcus pneumoniae* in Trinidad and Tobago, as they are leading causes of invasive infections in the Caribbean. The program included molecular epidemiology techniques as well as antibiotic susceptibility testing. Based on challenges identified, it was decided to expand surveillance to involve more hospitals and to identify pediatricians to act as focal points at each hospital to monitor the surveillance system.

Grenada conducted a study to assess the prevalence of invasive bacterial infections and identify the most common causative agents in pediatric hospital populations. From 1990-96 there were 46 cases of meningitis, 90% of which were caused by Hib. The resulting decrease in cases (6 cases in 2001-2003) was attributed to the introduction of the Hib vaccine. Grenada has committed to implementing a formalized surveillance system to monitor invasive bacterial disease and introducing a policy to standardize blood culture collection prior to institution of antimicrobial therapy.

7. CAREC Priorities

The first objective of the CAREC Strategic Plan is to strengthen national and regional public health surveillance and response systems. Within this objective, surveillance priorities include chronic diseases and communicable diseases, especially

AIDS, polio, measles, emerging and re-emerging infectious diseases (TB, dengue, hemorrhagic dengue, malaria, West Nile virus, and antimicrobial resistance).

Priorities for the future include revision of the Caribbean Communicable Disease Surveillance System, weekly surveillance of syndromes and weekly feedback via CARISURV. There needs to be more interdisciplinary team work at CAREC, more use of rapid tests, hotel-based surveillance systems, geographic information systems, and modern IT systems. A minimum data set from 2004 and behavior risk factor surveillance will be implemented.

The surveillance project for the Eastern Caribbean (OECS) countries pilots the revision and strengthening of the CAREC Regional Communicable Diseases Surveillance System. Such a revision was recommended in 2001 by the CAREC Scientific Advisory Committee.

The surveillance project strengthens the CAREC Regional Communicable Diseases Surveillance System through the following strategies:

- Introduction of integrated syndromic surveillance;
- Use of sentinel sites;
- Strengthening of laboratory diagnostic capacity in-country and at regional level (CAREC and reference laboratory network);
- Establishment of multidisciplinary Surveillance & Response Teams at both national and regional levels (CAREC); and
- Systematic use and timely dissemination of surveillance information of various types such as syndromic and etiologic, trends and incidence of priority infectious problems and other acute public health threats (e.g. bio-terrorism, post-disaster surveillance).

Implementation of the pilot phase started in November 2003 with four countries (Dominica, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines). Evaluation will take place during the first semester of 2004, with a regional review by the Caribbean National Epidemiologists and Laboratory Directors in June 2004.

This CAREC project is supported by the French Technical Cooperation and PAHO through the NCID-sponsored surveillance of emerging infectious diseases in the Caribbean sub-region.

8. EPI Evaluations

◆ Belize and Jamaica:

In 2003, PAHO conducted external reviews of the EPI programs in Belize and Jamaica in cooperation with the Ministries of Health in both countries. The purposes of the EPI reviews were to:

- Assess the status of planning, organization, and execution of services of the immunization program, including cold chain and bio-safety procedures, and validate the surveillance system;
- Define strengths, weaknesses, and factors that facilitate and hinder the achievement of objectives of the program;
- Use the data gathered for timely decision-making and development of a five-year plan of action aimed at strengthening the program; and
- Determine user satisfaction.

Vaccination coverage rates are greater than 80% in Belize and Jamaica. In both countries, EPI is given high priority at all levels, and staff members are dedicated to achieving program objectives. The Jamaican government has demonstrated its commitment by adhering to vaccination and surveillance strategies for measles, rubella and poliomyelitis; successfully conducting measles follow-up vaccination campaigns in 1996 and 2000/2001; and introducing a 2nd dose of MMR and the pentavalent vaccine into the routine schedule in 2002 and 2003, respectively.

A number of challenges were also identified by the evaluation team. Record-keeping, community health worker knowledge and skills, times offered for vaccination, information systems, bio-hazardous waste disposal, user fees, and preparedness for cold chain were all specified as areas for improvement in 2003.

The abolition of user fees is a complex problem, as Jamaican health reform has mandated that cost-recovery occur at the point-of-care, challenging free provision of vaccination.

In Belize accomplishments include convenient location and hours for vaccination; a team of committed and qualified staff; adequate supplies of vaccines and other materials; outreach strategies to improve immunization coverage; written guidelines for the MCH/EPI program; annual national work plans and monthly evaluation; and excellent efforts to maintain the cold chain. The reviewers recommended greater dissemination of the MCH/EPI plan to all operational levels, as well as the development of annual work plans and quarterly schedules by the health centers. Training is required in epidemiologic surveillance, monitoring vaccination coverage, and other EPI concepts and an orientation package for health workers and a standard supervisory tool were suggested. Advances have already been made in this area with the sensitization of Regional Health Managers to the monitoring, supervision and evaluation of EPI. Other areas which may be improved upon include the disposal of bio-hazardous waste, preparedness for cold chain failure, and information technology.

◆ Progress reports on country evaluations from 2002 – St. Vincent and the Grenadines, and Anguilla:

St. Vincent and the Grenadines and Anguilla presented their progress on fulfilling recommendations of the 2002 EPI external review (PAHO/Ministries of Health). St. Vincent and the Grenadines responded successfully to many of the recommendations made by the evaluation team. For example, they harmonized the public and private vaccination schedules, held an EPI update for District Medical Officers, conducted an inventory of physical resources, implemented a regular maintenance plan, and began a wider dissemination of their surveillance reports.

In Anguilla, many of the recommendations were not achieved due to financial and time constraints associated with the transfer of the health system to the Anguilla Health Authority (1 January 2004). For example, a supervisory plan and training were not developed. Selected activities which were achieved during the year include:

- Procurement of vaccine, syringes, needles, and biohazard containers;
- Procurement of a dedicated vaccine refrigerator for each Health Center and twice daily monitoring of refrigerator temperatures at all Health Centers;
- Assessment of the cold chain at 5 Health Centers;
- Standardization of vaccine log books across Health Centers;
- Supervisory visits to all Health Centers;
- Development of a user satisfaction instrument.

9. Vaccination Week in the Americas

In June 2003, 19 countries from the Americas including three from the Caribbean (Suriname, Barbados, and Jamaica), participated in the Region's first Vaccination Week.

The primary objective of the vaccination week was to target high-risk areas with children who do not usually receive immunization services. In participating countries >14 million children aged <5 years were targeted, of whom 97% were vaccinated.

Factors that contributed to the success of the Vaccination Week included:

- High level of political commitment;
- Effective cross-border planning and coordination between countries;
- Well-developed plans of action;
- Effective partnership and intersectoral coordination; and
- Effective communication, advocacy, and social mobilization.

The Ministers of Health at the most recent meeting of PAHO's Directing Council in September 2003 in Washington, D.C. passed a resolution to continue yearly Vaccination Weeks. The Ministers recommended that all countries of the Region participate in 2004. In addition, Spain and a few other countries of Europe expressed strong interest.

Plans to evaluate the next Vaccination Week are being developed to demonstrate more accurately that children who are under-vaccinated are being reached, and are being immunized through these efforts.

10. Vaccination Safety Workshop

A workshop on safe vaccination was held for EPI managers from 12-14 November. The workshop consisted of didactic and interactive sessions, work groups and individual presentations. The main content areas included the essentials of maintaining high quality vaccines; safe injection practices; monitoring events supposedly

attributable to vaccination and immunization (ESAVI); communication skills and how to interact with the media; and developing a crisis response plan.

The information was divided into seven modules with accompanying case scenarios that were discussed in group sessions. To many of the participants, one area that was relatively new was the role of the national regulatory authority and its function in the vaccine procurement process. As many countries reportedly do not have a regulatory authorities but procure vaccines through PAHO's Revolving Fund, it was emphasized that countries must register vaccines, control lot release, and conduct pharmacovigilance.

The need for developing a monitoring system for ESAVIs and developing a multidisciplinary crisis team to handle severe adverse events was also discussed. The emphasis was placed on developing strong communication skills to address public concerns and to minimize rumors and negative press reporting. Participants developed press releases and practiced interviewing with a mock journalist; these sessions were videotaped to foster learning.

Finally, groups created crisis communication plans with the intention that they will be implemented in their respective countries.

11. Web Surveillance Systems

Data entry, analysis and reporting for CARICOM countries currently utilizes multiple information technology tools including MESS, PESS, PAISIS/EPISYS, EPI Tables, and International Program Evaluations. In the future, information management for communicable disease surveillance at PAHO will rely on an integrated web-based system. The system will enable the Ministries of Health to enter case information and report laboratory results to CAREC via the internet. At the same time, the centralized database enhances the region's ability to survey risks and manage outbreaks. Various technologies and diseases will be integrated into one platform, so that software and database incompatibility among countries does not limit rapid data collection. The goal is to support all types of users. Instant and secure access from anywhere will be available and statistical tools, GIS, and interactive pdf forms will enable health workers to generate interpretations of their epidemiologic data (e.g. maps, tables, and graphs).

USVI and Curaçao presented the immunization electronic vaccination registers used in their countries. The system in the USVI is a web based system that offers access to schools (read only), private and public health facilities, private practitioners and parents. Full access is not available to everyone. Confidentiality of health information is maintained. The electronic register in Curaçao is Access-based and centrally managed and data from clinics (public and private), and schools are input in the register.

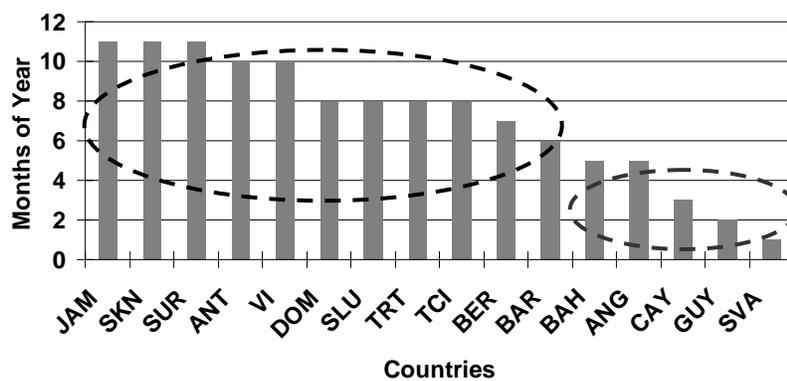
12. Vaccine Procurement and Logistics

Vaccine supplies in several countries were interrupted during the period although all countries had adequate supply of syringes and needles. Countries were able to

minimize the impact of shortages by sharing supplies of vaccines. In 2003, 11 of 20 countries experienced financial problems resulting in arrears over 6 months or more to the EPI Revolving Fund (Figure 8). Five countries were 10 or more months in arrears. While efforts were made to arrange for vaccine loans to affected countries, more attention should be paid to vaccine forecasting and financing.

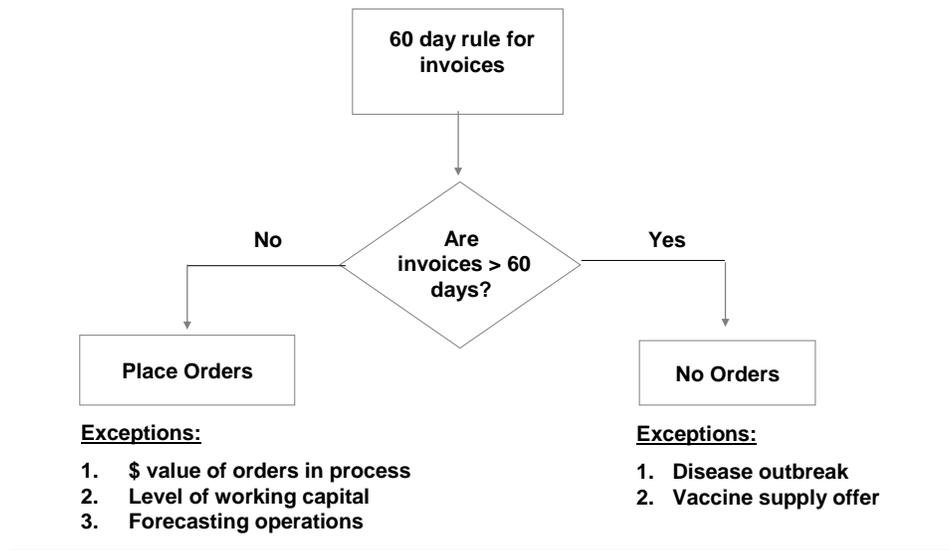
The benefits associated with proper vaccine forecasting were identified as accurate vaccine estimates, effective stock management, and financing plans supported by national governments. Obtaining commitments from Chief Medical Officers, Ministry of Finance counterparts, and others involved in producing national forecasting estimates requires good planning. This planning sets in motion an integrated procurement cycle involving vaccine suppliers and the EPI Revolving Fund. Committed financing is an essential element for an uninterrupted vaccine supply.

**Figure 8. Countries in Arrears with the EPI Revolving Fund
January - November 2003**



To minimize arrears to the EPI Revolving Fund, timely invoicing and payments become a collective responsibility involving participating countries and PAHO. Invoices outstanding for more than 60days are considered in arrears (Figure 9).

Figure 9. EPI Revolving Fund: Management Decision Flowchart



◆ Analysis of Vaccine Wastage in Guyana:

Guyana has undertaken a study of vaccine wastage. Wastage was recognized to be a major problem in 2001. The MCH/EPI department identified the following factors which contribute to wastage:

- Frequent power outages;
- Imprecise estimation of vaccines needs for individual sessions;
- Inadequate cold chain storage;
- Expired vaccines; and
- Weather conditions in remote areas.

As a consequence, more training was undertaken to accurately estimate target populations, to use appropriate wastage factors, and to implement more reliable planning and transportation.

13. Financial Sustainability Plan (FSP)

FSP is a monitoring and evaluation document developed by the Global Alliance for Vaccines and Immunizations (GAVI). Countries that have applied for and been granted supplemental financial support for vaccination activities are required to submit the FSP. The FSP documents the ability of countries to mobilize and efficiently use domestic and supplementary external resources on a sustainable basis, and to achieve current and future target levels of immunization performance.

Guyana qualified for vaccine fund support in 2001 and has recently submitted its FSP for approval. Guyana should be commended for completing this task as it is a considerable undertaking.

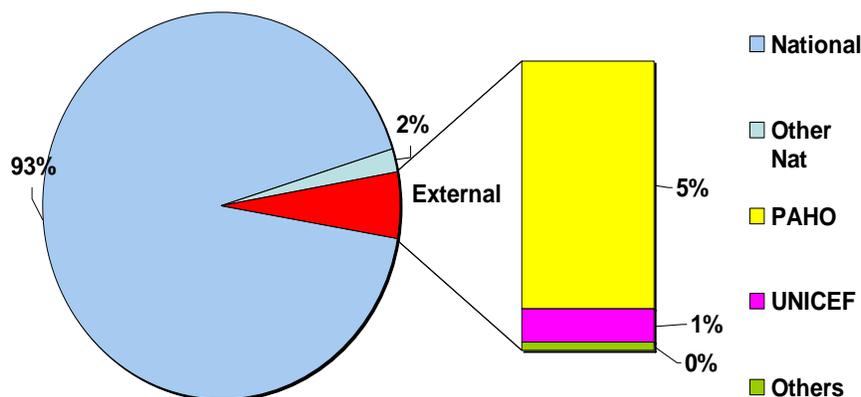
IV. Financial Analysis of 2004 National Work Plans

All countries presented and discussed their 2004 National Work Plans, outlining their technical components and activities, including the cost per activity and area of action. The projected cost for the EPI in the English-speaking Caribbean and Suriname for 2004 is in the order of US \$ 15 million, of which 95% will come from national budgets.

The following is the distribution of these funds by source of funding, as shown in Figure 10.

National Funds	US \$	14,144,980
PAHO – Regional	US \$	523,430
PAHO – Country	US \$	198,500
UNICEF	US \$	96,150
OTHER	US \$	23,500
TOTAL	US \$	14,986,560

Figure 10. National and External Support to EPI Plans of Action, 2004



Total: \$14.9 million

The external support identified above should be negotiated with the corresponding partner agencies to ensure the required support for the areas identified below.

Biological and Logistics	US \$	48,550
Cold Chain	US \$	77,000
Training	US \$	186,000
Social Mobilization	US \$	155,000
Operating Costs	US \$	221,000
Supervision	US \$	9,300
Surveillance	US \$	62,650
Research	US \$	57,000
Evaluation	US \$	24,500
TOTAL	US \$	841,000

Finally, the importance of reviewing work plans for quality was recognized to insure that priority work areas and classification of costs are properly reflected (Figure 11) and that projections of cost requirements are accurate (Figure 12).

Figure 11. Workgroup: Reviewing Plans for Quality, 2003

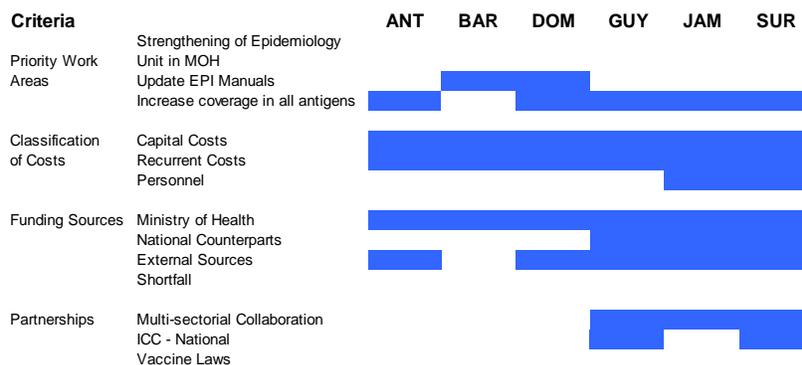
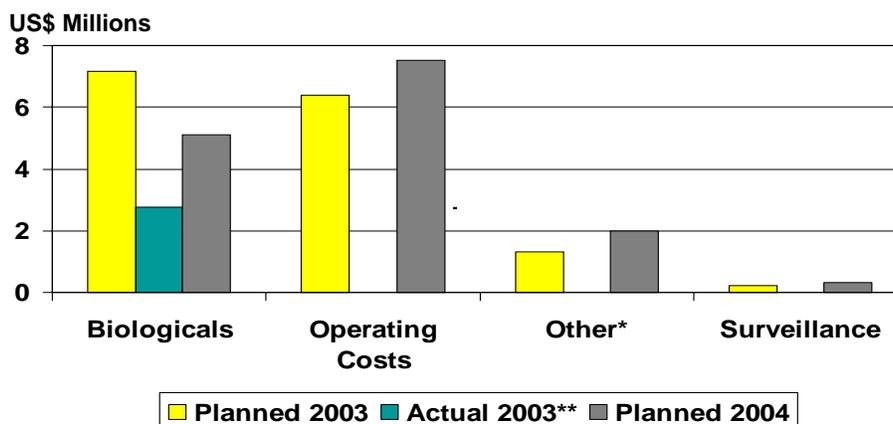


Figure 12. Estimated Resource Requirements by Activity, 2003-2004



* Other: Cold Chain, Training, Social Mobilization, Supervision, Research & Evaluation
 ** EPI Revolving Fund Expenses, November 2003

V. Caribbean Surveillance Award

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

Belize received the 2003 Surveillance Award. Awards for second and third place went to Cayman Islands and Jamaica. In addition, the following countries received special recognition awards for their efforts in improving different aspects of their Fever & Rash surveillance system: Bermuda and Dominica.

Participants at the 20th Caribbean EPI Managers' Meeting congratulated these countries for being the recipients of awards and extend their compliments to all their health workers for such outstanding performances.

The 21st EPI Managers' Meeting will be held in Belize in November 2004.

VI. Conclusions and Recommendations

- Control of vaccine-preventable disease remains exemplary in the countries of the sub-Region, and all should be congratulated on their efforts. There continues to be no confirmed **measles** cases reported up to week 43 2003 -despite careful surveillance- and no laboratory-confirmed rubella cases have been documented for 2002 and 2003 to date. The last CRS case occurred in 1999 in Suriname.
- The **immunization program** in the Caribbean is facing major challenges in achieving and sustaining high vaccination coverage (greater than 95%) in a climate of reform and economic difficulties in the health sector. Evaluating and validating surveillance systems is essential to the delivery of a sensitive and effective immunization program.
- Seventeen of 21 countries have completed and submitted inventories of laboratories and only one (CAREC) is likely to have **poliomyelitis** potentially infectious material. Nevertheless, PAHO/CAREC wants to inspect laboratories in three additional countries (UWI-Mona, Barbados, and French Guyana). It is recommended that this work on containment of potentially infectious material be completed by the end of 2004.
- Over the last year, AFP rates have remained constant but there has been improvement in other indicators such as timeliness and completeness of specimen collection. These improvements must be maintained.
- For both **measles and rubella**, importation of cases still remains the greatest risk for re-emergence.
- In larger countries, such as Jamaica and Suriname, overall immunization coverage needs to be increased. Pockets of low immunization coverage exist in some countries, especially in Guyana, Jamaica, and Suriname. Efforts to correct these deficiencies are currently being accelerated. Follow-up evaluations to monitor completion of these efforts will be essential and should be reported on at the next Managers' meeting.
- More than 90% of the countries in the sub-Region are providing a two-dose MMR strategy. It is essential that coverage for the second dose of MMR be 95% or greater to prevent the accumulation of susceptibles.
- Countries which have introduced a routine two-dose MMR program, such as Jamaica, must evaluate carefully the success of the second dose implementation. If there are significant numbers of susceptible children who have not been protected by the second dose, then a further catch-up campaign must be implemented. Under these circumstances, both a two-dose program and a catch-up campaign will not be a cost-effective use of resources. It is essential that countries which are providing a two-dose MMR program be capable of measuring coverage of each dose, and calculating the number of children who have received two doses, one dose, or no doses of vaccine.

- **Rubella** surveillance must be strengthened. This can be achieved through collaboration with the Regional Perinatal Information System (SIP 2000), the Latin American Center for Perinatology (CLAP), and the Congenital Malformation Latin American Collaborative Study (ECLAMC). Women who acquire rubella in pregnancy should receive follow-ups and their infants should also receive detailed follow-up evaluation.
- The proportion of clinical samples that were received within 5 days is still very low and must be improved. If the first specimen has been taken within the first three days of the appearance of the rash in pregnant women (for rubella) or in cases in clusters of rash-fever, and is negative by IgM testing, second specimens should be taken. This is a topic that will be reviewed at the next Regional TAG.
- Each specimen sent for measles and rubella IgM testing **MUST** have an epidemiologic case identification number.
- Evaluation reveals that some countries have no funding or mechanism in place for **in-country transportation of specimens**. Every effort is being made to encourage countries to ship specimens to the CAREC laboratory as quickly as possible and have in-country mechanisms for specimen transportation.
- This is a time of expected low rubella incidence; therefore the next several years will be critical to evaluate the full impact of the rubella vaccination program. All countries need to ensure that strategies are in place to detect and vaccinate those who have not been vaccinated.
- Molecular typing of rubella virus isolates will facilitate better understanding of the source of rubella outbreaks and CRS cases and will allow determination of rubella strain variations. To date, there are few virologic specimens submitted for molecular typing.
- It is crucial for countries embarking on rubella elimination to document endemic strains, which are essential to determine whether cases are indigenous or imported.
- Whenever possible, naso-pharyngeal swabs should be taken from suspected cases so that viral culture can be undertaken.
- The **invasive bacterial infection surveillance system** implemented in five countries -Barbados, Guyana, Jamaica, St. Vincent and Trinidad and Tobago- requires additional technical support to be sustainable.
- **Validation of the surveillance system** was conducted in Belize and Jamaica. Validation should be continued in the larger countries, such as Guyana and Trinidad, next year.
- Governments must ensure that **invoices for vaccine** supplies are paid in a timely way, within the 60 days allowed. Failure to pay for supplies jeopardizes maintenance of routine immunization and may lead to widespread rather than localized shortages.

- PAHO/CAREC will continue to work with countries and suppliers to improve efficiencies in the PAHO Revolving Fund.
- Because 25 of 38 sectors recently evaluated in French Guyana are not included in the routine immunization program, all efforts to correct this situation should be lauded.
- The template used for the **Country Plans** has been used very effectively for many years. However, it is timely for the proforma to be reviewed and revised. This will ensure that it reflects current priorities and work practices so that it can remain a 'living document' that is a useful tool for the continuous management of the immunization programs of countries.
- At the next Caribbean EPI Managers' meeting, countries should report on activities to improve attitudes of nurses and doctors providing immunization services, including private providers.
- Countries should seek active participation from the private sector and particularly specialist service providers, such as obstetricians, for CRS surveillance.
- Effective management and supervision of the implementation of the immunization country Plans of Action remains the backbone of the Caribbean program. The EPI managers participating in this meeting should be congratulated for their tireless efforts to reach all children and protect them from vaccine-preventable diseases. Governments must continue to keep immunization high on their lists of priorities.