

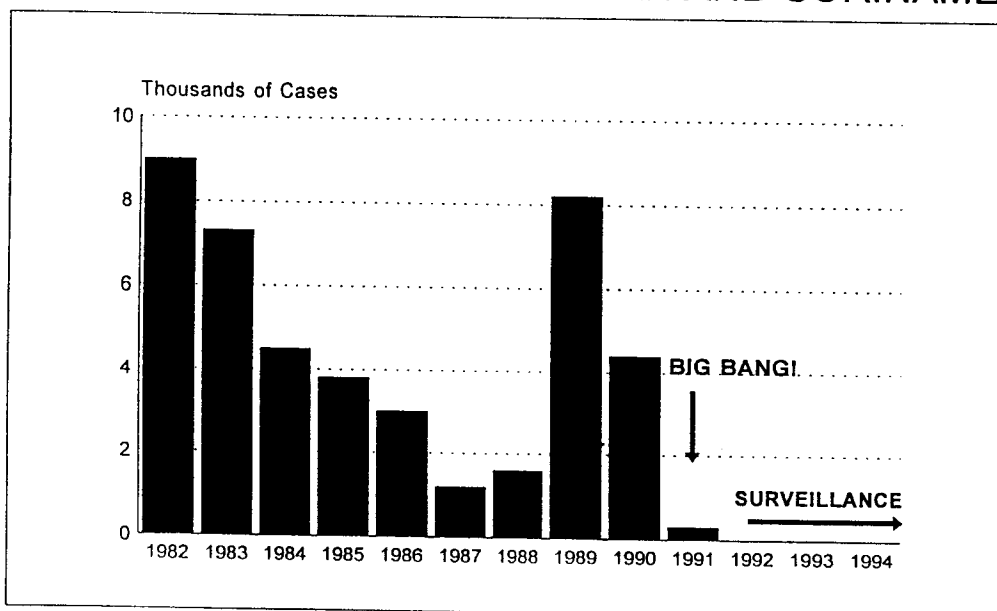
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PAN AMERICAN HEALTH ORGANIZATION  
EXPANDED PROGRAM ON IMMUNIZATION

**ELEVENTH MEETING OF CARIBBEAN EPI MANAGERS**

**FINAL REPORT**

MEASLES CASES - 1982 TO 1994  
ENGLISH-SPEAKING CARIBBEAN AND SURINAME



Source: Country Reports to CAREC  
BIG BANG = 1991 Mass Vaccination Campaign 9mo. - 14yrs.

Nassau, Bahamas

14-18 November 1994

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## **I. Introduction**

The Eleventh Meeting of the Caribbean EPI Managers was held in Nassau, Bahamas, from 14-18 November 1993. Key points of achievement noted were as follows:

- a) Nearly 12 years have elapsed since a reported case of paralytic poliomyelitis was detected in the Caribbean. The last known case in the Western Hemisphere was on 23 August 1991 in Junin, Peru. This was the last case detected in the Region of the Americas.
- b) No cases of indigenous measles have been reported in over 3 years in the Caribbean, despite intensified surveillance for measles with nearly 600 units reporting each week in the English speaking Caribbean and Suriname.
- c) Remarkable progress has been achieved in surveillance of fever and rash illnesses. Of note were the surveillance indicators presented by Jamaica, which demonstrated that the posting of a few surveillance officers (funded by a special Rotary International grant) was critical in achieving a very high level of performance.
- d) Immunization coverage levels remain high throughout the Caribbean and the Americas.

Participants at the Meeting were welcomed by Dr. Claudette Harry, PAHO/WHO Representative in The Bahamas, on behalf of the PAHO Director, Dr. Carlyle Guerra de Macedo. The event was officially inaugurated by the Honorable Minister of Health and Environment of The Bahamas, Senator Ivy Dumont. Dr. Peter Figueroa, Director of Epidemiology at the Ministry of Health in Jamaica and member of the PAHO/EPI Technical Advisory Group, chaired the Meeting and Dr. Ciro de Quadros, PAHO's Senior Immunization Advisor and Mr. Henry Smith, PAHO's Immunization Officer for the English speaking Caribbean and Suriname, served as Secretaries.

The Meeting was attended by over 80 participants from the 19 countries of the English speaking Caribbean and Suriname; representatives of the French Departments of Guadeloupe and French Guyana, as well as from Curaçao and St. Maarten also attended the meeting. For the first time, and following recommendations of previous meetings, representatives of Puerto Rico attended the event. Several NGOs, including Rotary International and the Christian Children's Fund were also in attendance. Finally, technical personnel from PAHO and its Caribbean Epidemiology Center, UNICEF, and CPHA, were active participants in the Meeting.

## **II. Objectives of the Meeting**

The principal purpose of the Meeting was to review the overall EPI program in the Caribbean and to identify obstacles which might impede achieving program targets.

To assist in this identification, country reports and the 1994 National Work Plans were reviewed and analyzed. This exercise resulted in the elaboration of the 1995 National Work Plans.

A major objective was to evaluate continued efforts towards the elimination of measles by 1995, focusing on various limitations related to surveillance of suspected measles cases and incomplete laboratory specimen collections. The key issue of the continued build up of susceptibles was addressed, with each country determining the number of potential susceptibles in their country, and whether a catch-up vaccination campaign was necessary. Also addressed were issues pertaining to the maintenance of the absence of wild poliovirus transmission in the region.

### **III. Conclusions and Recommendations**

1. A high level of commitment was clearly evidenced by the high quality of presentations and by 100% participation of member countries. One could see from the presentations that problems and solutions related to build up of susceptibles and surveillance activities were of primary concern. Program managers described their progress towards the target of elimination of indigenous measles transmission, a goal set by the Ministers of Health of the CARICOM and now endorsed by the XXIV Pan American Sanitary conference which established the goal of elimination of indigenous measles transmission from the Americas by the year 2000.
2. The commitment of all governments was evidenced by allocation of resources which have accounted for approximately 90% of the cost of the program over the last few years, as well as personal involvement of political leaders in support of the program. The role of international supporting agencies was noted as an important factor in the progress achieved thus far and their continued support will be fundamental for further gains.
3. The continued implementation of and improvements in the surveillance system for detection of suspected measles cases was evidenced by improved weekly reporting and training in operational procedures related to surveillance and case investigation.
4. Coverage data indicates that there is a growing number of susceptibles building up among the 1-5 year age group. Such a build-up of susceptibles may trigger an epidemic should measles virus be introduced and indicates the need for a catch-up measles vaccination campaign in these age groups.
5. The issues addressed were an indication of the advanced nature of the evolution in the elimination program in the Caribbean. Also a testament to achievements in the Caribbean program is the recently adopted W.H.O. Global Strategy for Measles Control. It follows the Caribbean model very closely.

6. The meeting stressed the critical role that CAREC should play in helping to strengthen the surveillance of vaccine preventable diseases in the Caribbean, both in terms of organization and maintenance of the reporting networks, and analysis of the data to allow for refining strategies for disease control and elimination.

7. The continued expansion of participation from Caribbean countries and territories, as evidenced by the participation of Puerto Rico, indicates the growing solidarity of these geographically related countries to the overall goals of EPI.

## 1. Immunization Coverage

Overall, immunization coverage was maintained at the previous high levels already achieved (See Figure 1). However, it was reported by some countries that coverage had either dropped or remained stationary under the 90% mark. When coverage is less than 95%, this indicates that there are considerable numbers of unvaccinated children.

## 2. Maintenance of Polio Eradication

The International Commission for the Certification of Poliomyelitis Eradication (ICCPE) concluded that the transmission of the wild Polio virus has been interrupted in the English speaking Caribbean and Suriname.

The following recommendations are made to maintain this polio free status:

- a. Immunization levels of at least 80% must be maintained at all levels, including at the district level.
- b. Weekly negative reporting must be maintained from all reporting sites.
- c. Investigation of acute flaccid paralysis (AFP) in children under 15 years of age must be continued and two adequate stool specimens obtained from every case. To be adequate, the stool samples must be:
  - \* collected within 15 days of onset of symptoms;
  - \* a second stool sample taken within 24 to 48 hours of the first sample;
  - \* a quantity of about one "thumb size".

During transport, the sample must be kept refrigerated at all times (see field guide for additional details).

- d. It is no longer necessary to routinely collect stool samples from contacts of the cases.

### 3. Measles Elimination

#### 3.1 Accumulation of susceptibles

An analysis of the Caribbean situation was made. As immunizations are given in most countries at 1 year of age, there are approximately 150,000 infants (all infants less than 1 year of age) at any given time unimmunized in the Caribbean. If it is assumed that approximately 30% of these infants are unprotected either by lack or loss of maternal antibody at sometime during their first year of life, this would provide up to 45,000 susceptibles at any given time in the under 1 age group. As the mass campaign provided vaccine to all persons 1 to 15 years of age in May 1991, it is likely that at that time the number of susceptibles in that age group were dramatically reduced. However, there are factors which prevent 100% of the target population from being immune; 1) vaccine is not 100% effective, 2) as coverage has been less than 100% since the campaign, there is a likely build up of additional susceptibles with each successive birth cohort, and 3) potential cold chain problems.

Based on these 3 factors one might estimate that 20% of the 1-15 age group is susceptible. For the 3 years since the campaign there have been approximately 450,000 births, and if approximately 20% are not protected, this would add-up to 90,000 susceptibles. If we add this number to the 45,000 susceptibles under 1 year of age, there may be as many as 135,000 susceptibles at any given time in the Caribbean.

Despite improved coverage a yearly increase of approximately 30,000 susceptibles are likely to be added to this total (from each new birth cohort, those not vaccinated and those that represent vaccine failures). Such a number of susceptibles are more than sufficient to support a considerably large epidemic should a measles introduction occur. This estimate does not include an unknown number of susceptibles in the greater than 4 years of age sector of the population.

With the above background information, each country estimated the number of likely susceptibles in the <5 population (Table 1). It was determined that if there was an average of 20% susceptibles in the birth cohort over the last 4 years, then the build up of susceptibles over a 4 year period is critical enough to warrant a catch-up campaign targeted to the under 5 age group. Countries which do not exceed this limit still need to identify smaller pockets of susceptibles, such as areas with urban poor and remote or inaccessible locales, where vaccination activities should be aggressively implemented to deal with these groups.

At present Jamaica is conducting a survey of vaccination history and serologic status in selected age groups in order to determine with more accuracy the magnitude of the pool of susceptibles. Results of these studies are expected to be available in early 1995, and should provide guidance to countries on the timing for planning catch-up campaigns.

## 3.2 Rash and Fever Surveillance

### 3.2.1 Reported Cases

220 suspected measles cases were reported between January and October 1994. This compares with 232 reported for the same time period in 1993. Of the 1994 cases, 195 were investigated, none were confirmed as measles. Of the 220 cases reported, 25 (11%) are still under investigation, 27 (12%) were compatible, and 168 were discarded (76%). (See Figure 2) Of the compatible cases the majority were classified as compatible either due to inadequate specimens, or because of loss of follow-up. Of the discarded cases, 28 were laboratory confirmed as rubella (17%), 10 as dengue (7%) and 128 classified as other (76%). The "other" category consisted largely of negative laboratory results and a variety of other rash producing viruses. Almost 70% of reported cases were in persons 5 years of age or under.

### 3.2.2 Information system

It was noted that a great number of measles epidemiological investigation forms are not being sent to CAREC. This has greatly impeded the analysis and evaluation of data for the entire Caribbean. Without such data it is difficult to assess trends and make group policy and strategy decisions. Nevertheless, based upon data available collected and analyzed from laboratory forms, a number of indicators related to the laboratory results were presented:

\* For the period January to October, 1994, a total of 187 out of 220 (94%) of suspected cases had an S1 sample obtained and submitted to CAREC. (4 of the 33 which were without specimens were cases which did not require an S1, such as cases incorrectly reported as suspected.) Of the 187 S1, 114 (60%) had S2 submitted and of the other 73 S1, 27 were without specimens due to cases not requiring an S2, for example, confirmed rubella diagnosis with S1.

\* The interval between rash onset and collection of S1 was under 8 days in over 85% of cases. 50% of all S1 specimens taken were received within a two week period at the reference laboratory. Over 40% took longer than 3 weeks to have specimens received in CAREC (See Table 2). 50% of S2 was collected within 2 weeks after collection of S1.

\* Greater efforts should be made to shorten the time span between collection of specimen and shipment to the laboratory. Results were given by the laboratory within 8 days after receipt of specimen.



### 3.2.3 Reporting Units

All countries report a high proportion of sites reporting each week. A total of 609 reporting units are now incorporated in the surveillance system and its weekly negative reporting. Approximately 90% of these units are reporting regularly. During week no. 43, 599 of the 609 sites or 98% reported to CAREC on time. One important indicator of response of the system to reports is the interval between rash onset and date of S1 taken which revealed 85% of cases were reported within 1 week of onset.

It is important to note that in some countries the private medical practitioners (PMD) are not yet fully incorporated in the system, additional efforts should be made to achieve this objective. In a region that is apparently free from indigenous transmission and with a very heavy influx of outside tourists, it is likely that cases of fever and rash illnesses would first be seen by a private medical practitioner, therefore the importance of their participation in the system. Some countries are having very good progress incorporating the PMD, the key to their success has been good coordination, training and permanent contact and feed back.

Another aspect that merits action is the evaluation of the surveillance system in respect to the ZERO reporting. It is crucial that ZERO actually reflect the absence of suspected measles cases and not the routine submission of a negative report.

## 4. Rubella Control Strategies

Confirmed Rubella cases were reported in a number of countries including Jamaica, Belize and Suriname. There is general concern to reduce the number of cases of congenital rubella syndrome (CRS) in the Caribbean. In order to achieve this, it is necessary to define the epidemiology of rubella and congenital rubella syndrome and develop an appropriate rubella vaccination strategy. Several recommendations were made regarding this issue:

- \* Improve surveillance of congenital rubella syndrome through a) active hospital surveillance, b) targeting pediatricians and obstetricians who perform termination of pregnancy, and c) services that care for children with long term sequelae of CRS such as deafness, mental retardation and heart disease.
- \* Perform rubella sero-surveys in selected countries among women aged 15 to 30 years to identify susceptible cohorts. This can best be done by testing blood collected for other purposes, e.g. Ante Natal Clinic attendees, VDRL or HIV sentinel surveillance.
- \* Continue rubella testing of blood samples taken from suspected measles surveillance.

\* Develop an appropriate rubella vaccination strategy for each Caribbean country based on the pattern of susceptible age cohorts and history of rubella vaccine use. This strategy would include a number of common elements such as follows:

- a. All countries should use MMR or MR for immunization against measles and rubella at 1 year of age.
- b. During the eventual "catch up" campaign to eliminate the susceptibles built up during the last four years, which should be targeted to the under 5 year population use MR (or MMR) and not Measles vaccine alone.
- c. Vaccinate women aged 15 to 30 years who have not been previously vaccinated and where a sero-survey does not clearly establish that the number of susceptibles is small (e.g. under 10 - 15%).
- d. In those countries that did not use MMR or MR in the measles campaign of 1991 there will be a susceptible age cohort for 5 - 15 years that needs to be reached through a school vaccination program for girls.

## **5. HIB**

An effective vaccine is available to protect infants against invasive Hemophilus Influenza type B infection (HiB). This vaccine was successfully introduced in some developed countries where HiB was shown to be a major cause of meningitis. In the Caribbean, some countries have already introduced this vaccine in their national immunization programs, some others are considering its use.

It is advisable that the epidemiological situation concerning HiB meningitis be defined in order to determine whether the introduction of this vaccine is a priority. Given the cost of the vaccine, countries must ensure that there are sufficient resources available to introduce and sustain use of the vaccine in a manner that is not detrimental to the current immunization program.

## **6. Tuberculosis Control**

In response to growing concern in the Caribbean about the re-emergence of tuberculosis infection world-wide, CAREC prepared a report in 1994 entitled "Tuberculosis Control in the Caribbean: A Strategy for the Region." The report addresses three main issues:

- \* summarizes the current epidemiology of the disease in the region and the status of control programs;

\* reviews the World Health Organization's strategy for control and identifies priority activities for strengthening country-level programs; and

\* identifies CAREC's role in developing and implementing a regional strategy . The purpose of the report is to inform Caribbean countries about current trends and issues in tuberculosis control and to stimulate them to thought and action.

The average incidence rate for tuberculosis among CAREC Member Countries (CMCs) in 1992 was 10 per 100,000, with rates ranging from zero in three small countries to a high of 38.5 in one. Among the 987 deaths due to tuberculosis reported during the period 1979 to 1992 from the nineteen CMCs, 75% occurred among persons aged 45 years and above and only 2% occurred among children aged 5 years and under. Males accounted for 69% of tuberculosis deaths and 91% of tuberculosis deaths resulted from respiratory disease.

Two major concerns are co-infection with the HIV and the emergence of drug resistant strains of tuberculosis. The incidence rate of HIV infection is growing in the region and it is estimated that a person infected with the HIV has a 50% risk of developing active tuberculosis. The emergence of drug-resistant strains of tuberculosis in North America is of particular concern to CMCs, two of which have reported identification of tuberculosis strains resistant to at least one of the most commonly used antibiotics.

A survey of the CMCs in 1993 revealed that tuberculosis control programs in the region are generally inadequate. Surveillance activities are both limited and fragmented and diagnostic capabilities vary widely. Frequently, standards for tuberculosis treatment have not been implemented, the availability of drugs is limited, and monitoring of treatment is not routine. Thirteen of the nineteen CMCs utilize BCG vaccine in the EPI program, but two of these countries administer it at age 5 years instead of at birth as recommend by WHO.

The WHO strategy for national tuberculosis programs emphasizes six strategies:

- (1) political commitment at the highest level;
- (2) staff training and supervision;
- (3) cost effective diagnosis, including laboratory and radiological services;
- (4) effective chemotherapy;
- (5) surveillance focusing on case-finding and rapid follow-up; and
- (6) research of new approaches in service delivery, program management, treatment and prevention.

CAREC's role in developing and implementing a tuberculosis control strategy for the region reflects its focus on building national capacity in epidemiology, surveillance,

and laboratory services. Specific activities include providing technical assistance to CMCs interested in establishing or enhancing control programs for surveillance, diagnostic services, treatment, professional and public education, and research.

## **7. Hepatitis B Control**

In keeping with the World Health Organization's guidelines, universal Hepatitis B vaccination for infants is strongly recommended in any country where the prevalence of Hepatitis B infection is higher than 7%. Again, cost considerations should be taken into account in introducing this vaccine in order that the current immunization program is properly maintained. Vaccines are recognized to be the most cost effective health intervention, therefore new funds must be made available for the introduction of new vaccines whenever they are available and needed.

## **8. Social Mobilization**

Continued Social Mobilization and NGO involvement are essential to the goals of the EPI, improving coverage and the maintenance of the eradication of polio and the elimination of measles. With regard to measles social mobilization, it is critical to increase the population's consciousness about the need to have children of any age taken to a health authority when rash and fever occur. To achieve this end, innovative approaches, similar to those developed in Jamaica, must be taken on a continuous basis. These include the use of media and community groups in addition to a special school program which develops materials intended to heighten the awareness of school children about the importance of immunizations. This has the added benefit of involving teachers in the EPI as well as the rash and fever surveillance system.

The importance of social communication with regard to educating the public to bring ill children with rash and fever for medical assistance has to be stressed. Posters displaying this concept should be developed.

The importance of continued NGO involvement as well as developing new links with NGOs was stressed.

The group further recommended that additional efforts be made to improve even further the coordination at country level, through the organization of national coordinating committees or other mechanisms to ensure accurate and prompt exchange of information. Such mechanisms could include the preparation of needs assessment at the district level, as carried out in Grenada. The needs assessment survey serves as a basis for identification of areas where local NGOs can form partnerships with the health authorities for the possible solution of problems. Another major area for improvement is the training and education programs initiated by the Ministries of Health, which should

consider the inclusion of NGO representatives in those areas in which they have been working together and where they can make further contributions.

World Health Day will be celebrated in April 1995 and will focus on progress towards global polio eradication. This is an excellent opportunity for re-vitalizing a variety of aspects related to the EPI program, including coordination between the countries and donor agencies in relation to dissemination of social communication materials for this event.

#### IV. Financial Analysis of 1995 National Work Plans

All countries have presented and discussed their 1995 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 1995 is in the order of US\$9.0 million, 83% 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\$6,638,980 (81%)
PAHO (Including CPHA Grant)	471,950
CPHA bilaterally	89,000
UNICEF	798,900
Rotary International	70,100
Other	46,300
<b>TOTAL</b>	<b>8,115,230</b>

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

Biological and Logistics	US\$201,800
Cold Chain	165,800
Training	180,600
Social Mobilization	240,400
Operating Costs	479,300
Supervision	45,750
Surveillance	91,500
Research	42,600
Evaluation	28,500
<b>TOTAL</b>	<b>1,476,250</b>

## **V. Future Meeting Plans**

The next meeting will be held in November, 1995. Note was taken of the offers made by the representatives of Puerto Rico and the British Virgin Islands to host the 12th Meeting the Caribbean EPI Managers in the Commonwealth of Puerto Rico and in the British Virgin Islands, respectively.

It was recommended that at the next meeting participants from other Caribbean countries or areas not attending the 1994 meeting be invited. These include Cuba, Haiti and the Dominican Republic.

Table 1  
 Projection of Children Under 5 Years of Age Who Would Be  
 Susceptible to Measles by June 1995  
 (4 birth cohorts born since May 1991)

Country	Annual Births	Percent Not Vaccinated	Projected Susceptible <5 Years Age*
Anguilla	159	0	96
Turks & Caicos	286	10	258
Montserrat	186	0	112
British V. I.	320	1	202
Cayman Islands	550	2	363
St. Kitts/Nevis	1000	1	630
Antigua/Barb.	1284	0	770
Bermuda	954	15	1002
Dominica	1652	7	1339
St. Vincent/Gr.	2640	9	2297
Grenada	2372	13.5	2384
St. Lucia	3690	15	3875
Belize	7781	20	9337
Bahamas	6500	9	5655
Barbados	4097	9	3564
Suriname	9000	26	12420
Guyana	21344	20	25613
Trinidad/Tob.	23000	20	27600
Jamaica	60000	20	72000
TOTAL SUSCEPTIBLES			169517

\* Projection based on a) 10% vaccine failure for 3 births cohorts, b) percent unvaccinated for 3 birth cohorts, and c) 30% of one birth cohort (the 30% figure represents the estimated number of infants under 12 months of age which may be susceptible at any given time). The estimated total number of susceptibles is calculated as  $((3 \times \text{annual births}) \times 0.1) + (0.3 \times \text{annual births}) + ((3 \times \text{annual births}) \times \% \text{ Unvaccinated})$ .

TABLE 2

REPORTED CASES OF SUSPECTED MEASLES  
 FREQUENCY DISTRIBUTION OF TIME BETWEEN  
 S1 TAKEN AND S2 TAKEN  
 JAN - OCT 1994

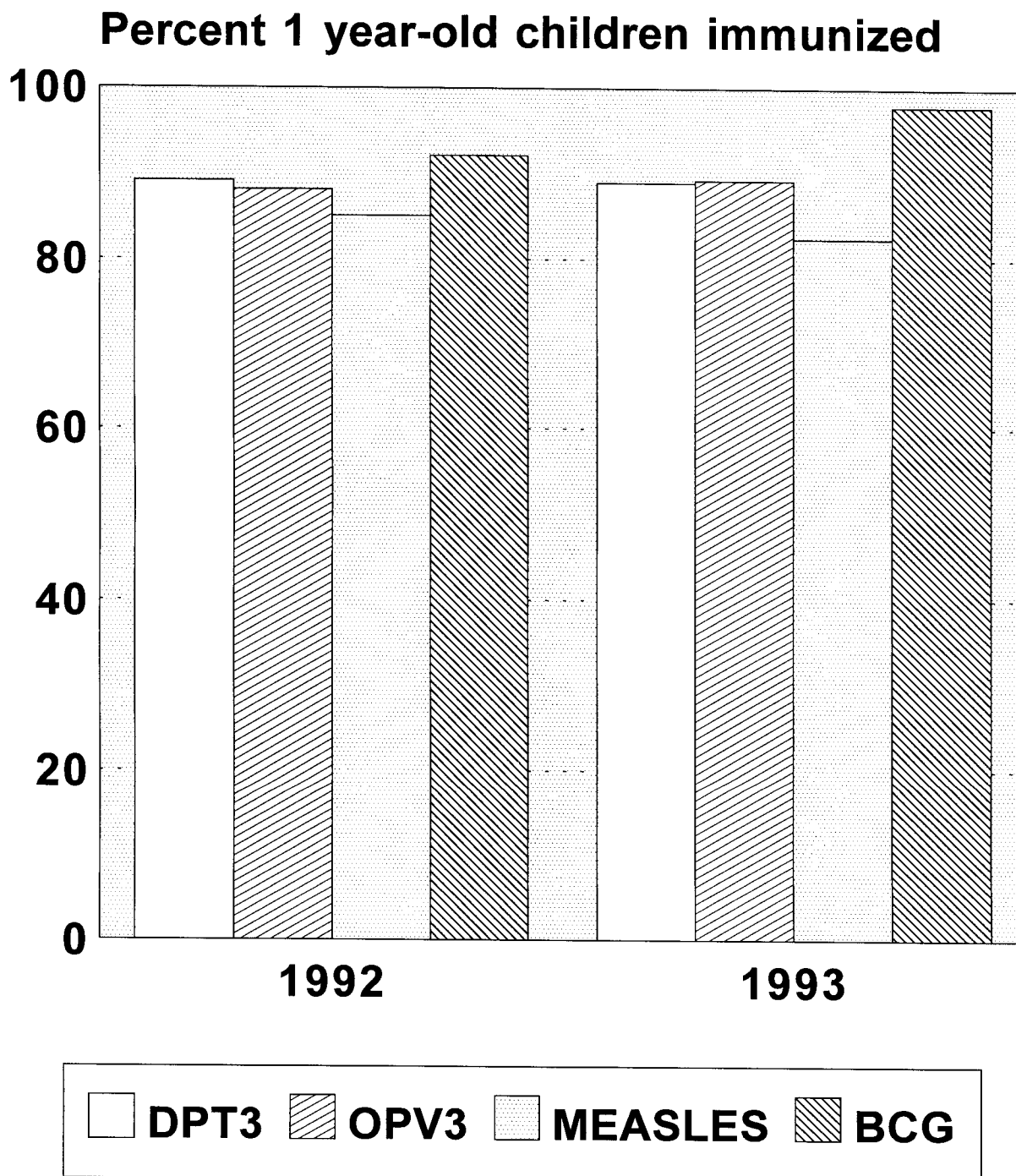
INTERVAL	Freq	Percent	Cum.
UNK	2	2.2%	2.1%
4	1	1.1%	3.4%
7	3	3.4%	6.7%
8	2	2.2%	9.0%
9	2	2.2%	11.2%
10	3	3.4%	14.6%
11	2	2.2%	16.9%
12	4	4.5%	21.3%
13	6	6.7%	28.1%
14	15	16.9%	44.9%
15	3	3.4%	48.3%
16	6	6.7%	55.1%
17	4	4.5%	59.6%
18	3	3.4%	62.9%
19	2	2.2%	65.2%
20	3	3.4%	68.5%
21	5	5.6%	74.2%
22+	23	23.6%	100.0%
Total	89	100.0%	



# Vaccination Coverage EPI Vaccines, 1992 - 1993

## English-Speaking Caribbean and Suriname

### Figure 1



Source: Ministries of Health  
1994



FIGURE 2  
 CLASSIFICATION OF REPORTED SUSPECTED MEASLES CASES  
 JANUARY - NOVEMBER 1994

