



# MEASLES update



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## Current News

### Epidemiology of Measles Outbreak in British Columbia — February 1997

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On January 28, 1997, three clinical cases of measles among students attending Simon Fraser University (SFU) were reported to the British Columbia Centre for Disease Control. These cases were subsequently confirmed by the presence of measles-specific IgM on acute serology. Because several more clinical and suspect cases had been identified by the following day, a decision was made to offer a measles-containing vaccine to all staff and students of SFU. This mass vaccination program was delivered on campus from January 31 to February 7, 1997 and resulted in > 85% uptake among estimated susceptibles.

To date, 107 cases of measles have been reported, 56 of whom have a link to SFU. Forty cases have been confirmed either through the presence of IgM on acute serology or an epidemiologic link with a laboratory-confirmed case. The remaining cases were either clinical (40 cases) or suspect (27 cases).

Figure 1 presents the age distribution of cases; the majority have been between 19 and 29 years old. One case in this age group had previously received two doses of a measles-containing vaccine, 26 had received one dose, and three had received no doses. Immunization histories were unknown for the remaining 34 cases. There were 15 cases between 1 year to 18 years old. Four of these (three clinical cases and one suspect case) had received two doses of a measles-containing vaccine previously, eight had received one dose of vaccine, and three had received no doses.

Figure 2 presents the epidemic curve for measles cases reported up to February 13. Cases with a link to SFU are separate from those with no link. Case prodrome onset dates have occurred in two waves. The first wave peaked on January 24

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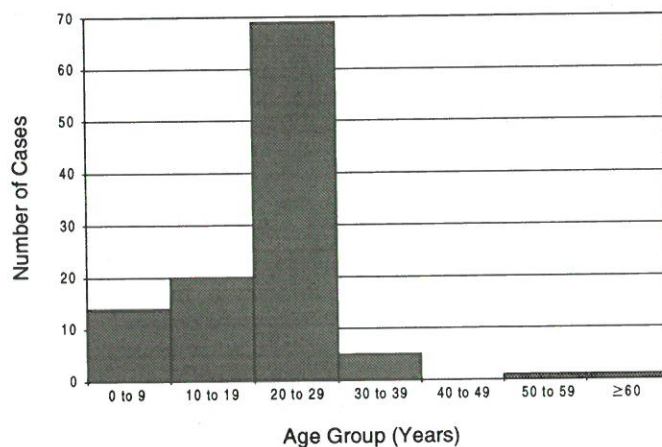
### New Measles Vaccination Programs in New Brunswick and Alberta

**New Brunswick** has announced that beginning April 1, 1997 all 18-month-old children in the province will be offered routine two-dose measles-mumps-rubella vaccination. A catch-up program is not planned. With the implementation of routine two-dose vaccination in New Brunswick, all provinces and territories in Canada will have a program to offer a routine second dose measles vaccination at 18 months or at 4 to 6 years.

**Alberta** has announced the implementation of a mass catch-up measles vaccination program to provide a second dose of measles vaccine (using monovalent measles vaccine) to students in Grades 1 to 9. The announcement follows the importation of measles into Alberta from an ongoing measles epidemic in British Columbia; as of March 14, 1997 approximately 35 confirmed cases had been reported in Alberta. The catch-up program will be conducted from April 1, 1997 through March 31, 1998. Routine second dose measles vaccination at 4 to 6 years (introduced in 1996) will continue.



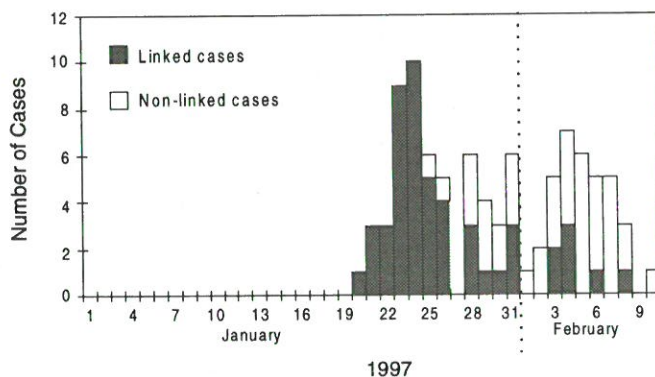
**Figure 1**  
Age distribution of measles cases in British Columbia,  
January 20 – February 12, 1997



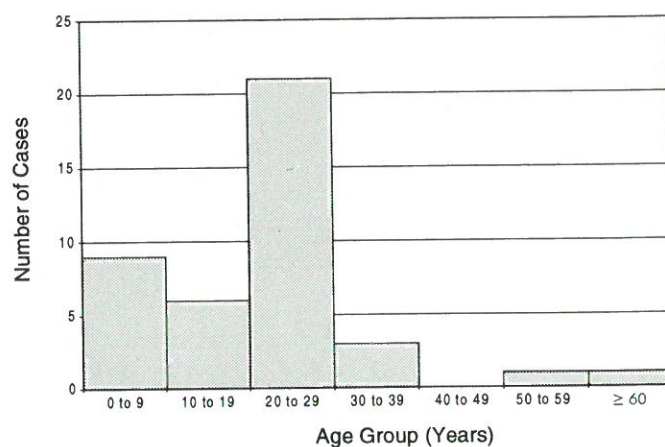
and was made up primarily of cases linked to SFU. The second wave of cases started on February 2 and peaked on February 5. New case reports will change the shape and size of this second wave. Forty-one cases had prodrome onset dates on or after February 2. Nine (22%) of these were linked to SFU and four (three clinical cases and one suspect case) were linked to other post-secondary educational institutions. Twenty-eight (68%) of the 41 cases had no reported association with an educational institution.

Figure 3 presents the age distribution of cases with prodrome onset dates in the second wave (on or after February 2). The majority of these cases were also among those aged between 19 and 29 years.

**Figure 2**  
Measles prodrome onset dates for SFU-linked  
and non-SFU-linked cases



**Figure 3**  
Age distribution of second-wave measles cases  
in British Columbia, February 2-12, 1997



## Conclusions

Early transmission of the virus in this outbreak was mainly among individuals aged 19 to 29 years who had an association with SFU. To date, considerably fewer SFU-linked cases have been identified in the second wave, which suggests that transmission has been reduced but not yet eliminated at SFU.

Most children and adolescents < 18 years old who were reported as cases were not immunized or were under-immunized. The number of cases in this group was lower than otherwise expected; this is probably related to an 85% uptake of a second dose of measles-rubella vaccine offered to those from 19 months of age to end-of-high-school age group in 1996.

Transmission of the measles virus has started to occur in the greater Vancouver area in young adults (19 to 29 years old), some of whom attend other post-secondary institutions. One confirmed case has been identified as an inmate of a provincial correctional facility.

## Control Measures

The British Columbia Ministry of Health has authorized funding to support the measles immunization of all staff and students in post-secondary educational institutions, and all inmates and staff of provincial and federal correctional facilities in British Columbia. As well, all health-care workers in acute-care settings will be offered measles vaccine. Susceptible persons in the general population have been advised to ensure that they have received at least one dose of a measles-containing vaccine.

## Acknowledgements

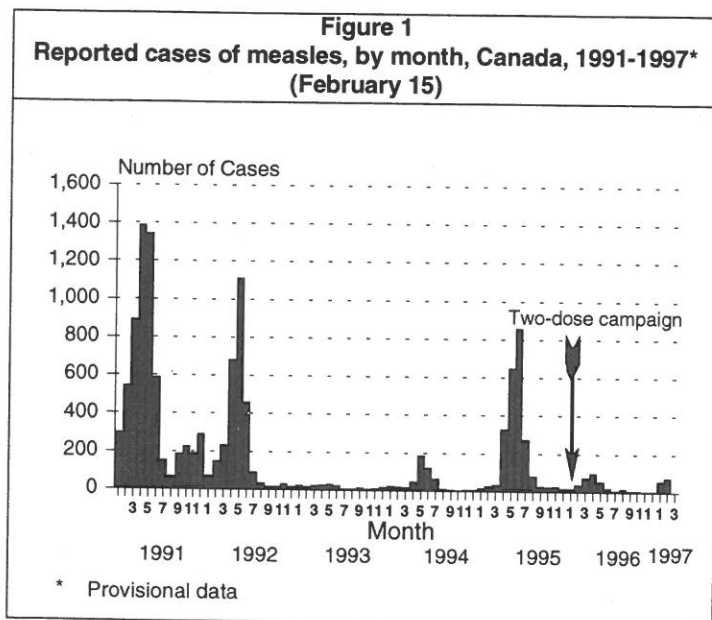
We would like to thank the staff in health units throughout British Columbia, and the Viral Serology Section, British Columbia Provincial Laboratory.

# Measles in Canada, 1996-1997 (as of February 15, 1997)

Paul Varughese, Division of Immunization, Bureau of Infectious Diseases, LCDC, Ottawa

## Measles cases in 1996

From January 1 to December 31, 1996, a provisional total of 327 measles cases (1.1 per 100,000 population) has been reported in Canada. This compares with 2,362 cases reported for 1995, a decrease of 86%. Figure 1 shows the trend in reported cases by month since January 1991. Approximately 88% of the cases (287 cases) reported in 1996 occurred in the first half of the year and prior to the introduction of the mass measles immunization program in Ontario where measles transmission had been ongoing. No deaths attributable to measles were reported in 1996.



## Geographic Distribution

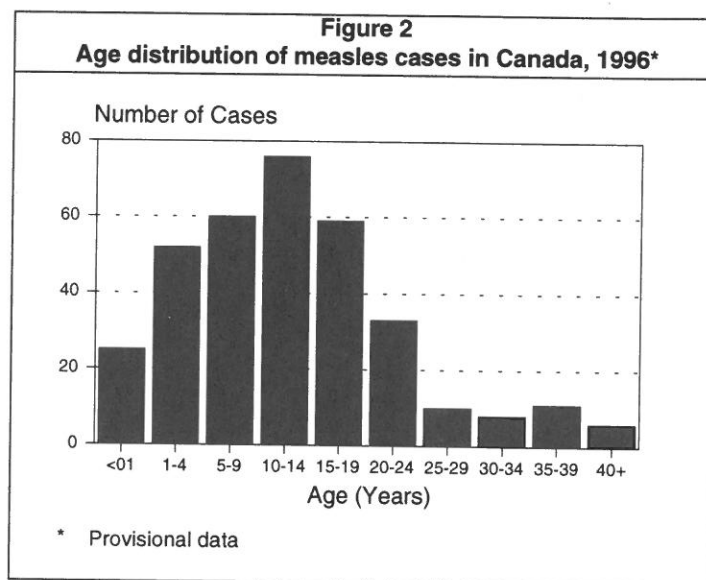
The following provinces/territories reported cases in 1996: Ontario (185), Quebec (83), British Columbia (40), Alberta (eight), Saskatchewan (five), Nova Scotia (four), and the Yukon Territory (two). Thirteen (3.5%) cases have been identified as imported or import-related; all were Canadian residents, most of whom had received one dose of measles vaccine. Of the eight cases in Alberta, five were imported and two were import-related. Countries of exposure include Belgium, France, Greece, Germany, Japan, India, New Zealand, the United Kingdom, and the United States. However, secondary transmission is seldom reported in Canada.

## Confirmation of Diagnosis

The diagnostic status of all cases is not currently available; however, at least 185 (57%) cases reported in 1996 have been laboratory-confirmed, others are possibly epidemiologically linked or clinically compatible cases.

## Age Distribution

In 1996, cases ranged from 2 months to 49 years of age (median: 11 years). Infants accounted for 8%, preschoolers (1 to 4 years) 18%, those 5 to 19 years of age 58%, and those  $\geq 20$  years accounted for 16% of the cases (Figure 2). Measles activity in Quebec, unlike in Ontario or other regions, was unique in that half of the reported cases were older children and young adults (aged 17 to 20 years) attending high school or college; the majority had a history of one-dose measles vaccination. The majority of cases reported from Quebec were not in the age groups targeted in the school-based two-dose catch-up campaign carried out around the same time period.



## Vaccination status

Vaccination information is incomplete because the information was unavailable for many cases, especially adults. At least 62% of the cases had a history of one dose measles vaccination, and 8% were infants <12 months of age.

## Measles cases in 1997

Since January 1, 1997, 133 measles cases have been reported in British Columbia (125), Alberta (six) and Ontario (two). The six cases from Alberta (four in Calgary and two in Edmonton) have been laboratory-confirmed and were linked to the recent outbreak of measles in British Columbia (a report of the outbreak is published in this issue of *Measles Update*). Exposure to the virus was traced to a ringette tournament held in the last week of January, 1997 in Calgary, Alberta which was attended by a British Columbia resident in the prodromal phase of measles. A number of participants from other parts of Alberta, including Edmonton, were potentially exposed at the tournament. Five of the six cases in Alberta are known to have received at least a single dose of measles vaccine. Following an investigation of the cases, a second dose of measles vaccine was offered to students who were identified as potentially at risk (i.e., those lacking



documented evidence of a second dose of measles vaccine or measles disease). Although Alberta did not have a school-based two-dose catch-up program in 1996, many students are reported to have received two-dose vaccination in the past, as part of the outbreak control measures. In Ontario, one of the two cases reported was sporadic. The other case was import-related involving a 17-year-old with a history of a one-dose vaccination. This case contracted measles from an 18-month-old unvaccinated sibling who had developed the disease in late December following a trip to Switzerland and had known contact with measles in that country.

### Comments

Measles transmission in 1996 was mostly in Ontario and certain parts of Quebec whereas to date in 1997, transmission has been reported mainly in British Columbia with a spill-over to

Alberta. The epidemiology of measles is changing in Canada, especially in view of the recent introduction of a two-dose immunization program. The decreasing incidence observed in recent months is undoubtedly due to the impact of the implementation of two-dose measles catch-up campaigns, particularly in the larger provinces such as Ontario and Quebec. Persons who continue to be at risk are unvaccinated susceptibles and approximately 5% to 10% of those who have received only one dose of the vaccine.

### Acknowledgement

The assistance and cooperation of all provincial and territorial epidemiologists, and laboratory staff, medical officers of health and other health care personnel, and staff from LCDC, is greatly appreciated.

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### SPOTlight on Research

The following abstracts represent a selection of studies presented at the Canadian National Immunization Conference held in Toronto, Canada, from December 8 to 11, 1996.

Submissions of final and preliminary reports of measles-related studies are encouraged.

## Vaccination Coverage in Schools During Two-dose Catch-up Measles Immunization Campaign, Quebec City, 1996

Boulianne N<sup>1</sup>, Alain L<sup>1</sup>, Paquin L<sup>1,4</sup>, Arruda H<sup>2</sup>, Clouâtre AM<sup>3</sup> and Douville Fradet M<sup>1,4</sup>

of two measles vaccinations, children with a medical diagnosis of measles and others.

### Introduction

Quebec has set itself the goal of eliminating measles by the year 2002. To do so, a two-dose immunization schedule was implemented in early 1996. At the same time as the second dose was introduced, a catch-up immunization program was announced aimed at all elementary and high school children. The vaccination coverage objective was 85%.

### Method

Surveillance of vaccination coverage started at the beginning of the catch-up campaign, on February 12, 1996. The school population concerned was established from the school registration records provided by the Department of Education. The data on the vaccines administered were gathered every 2 weeks from the *Centre local de services communautaires* (CLSC) by the regional public health departments. A standardized form made it possible to collate the information by elementary and high school level for vaccinated and unvaccinated children. The unvaccinated children were grouped in three categories: children with written proof of earlier administration

### Results

A total of 980,494 children received the monovalent measles vaccine out of the 1,130,070 targeted. Vaccination coverage was thus established at 86.8% (88.0% for elementary school children and 85.0% for high school children). If the children who had already received two doses of vaccine and those who had already had the disease are added, vaccination coverage rises to 89.4% (90.3% for elementary school children and 88.0% for high school children). Vaccination coverage by region varied from 85.3% to 97.4%.

### Conclusion

Such success should allow to limit the risk of an outbreak in that population and to reach the objective of measles elimination. However, as long as there is some importation of cases, there will be limited outbreaks since there are some susceptibles, especially among young adults not immunized during the catch-up campaign. It remains vital to monitor closely the epidemiologic evolution in order to measure the impact of the program. Finally, we must ensure at any cost a high level of immunization coverage among the new birth cohorts in order to avoid a new accumulation of susceptibles.

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<sup>1</sup>Centre de santé publique du Québec

<sup>2</sup>Direction régionale de santé publique de Laval

<sup>3</sup>Direction régionale de santé publique de la Montérégie

<sup>4</sup>Ministère de la Santé et des Services sociaux du Québec

# Safety of the Measles Vaccine: the Quebec Experience

Douville Fradet M<sup>1,2</sup>, Alain L<sup>1</sup>, de Serres G<sup>1</sup>, Robert G<sup>3</sup> and Boulianne N<sup>1</sup>

## Introduction

During the mass measles immunization campaign, conducted in schools in Quebec between February and July, 1996, 980,494 doses of monovalent vaccine were administered to children in elementary and high schools. The unusual situation of a mass immunization offered a unique opportunity for assessing the safety of this type of vaccine.

## Method

A prospective study was undertaken at the beginning of the immunization campaign to determine the frequency of incidents temporally linked to administration of the monovalent measles vaccine. Reports of incidents were gathered from the Quebec ESPRI file. The incidents were systematically validated by regional respondents, using standardized definitions. A provincial validation was carried out in a second phase to ensure the data in the file were consistent and to further completion. The data on the vaccinated populations, which were used as

denominators to calculate the rates, are from the provincial surveillance of vaccination coverage.

## Results

In total, 239 incidents were reported for an overall rate of 29.3 per 100,000 (24.2 per 100,000 among elementary school children and 36.7 per 100,000 among high school children). There were twice as many reports concerning girls as there were concerning boys. In general, the incidents reported were mild, of short duration, and ended in full recovery. Reported events included fever (4.3 per 100,000), local reactions (4.5 per 100,000) and systemic reactions (10.6 per 100,000), the majority of which were allergies. Few neurologic illnesses were reported (1.0 per 100,000); one report of encephalopathy with sequelae is still under investigation.

## Conclusion

The results demonstrate the safety of the monovalent measles vaccine. This type of study does not allow an assessment of the number of reactions attributable to the vaccine, since the rate of infection among the unimmunized population is not known. The results also show the importance of a systematic validation of side-effects, even though there are basic reporting definitions.

<sup>1</sup>Centre de santé publique du Québec

<sup>2</sup>Direction générale de la santé publique, ministère de la Santé et des Services sociaux du Québec

<sup>3</sup>Direction de la santé publique des Laurentides

# Ontario 1996 Measles Elimination Program: Staff Perspective

Khan H and Kerbel D, Disease Control Service, Public Health Branch, Ontario Ministry of Health

## Introduction

Between February and June 1996, Ontario public health staff undertook to immunize 2.1 million students aged 4 to 19 years with a second dose of measles vaccine. Following the campaign, a survey was done to evaluate the effectiveness of central ministry support and the feelings of the staff about the campaign to identify areas for future improvement.

## Methods

Ten questionnaires were mailed to each Ontario health unit for completion by the measles program manager and nine randomly selected public health nurses.

## Results

The response rate was 96.4% (405 of 420 questionnaires). Inservice training sessions were attended by 58% of the staff, 72% of whom found these helpful. The inservice manual was cited as being useful by 73%. Only 42% reported having access to the Ministry of Health's 1-800 measles hot line, but those with access found the line useful (68%), the reply prompt (78%) and

helpful (80%), and the consultants accessible (74%). The bi-weekly measles bulletins were considered useful (85%), easy to understand (91%) and adequate in content (97%). Eighty-nine percent of staff wanted to receive similar bulletins in the future. Promotional materials were perceived by 90% to greatly enhance the campaign, although mass media coverage was considered inadequate. Sixty-eight percent felt the educational materials for parents and teachers were adequate, but recommended a clearer consent process and more information on pregnancy issues. Seventy-one percent felt that equipment supplied was satisfactory, but 17% commented on poor quality needles and 8% on the dry alcohol swabs. Positive aspects of the campaign were: the image of public health in the community (93%), team spirit (91%), and personal and professional satisfaction (80%). Negative aspects of the campaign were neglect of other programs (53%) and the short preparation and completion time.

## Conclusions

Central support for the campaign was satisfactory. Future mass campaigns should have more advance notice and preparation time. Input from field staff regarding simplification of the consent process and increased media coverage are desirable.



# Evaluation of the Impact of the Promotional Materials Used During the Measles Mass Campaign

Pelletier L<sup>1</sup>, Duclos P<sup>1</sup>, Daly P<sup>2</sup> and Kerbel D<sup>3</sup>

## Introduction

In the winter and spring of 1996, six provinces and territories launched measles mass catch-up campaigns. The main objective of this survey was to assess the impact of the promotional materials aimed at parents during the measles mass campaign.

## Methods

A telephone survey was conducted among parents of children aged between 5 and 18 years in Ontario, and children aged 18 months to 18 years in British Columbia (BC) from July 22 to August 16, 1996. Households surveyed were selected from a list of 1,802 residential phone numbers for Ontario and 1,394 numbers for BC obtained through systematic sampling from the ProCD Canada Phone Book.

## Results

A total of 206 eligible households in Ontario and 209 in BC completed the questionnaire. The mean age of respondents was 39 years, approximately 55% had either a college or a university degree and 90% spoke English as the main language at home; the majority of respondents were mothers. With regard to the different sources of measles information in the previous 6 months, 94% of the respondents in Ontario recalled having seen the leaflet distributed at schools while 52% mentioned the newspaper. In BC, the sources of information were more varied; information leaflet (79%), newspaper advertisements and articles

(62%), radio and/or TV public service announcements and interviews (62%), information or posters in doctors' offices (29%) and public health nurses (27%). In Ontario, almost 80% found that the leaflet was the most useful source of information. However, in BC, only 60% considered the leaflet as the most useful source of information; other useful sources mentioned were newspaper articles (10%) and public health nurses (11%). Interestingly, before the mass campaign, only 54% of the parents in Ontario and 63% in BC had considered measles immunization to be important; the proportions had increased to 86% and 89% respectively by the time of the interview. Surprisingly, only 7% of the parents in Ontario and 11% in BC had concerns about measles immunization before the mass campaign, while this percentage at least doubled by the end of the campaign for both provinces. Among 377 children of the families interviewed in Ontario and 402 children in BC, 91% and 89% respectively were vaccinated against measles during or shortly after the mass campaign. In BC, a smaller proportion of preschoolers were immunized (83%), likely because that group was harder to reach.

## Conclusion

The population surveyed in each province had a similar socio-demographic profile. The most notable differences were in the sources and usefulness of information obtained. These differences were attributed to the need to reach parents of preschoolers in BC by other means than the school leaflet. Overall, the knowledge, attitude and practices towards measles immunization are strikingly similar in both provinces.

<sup>1</sup>Division of Immunization, LCDC  
<sup>2</sup>British Columbia Ministry of Health  
<sup>3</sup>Ontario Ministry of Health

# Evaluation of the Measles-Rubella Catch-Up Campaign in British Columbia

Pielak K<sup>1</sup>, Eis C<sup>1</sup>, Daly P<sup>1</sup> and Anderson V<sup>2</sup>

## Introduction

Between April and the end of July, 1996, British Columbia conducted a measles-rubella immunization catch-up campaign as part of a measles elimination strategy. Measles-rubella (MR) vaccine was offered to all children aged 19 months to the end of Grade 12. The campaign was evaluated on completion.

## Methods

Data were collected in three main areas: (a) immunization coverage levels, (b) nursing administration time per injection of

MR vaccine, including all aspects of the nursing services, and (c) adverse events following immunization.

## Results

Overall immunization coverage of the target population was 85.3% as of the end of July 1996. Coverage was 71.1% for preschoolers (age 19 months to 5 years), 93.2% for elementary school children (kindergarten to grade 7), and 83.6% for secondary school children (grades 8 to 12). The total nursing time per injection was approximately 11 to 14 minutes. A total of 437 adverse events following immunization were reported, representing a rate of 63 per 100,000 children immunized. Of these, there were 168 reports of fever and/or rash, 67 local

reactions, 73 allergic reactions (including one suspect case of anaphylaxis), 13 painful and/or swollen joints and 116 other reactions. No cases of measles have been reported since the end of July 1996.

### Conclusions

The overall immunization coverage of 85.3% was sufficient to prevent an outbreak of measles in 1996. Coverage was better among elementary school children than secondary school children. Coverage for preschoolers was lower, likely due to

lower campaign awareness among preschool parents and the logistics of bringing preschoolers into clinics. Most of the nursing time per injection was not related to vaccine administration, but to the logistics of implementing the mass campaign. This information will be valuable in planning future immunization initiatives. The rate of adverse events was lower than anticipated, particularly for joint problems among post-pubertal females, and demonstrates the safety of the MR vaccine.

<sup>1</sup>Communicable Disease Epidemiology Services, BC Centre for Disease Control

<sup>2</sup>Boundary Health Unit, Public Health Nursing, BC Ministry of Health

## The Newfoundland Measles Cohort Study: Measles Immunity After One and Two Doses of Measles-Mumps-Rubella (MMR II) Vaccination

Ratnam S, West R, Gadag V, Williams V and Oates E, Newfoundland Public Health Laboratory, Department of Health and Division of Community Medicine, Faculty of Medicine, Memorial University of Newfoundland

### Introduction

A follow-up study of measles immune status was carried out during 1995-1996 on a cohort of 4-year-old children who received either one or two doses of MMR II vaccine 2 to 3 years earlier. The efficacy of a second dose in those who had a limited antibody response to the first dose was assessed in comparison with those who had a good antibody response after one dose and who did not receive a second dose.

### Methods

The study population comprised of 404 children; 215 males and 189 females. The two groups of vaccinees were divided based on their plaque reduction neutralization (PRN) antibody response 4 to 6 weeks after the initial MMR II vaccination. Those who responded with PRN titres > 250 (one-dose recipients), n = 295; and those who responded with PRN titres < 250, n = 109. The latter group was given a second dose of MMR II between 18 and 24 months of age (two-dose recipients). Measles antibody levels were determined by the PRN test and immune status was assessed based on a PRN protective cutoff titre of > 120.

### Results

At 3 years post-vaccination, among the 295 one-dose recipients, PRN titres dropped to between 8 to 120 in 5 (1.7%) and to 120 to 250 in 27 (9.2%), while in the remaining 263 (89.2%) PRN titres remained > 250. Among the 109 two-dose recipients, 12 (11%) had PRN titres < 8 after the first dose, 45 (41.3%) had titres between 8 to 120, and 52 (47.7%) had titres between 120 to 250. Four to six weeks after the second dose, these proportions changed to 0%, 1.8%, and 9.2%, respectively, with the remaining 89% having boosted titres > 250. However, at 2 to 3 years post-second dose, these proportions changed to 0.9%, 26.6%, 14.7%, and 57.8%, respectively.

### Conclusion

MMR II-induced measles antibody response declines slowly over time. However, those who respond well to the first dose of MMR II maintain adequate levels of protective antibody titre up to 3 years. The majority of those with a low antibody response to the first dose respond well to the second dose. However, approximately one fourth of this group fails to sustain protective antibody titres over 2 to 3 years. A routine two-dose measles vaccination strategy is beneficial and can assist in the control and elimination of indigenous measles in Canada.



## English-speaking Caribbean Holds 5-Year Measles-Free Record

*Adapted from EPI Newsletter, Vol XVIII, No 6, 1996 [Pan American Health Organisation (PAHO), Washington, DC]*

The English-speaking Caribbean continues to hold the longest record in the Western Hemisphere of 5 years without measles. At the Thirteenth Meeting of the Caribbean EPI Managers held in Miami Beach, Florida from November 4 to 6, 1996, discussions focused on the build-up of susceptibles and actions needed to prevent the re-introduction of the disease.

During the 1992-1996 period there was no laboratory-confirmed indigenous measles transmission despite intensive surveillance and the investigation of 1,453 suspected measles cases. The level of measles vaccination coverage ranged from 75% to 86%. The last two confirmed cases were reported from Barbados in August 1991. Over 270 cases have been discarded as rubella, 58 dengue, and 1,125 with other diagnoses. In 1995, the Caribbean Epidemiology Center (CAREC) laboratory investigated 334 suspected measles cases reported from 16 CAREC member countries. Jamaica had the highest number of suspected measles cases in 1995 due to a rubella epidemic. Dominica and Turks & Caicos also had relatively high numbers of cases due to a dengue epidemic.

Virtually all countries in the sub-region have already implemented the PAHO's three-step strategy for measles eradication. Follow-up campaigns have been carried out in 14 of the 19 countries. Five countries have not implemented the follow-up campaign as yet. Suriname is waiting for vaccines and plans to conduct a follow-up campaign in 1997. Trinidad and Tobago has decided to conduct a mop-up campaign for low-coverage and hard-to-reach areas, and the need for a follow-up campaign is being evaluated. Bermuda, Bahamas and Cayman Islands are not planning a follow-up campaign at this time. Countries continued to work toward reaching the measles eradication target of 95% measles vaccination coverage.

Since launching the Measles Elimination Surveillance System on September 28, 1991 through December 31, 1995, there had been 223 weeks of reporting. During that time, most countries exceeded the target of 80% completeness for weekly reports.

Responding to the feedback received from the recent measles surveillance evaluations in the Americas, the English-speaking Caribbean analysed the quality of the case reporting forms. While countries were performing generally well, surveillance areas to be strengthened included more detailed information regarding the presence or absence of conjunctivitis, coryza or cough, vaccination history date of the last vaccination and the patient's address.

In the absence of measles cases, key indicators of population susceptibility are vaccination coverage and the accumulation of susceptibles who either were not vaccinated or have experienced primary vaccine failure. Importations are the only way measles can re-emerge in the region. Given the high volume of tourists every year, there is concern that if follow-up campaigns are not conducted, particularly in Trinidad and Tobago, there is a high risk of an outbreak, which could threaten the other countries as well. A follow-up campaign was strongly recommended for that country.

The following were highlighted as indications of the English-speaking Caribbean's commitment to sustaining the region's measles-free status:

- The measles catch-up campaign has been implemented by 18 of the 19 countries.
- Routine vaccination programs have maintained coverage levels over 80%.
- Follow-up campaigns have been or are being implemented in 14 of the 19 countries.
- Elimination efforts continue at the same pace, even after 5 years since the *Big Bang* mass vaccination campaign.
- Governments are covering over 80% of recurrent immunization costs.
- Commitment is deeply entrenched among people at various levels including politicians, chief medical officers, program managers, public health staff, and laboratory staff.

Submissions of pertinent reports/epi notes are welcome and the success of this endeavour depends upon the readers' interest and cooperation. Priority for inclusion in the newsletter is determined by the article's relevancy. This is not a formal publication, and the views and interpretation may not necessarily reflect Health Canada's position. Distribution is free of charge. Anyone wishing to receive a copy on a regular basis should contact the Division of Immunization, Bureau of Infectious Diseases, LCDC, Ottawa, Ontario, K1A 0L2; telephone (613) 957-1340; Fax (613) 998-6413.

### Editors:

Adwoa Bentsi-Enchill (613) 954-4365  
Paul Varughese  
Philippe Duclos  
Division of Immunization  
Bureau of Infectious Diseases  
FAX: (613) 998-6413

### Preparation:

Editorial and Production Services  
Dissemination Division  
Bureau of Strategic Planning and  
Risk Management

Laboratory Centre for Disease Control, Health Canada  
Tunney's Pasture, Ottawa, Ontario K1A 0L2