

New Brunswick Disease Watch Bulletin

Introduction:

Welcome to the second edition of the New Brunswick Disease Watch. In this volume we look at the constituents of the measles/mumps/rubella (MMR) vaccine and update the clinical picture and diagnostic criteria. Outbreaks of mumps have occurred in Quebec and of measles in British Columbia recently and cases may be seen here. There is also an update on Giardia where a non-seasonal spike of cases occurred in the Moncton area in Jan/Feb 2010. We continue to welcome feedback and suggestion for topics to paul.vanbuynder@gnb.ca.

Measles

Measles (rubeola) is caused by a virus in the family Paramyxoviridae, genus Morbillivirus and is a leading cause of vaccine-preventable deaths in children worldwide.

It is highly contagious, transmitted by airborne droplets or through contact with the nasal or throat secretions of infected persons. People are usually considered infectious from four days before until four days after the onset of the rash. Average incubation is 14 days.

Signs and Symptoms

- Prodromal fever
- Malaise
- Cough (productive)
- Coryza
- Conjunctivitis
- Koplik spots on the buccal mucosa
- Generalized maculopapular rash- begins on the face



Complications can include diarrhea, otitis media, bronchopneumonia, blindness and encephalitis. The most severe sequela of measles is subacute sclerosing panencephalitis (SSPE), a fatal disease of the CNS that develops seven to 10 years after infection. In Canada, death is estimated to occur once in 3,000 cases. Measles during pregnancy results in a risk of premature labour, spontaneous abortion and low birth weight infants.

Natural infection produces lifelong immunity. Asymptomatic, IgM-positive persons have not been found to be infectious.

Case investigation

All reports of suspected measles cases should be investigated immediately. Essential components of case investigation include establishing a diagnosis of measles, obtaining immunization histories for persons with confirmed cases, identifying sources of infection, assessing the potential for transmission, and obtaining specimens for viral isolation.

Laboratory confirmation

Measles is now a rare disease so clinical evidence is not sufficient to confirm a case. To minimize false-positive laboratory results, laboratory tests should be restricted to patients most likely to have measles, i.e., those with fever and a generalized maculopapular rash.

Confirmatory tests: IgM, Paired sera for IgG Useful tests: Culture, RT-PCR

| Test name | Specimens to take | Timing for specimen collection | Collection requirements |
|--------------|--|---|--|
| IgM antibody | Serum | ASAP, and repeat 72 hours after onset, if the first sample is negative | IgM is detectable for at least 28 days after rash onset. |
| IgG antibody | Paired sera | Acute: ASAP after rash onset (7 days at the latest) Convalescent: 10–30 days after acute | |
| Culture/PCR | Nasopharyngeal aspirates, throat swabs, urine, heparinized blood | Collect at same time as samples for serology (best within 3 days of rash onset) | RT-PCR for molecular typing. Do not collect after 10 days from rash onset. |

Epidemiology

Since the introduction of vaccine in 1963, the incidence of measles has declined markedly in Canada. However, between 1989 and 1995, despite high vaccine coverage, there were many outbreaks involving children who had received one dose of measles vaccine. It was estimated that 10% to 15% of immunized children remained unprotected after a single dose given at 12 months of age.

In 1996/97, every province added a second MMR dose to its routine schedule. These interventions achieved vaccine coverage for the second dose in excess of 85%, reducing the proportion of vulnerable children to such a negligible level that viral transmission could not be sustained. Imported cases continue to occur but secondary spread from imported cases is self-limited and involves the few Canadians who are still vulnerable.

Over the past five years, there has been an average of 10 measles cases each year in Canada with clusters of approximately four cases. The last large outbreak occurred in 2007 in Quebec where 95 cases were confirmed. Nearly all of the cases were susceptible individuals who were under-immunized (one dose of vaccine) or not immunized at all. Over half of cases were between the ages of one and 10 years.

Between 1996 and 2005, New Brunswick (NB) had 10 reported measles cases, with no cases reported in the last 4 years.

Disease surveillance

Measles has been nationally notifiable in Canada since 1998. All provinces report confirmed cases of measles weekly to the Public Health Agency of Canada which in turn report weekly to the Pan American Health Organization.

Prompt recognition, reporting, and investigation of measles are important because the spread of the disease can be limited with early case identification and vaccination of susceptible contacts.

Immunization

The Measles, Mumps, Rubella (MMR) vaccine is a mixture of three live attenuated viruses and is given by subcutaneous injection as a two-dose schedule. The first dose is administered at 12 months and the second at 18 months of age. A second dose of MMR vaccine is recommended for adults born in 1970 or later who are not immune; have not been previously immunized or may be at greatest risk of exposure. These include travelers to measles-endemic areas, healthcare workers, military recruits and students at post-secondary institutions. In 2007 New Brunswick commenced a six year catch-up program for grade 12

students, adults under 24 and those born in 1970 or later and attending a post-secondary institution.

Approved MMR vaccines in Canada include MMR II and Priorix. The MMR-V (MMR plus varicella vaccine) is also approved in Canada, however currently it is unavailable and not publicly funded.

The MMR vaccine has an excellent safety record. Because it is a live vaccine, side effects following vaccination can be similar to a very mild case of measles. More than 80% of children experience no side effects.

The Reporting and Diseases Regulation 2009-136, Public Health Act, requires that children entering a New Brunswick school for the first time, or those attending a day care center, show proof of immunization against measles, mumps and rubella unless a certificate of medical exemption or personal objection is presented.

MEASLES ALERT:

55 measles cases have been reported in British Columbia since the second week of March 2010. In the Lower Mainland of BC, eight of their 14 cases are associated with a single household with unvaccinated members. It is suspected that at least two out-of-country visitors brought measles into Vancouver sometime in February or early March, as two separate strains of the virus have been identified.

If any doctors become aware of measles cases linked to Vancouver please obtain specimens and details of contacts and travel; then, notify a Medical Officer of Health.

Mumps

Mumps is an acute viral infection characterized by fever, headache and inflammation of the salivary glands. Complications can include orchitis (in 20 to 30 per cent of males), oophoritis (in five percent of females), deafness and meningo-encephalitis.

Since the introduction of the mumps vaccine in Canada in 1969, there has been a decrease of more than 99 per cent in the number of reported cases; down from an average of 34,000 cases reported per year in the early 1950s to fewer than 400 cases per year in the early 1990s.

From 1996 to 2006, Canada experienced five mumps outbreaks, with the number of cases ranging from 13 to nearly 200. In 2007, 1,284 mumps cases were reported nationally. Most (1,159, or 90 per cent) were associated with outbreaks in Nova Scotia, New Brunswick and Alberta. More than half (58 per cent) occurred in persons 20 to 29, many of whom were college or university students. In the first half of



2008, there were 377 mumps cases compared with 666 for the same time in 2007.

In August 2009 a mumps outbreak occurred in Sullivan County, New York, in a summer camp of 400 boys from the tradition-observant religious community. The index case was an 11 year old boy who had returned from the United Kingdom where a mumps outbreak was occurring with approximately 4,000 cases. As of October 30 2009, 179

confirmed or probable cases had been identified in New York and New Jersey. In September 2009, members of the affected New York and New Jersey communities travelled to the province of Quebec to attend religious gatherings. Sixteen cases of mumps reported in Quebec have been linked to the Jewish communities. An ongoing outbreak of mumps mainly affecting indigenous communities was also reported at the start of December.

As of April 6, 2010, a total of 239 cases of mumps were reported in ten of the 18 Quebec regions of which 64% were linked to the indigenous communities. Of the confirmed mumps cases, 74% had received at least one dose of vaccine.

Although, New Brunswick itself has had only one reported case of mumps in 2009 and no reports thus far in 2010, health practitioners are requested to continue to test for and report any suspected mumps cases to a Medical Officer of Health.

Giardiasis

Giardiasis is an infection caused by *Giardia lamblia*, a flagellate protozoan (microscopic parasite). Infection may be asymptomatic but giardia may also cause acute or self-limited diarrhea and/or lead to intestinal symptoms like chronic diarrhea, steatorrhea, abdominal cramps, bloating, frequent loose greasy stools, fatigue, malabsorption, dehydration and weight loss. Symptom duration varies from two to six weeks in healthy persons and medication may help reduce it. Symptoms usually appear seven to ten days after exposure but the incubation period may range from three to 25 days. The reservoir of *Giardia lamblia* is human, wild animals and pets exposed to contaminated water.

Giardia lamblia infections are reported worldwide, mostly in children. Infection can follow accidentally swallowing the parasite from a wide range of sources: soil, food and water contaminated by an infected

human, or animal: or pet exposed to contaminated water. Person-to-person transmission is also possible via a fecal-oral route. The most important risk factors are: having a child in daycare, being in close contact with an infected person, drinking unfiltered water from a contaminated source, accidentally drinking water while swimming in a contaminated water source, being exposed to human feces through sexual intercourse and using ineffective water treatment methods while hiking or camping.

In New Brunswick (NB), giardiasis is a common infection, ranking in the top ten of the most reported notifiable diseases. From 2005 to 2009, an average of 95 cases was reported each year, with numbers ranging from 85 to 105. During that period, almost half of infections (47%) were reported from August to November with a peak in September. The annual incidence rate varies among age groups and months of the year. Peoples aged from 60 to 69, 0 to 9 and 30-39 are the most

Giardiasis National Case Definition

Confirmed case

Laboratory confirmation of infection (with or without symptoms) from stool, duodenal fluid or small bowel biopsy specimen:

- demonstration of *Giardia lamblia* OR
- demonstration of *Giardia lamblia* antigen

Probable case

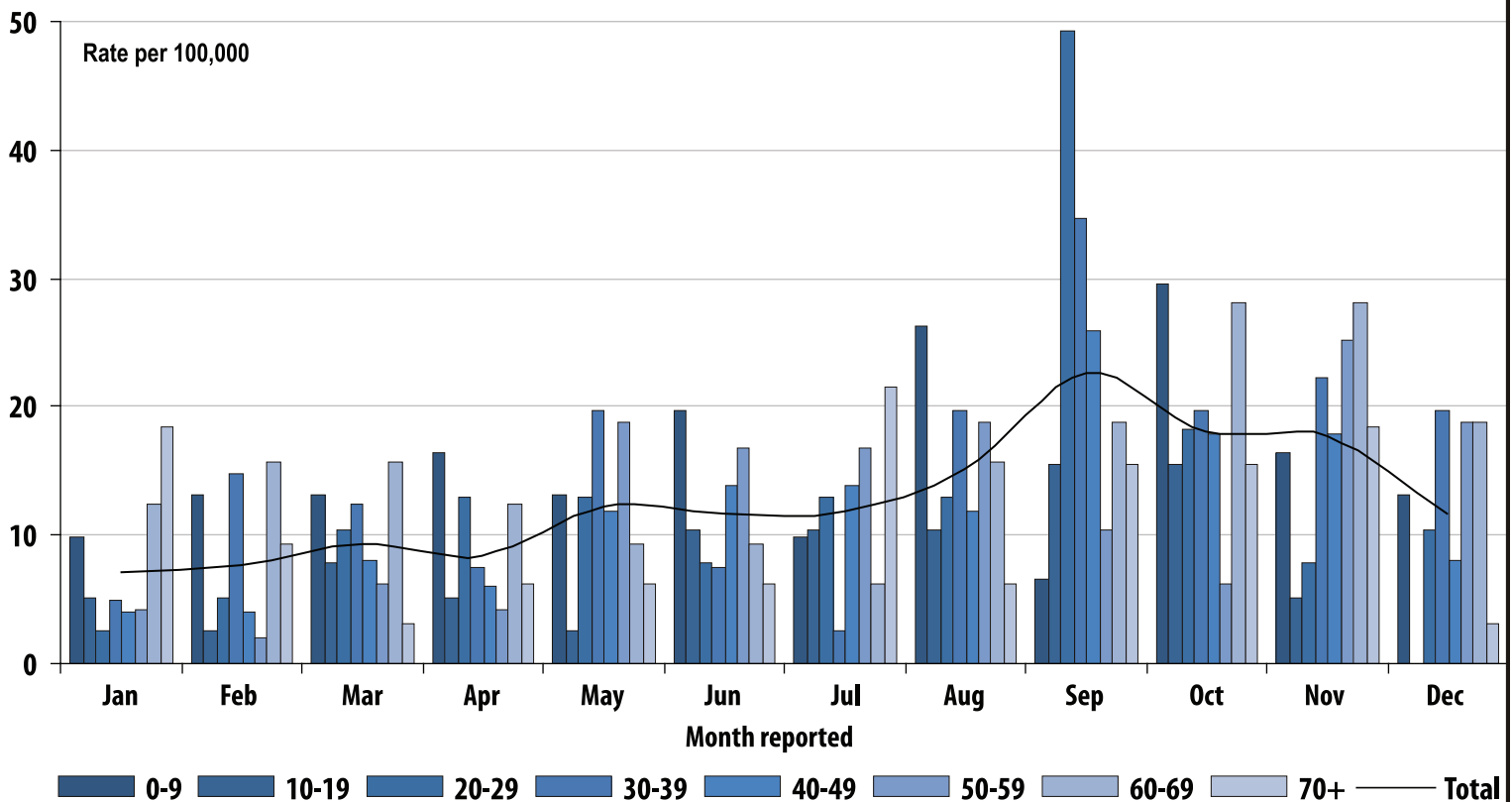
Clinical illness in a person who is epidemiologically linked to a confirmed case.

affected in NB. However, the highest incidence rate is observed among 20 to 29 years old people in September. This may be related to hiking season.

So far this year (January and February), the number of cases of giardiasis is higher than expected in NB: 15 against an average of 9 for these months in the past 5 years. The increase is

principally localized in the Moncton area. Eight cases were reported in the past two months compared to an average of 3 in the past 5 years for the same period.

Annualized Incidence Rate of Giardia lamblia Infections by Age Groups and Months, New Brunswick, 2005-2009 (N=476)



H1N1 ALERT:

The pandemic H1N1 vaccine will only be available until May 31, 2010. The vaccine is recommended to be given to unimmunized people, particularly those newly pregnant and children who have turned six months of age. Children do not require a second dose. The vaccine is available through local Public Health offices, the Victorian Order of Nurses and some family physicians.

For locations, visit <http://www.gnb.ca/0053/h1n1/protecting-e.asp>

All centers currently providing pandemic H1N1 can contact their local Public Health Office for instructions on how to return excess vaccine. The OCMOH would like to thank everyone who has assisted in this very successful program. We look forward to continuing the working collaborations that have been established.

NOTIFICATIONS

In New Brunswick the Public Health Act requires that cases of measles, mumps or giardiasis are reported to a Medical Officer of Health.

Measles: Orally within one hour after identification, followed by a written report by the end of the next working day.

Mumps and Giardiasis: Orally as soon as possible within 24 hours of identification, followed by a written report within one week after.