Prince Edward Island
CANADA
Health and Wellness

Prince Edward Island Guidelines for the Management and Control of Invasive Meningococcal Disease

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Department of Health and Wellness
Chief Public Health Office

Contents

Case Definition (1)

Confirmed Case

Clinical evidence of invasive disease[1] with laboratory confirmation of infection:

- isolation of *Neisseria meningitidis* from a normally sterile site (blood, CSF, joint, pleural or pericardial fluid)
  OR
- demonstration of *N. meningitidis* DNA by an appropriately validated nucleic acid test (NAT) from a normally sterile site

Probable Case

Clinical evidence of invasive disease with purpura fulminans or petechiae, with no other apparent cause and with non-confirmatory laboratory evidence:

- detection of *N. meningitidis* antigen in the CSF

Laboratory Comments

Positive antigen test results from urine and serum samples are unreliable for diagnosing meningococcal disease.

Clinical Evidence

Clinical illness associated with invasive meningococcal disease usually manifests itself as meningitis and/or septicaemia, although other manifestations may be observed (e.g. orbital cellulitis, septic arthritis). Invasive disease may progress rapidly to petechiae or purpura fulminans, shock and death.

Reporting Requirements (2) (3)

1. **Laboratories**
   The Provincial Laboratory shall, in accordance with the Prince Edward Island (PEI)*Public Health Act*(2), report all positive molecular tests and all serological evidence of infection by phone, **and** fax, or electronic transfer, as soon as the result is known, to the Chief Public Health Officer (CPHO) or designate as required by the PEI Reporting of Notifiable Diseases, Conditions, and Events Regulations(3).

2. **Health Practitioners**
   Health practitioners shall, in accordance with the PEI Notifiable Diseases and Conditions and Communicable Diseases Regulations of the (PEI) *Public Health Act* (2), report all probable and confirmed cases as soon as the result is known, to the CPHO (or designate).
   1. positive laboratory report, and
   2. other relevant clinical / epidemiological information.

[1] Invasive meningococcal disease usually manifests itself as meningitis and/or septicemia, although other manifestations may be observed (e.g. orbital cellulitis, septic arthritis). Invasive disease may progress rapidly to purpura fulminans, shock and death.

Etiology (4)

Invasive meningococcal disease (IMD) (Appendix A) is caused by the gram-negative bacterium *Neisseria meningitidis* (meningococcus). Meningococci can be classified based on the immunologic reactivity of the polysaccharide capsule into 12 different serogroups, of which five (A, B, C, W-135 and Y) are associated most frequently with IMD in Canada and around the globe, with incidence varying by the meningococcal serogroup.

Clinical Presentation (4) (5)

The most common form of meningococcal infection is the carrier state, where colonization occurs in up to 10% of healthy individuals. A person may remain a carrier for up to six months and remain asymptomatic.

In a small proportion of carriers, the bacterium invades the blood or meninges leading to invasive meningococcal disease. Symptoms occur 2 to 10 days (usually 3 to 4 days) after exposure.

Symptoms include:

- the sudden development of fever
- drowsiness
- irritability or agitation
- intense headache
- nausea
- vomiting
- stiff neck and
- photophobia

Most commonly, invasive disease results in meningitis and/ or septicemia, in addition to a characteristic non-blanching petechial or purpuric rash.

Meningitis

Meningitis occurs in approximately 50% of persons with invasive disease and is characterized by abrupt onset of fever, intense headache, chills, malaise, prostration, nausea, vomiting, nuchal rigidity, and photophobia. In infants and toddlers, symptoms may have a slower onset, signs may be subtle and non-specific such as poor appetite, lethargy and irritability. Neck stiffness may be absent, and a bulging fontanelle may be seen.

Meningococcemia (sepsis)

Approximately 35 to 40% of IMD cases present as meningococcemia, which is the most severe form of invasive disease. Early symptoms of sepsis include cold hands and feet, leg pains, and pallorous or mottled skin color. Symptoms of meningococcemia also include sudden onset of fever, a characteristic petechial or purpuric rash which may progress to purpura fulminans, circulatory collapse, and death can occur within hours of onset

Severe cases can result in delirium and coma and, if untreated, toxic shock and death. Overall mortality is approximately 10%, and up to a third of survivors have long term sequelae which include hearing loss, neurologic disabilities, and digit or limb amputations.

Epidemiology (4) (5) (6)

1. Reservoir

The reservoir is humans.

2. Transmission

It is transmitted from an infected person (including carriers) to another person through close, direct contact such as kissing, coughing, and sneezing. Transmission can also occur through saliva when sharing items such as cigarettes, lipstick, food, and drinks, etc.

Bacterial eradication from the nose and throat usually occurs within 24 hours of appropriate antimicrobial therapy.

3. Incubation Period

Meningococcal disease is characterized by a short incubation period (2 to 10 days, usually 3 to 4 days).

4. Period of Communicability

The period of communicability is 7 days prior to the onset of symptoms and up to 24 hours after the initiation of appropriate antibiotic therapy.

5. Host Susceptibility

Risk factors for IMD include host, organism and environmental factors.

Table 1: Examples of Risk Factors

Risk Factors	Examples
Age	• Children < 2 years of age are at greatest risk • Followed by adolescents and young adults aged 16–21 years • Adults > 65 years
Close contact with a case	• Household members • Persons who share sleeping arrangements with the case • Daycare workers & attendees
Living in closed crowded conditions	• Military groups • Post-secondary students living in dormitories
Immune suppressed	• HIV infection • Anatomic or functional asplenia
Travel to hyperendemic/epidemic areas	• African meningitis belt • During the Hajj in Saudi Arabia
Other	• Smoking or exposure to second-hand smoke • Recent respiratory viral infection

Occurrence (7)

1. General

Neisseria meningitidis is one of the leading causes of bacterial meningitis globally and can also cause sepsis, pneumonia, and other localized infections. There are 12 serogroups, but the majority of invasive meningococcal infections are caused by organisms from the A, B, C, X, Y, or W-135 serogroups. The annual number of invasive disease cases worldwide is estimated to be at least 1.2 million, with 135,000 deaths related to invasive meningococcal disease (IMD).

2. Canada (7)

Invasive meningococcal disease is endemic in Canada. The incidence rate varies considerably amongst serogroups, age groups, geographic locations and time.

Between 2006 and 2011, an average of 196 cases of IMD was reported annually in Canada, with an average incidence of 0.58 cases per 100,000 population. During this time period, incidence rates were highest among infants less than one year of age (average 7.35 cases per 100,000), followed by 1 to 4-year-olds (1.89), and 15 to 19-year-olds. Although IMD is rare, cases are reported year-round with peaks in the winter season.

In Canada, serogroups B, C, W-135 and Y are the most commonly reported serogroups. Between 2006 and 2011, incidence rates of serogroup B were highest (0.33 cases per 100,000) for all meningococcal isolates.

With the introduction of meningococcal C immunization programs, not unexpectedly, the incidence of serogroup C has decreased significantly from 0.13 in 2006 to 0.01 in 2011.

While the incidence of serogroup B remains predominant, diseases of serogroup W-135 and Y have stabilized at relatively lower incidence rates of 0.03 (range: 0.02 to 0.04) and 0.10 (range: 0.08-0.11), respectively.

IMD caused by serogroup B has tended to affect people in younger age (median age 16 years) whereas serogroups C, W-135 and Y have tended to affect people in older age groups (median age 43, 38 and 47 years, respectively).

3. Prince Edward Island

The last lab-confirmed case of IMD in PEI was reported in 2015.

Control (8) (9) (10)

Invasive meningococcal disease due to infection by serogroups A, B, C, W-135, and Y can be prevented by immunization.

Routine use of monovalent meningococcal vaccine against serogroup C (Appendix B) is recommended for all infants as a part of the routine immunization schedule.

A booster dose of either monovalent serogroup C vaccine or quadrivalent vaccine (Appendix C) (for protection against serogroups A, C, W-135, and Y) is recommended around the age of 12 years. Additionally, quadrivalent vaccine is recommended for selected individuals at increased risk of acquiring infection.

Meningococcal B Vaccine (Appendix D) is recommended for individuals who have an increased risk of invasive meningococcal disease (IMD) because of underlying medical conditions and those attending a post-secondary school **and** living in residence in PEI or out-of-province.

Diagnosis (4) (5)

Meningococcal disease is diagnosed by culture of *N. meningitidis* from a normally sterile site (e.g., blood, CSF) or purpuric lesions. Meningococcal disease may also be diagnosed through detection of *N. meningitidis*-specific nucleic acid in a specimen obtained from a normally sterile site using a validated polymerase chain reaction (PCR) assay. Although culture remains the gold standard for diagnosis of meningococcal disease, PCR is useful for detection of N. meningitidis from clinical samples, particularly when a patient was treated with antibiotics prior to specimen collection. Identification of gram-negative diplococci identified in a sterile site specimen strongly suggests *N. meningitidis* but is not confirmatory.

Key Investigation

Confirm diagnosis and ensure that individual meets case definition.

- Obtain history of illness including the date of onset, signs and symptoms.
- Identify risk factors for acquiring invasive meningococcal disease including history of recent travel or exposure to a confirmed case.

- Determine the possible source of infection taking into consideration communicability, incubation period, and mode of transmission.
- Determine eligibility and immunization history specific to meningococcal disease:
    - number of doses,
    - date administered,
    - where the person was immunized (e.g., out of country),
    - type of immunization provider (e.g., public health, doctor's office, travel clinic), and
    - if not immunized, determine reason why.
- Identify close contacts to the case within the seven days prior to onset of symptoms in the case and up to 24 hours after the case commences appropriate antibiotic therapy

Management of a Case (8)

- Probable cases should be managed as confirmed cases until laboratory results are reported.
- All confirmed and/or probable cases are to be reported to the CPHO as soon as the cases are known (See Reporting Requirements).
- The CPHO will inform Public Health Nursing (PHN) or First Nations Health (Abegweit, Lennox Island) of cases for follow-up contact tracing and education (see close contact section below)
- In addition to routine practices, hospitalized individuals should be placed under droplet precautions until 24 hours of appropriate antibiotic therapy have been completed.
- Cases who are unimmunized or partially immunized should be offered meningococcal-containing vaccine.

Management of Contacts (8) (9)

Prince Edward Island Public Health Nursing (PHN) or First Nations Health (Abegweit, Lennox Island) will obtain the names of exposed contacts during the initial interview with the case and create a list of those who would be susceptible to infection.

Health care workers should be advised to notify Occupational Health & Safety and/or Employee Health to determine immunization status and susceptibility to disease following exposure.

- Determine type of exposure during the seven days before onset of illness in the case and 24 hours after the case initiated appropriate antibiotic therapy.
- Determine eligibility for post-exposure prophylaxis (PEP). Refer to the section Post Exposure Prophylaxis for Contacts (Appendix E) for more information.
- Determine meningococcal immunization history (i.e., type of vaccine, number of doses and date of administration).
- Any contacts who are unimmunized or partially immunized should be offered an age-appropriate dose of meningococcal-containing vaccine if they are eligible according to the current Adult Immunization Program (AIP).
- Provide information about meningococcal disease, including signs and symptoms.
- Refer symptomatic contacts for assessment as appropriate.

- Advise asymptomatic contacts to monitor closely for symptoms and to seek immediate medical assessment if they develop febrile illness or any other signs or symptoms of meningococcal infection within 14 days following their last exposure to the case.

Definition of Close Contact

- Individuals living and/or sleeping in the same household*/dorm room as the case.
- Staff and children in childcare facility or nursery school.
- Individuals who have had direct contact with the oral/nasal secretions of the case (e.g., kissing, shared cigarettes, food, glasses/bottles, eating utensils).
- Persons with prolonged contact (more than eight hours) in close proximity (less than or equal to one metre) to the case (e.g., roommates during travels).
- Health care workers who have had intensive unprotected contact (without the use of appropriate protective equipment [PPE]) with the nasopharyngeal secretions of the case (e.g., intubation, suctioning, closely examining the oropharynx, and/or resuscitation).
- Airline passengers sitting immediately on either side of the case (but not across the aisle) when the total time spent aboard the aircraft was at least eight hours.
  *NOTE: contacts who live in the same household as the index case are 500 to 1200 times more likely to develop IMD than the general population. The increased risk for disease for household contacts may extend for up to one year after the disease in the case, well beyond any protection derived from chemoprophylaxis.

Secondary Contact

A person who is in contact with a household member, but who has not been in contact with the index case. Secondary contacts do **not** need chemoprophylaxis.

Post Exposure Management (10)

Contacts of cases

Close contacts of individuals with meningococcal infections have an increased risk of developing IMD; this risk is greatest for household contacts. The increased risk of disease for household contacts persists for up to 1 year after disease in the index case and beyond any protection from antibiotic chemoprophylaxis. In general, this prolonged risk is not seen in contacts who do not have ongoing exposure.

Chemoprophylaxis should be offered to all persons having close contact with a case of IMD from 7 days before onset of symptoms in the case to 24 hours after onset of effective treatment in the case, regardless of their immunization status (Appendix E).

Vaccination or re-vaccination of certain close contacts should be considered in addition to chemoprophylaxis when the serogroup is vaccine preventable, as it may further reduce the risk of subsequent meningococcal disease.

Close contacts Requiring Chemoprophylaxis and Consideration for Immunoprophylaxis

The following individuals (regardless of immunization status) should receive chemoprophylaxis (Appendix E) and, if the meningococcal serogroup identified in the case of IMD is vaccine preventable, should also be considered for immunoprophylaxis:

- Household contacts of a case of IMD
- Persons who share sleeping arrangements with a case of IMD
- Persons who have direct nose or mouth contamination with oral or nasal secretions of a case of IMD (e.g., kissing on the mouth, shared cigarettes, sharing bottles)
- Children and staff in contact with a case of IMD in childcare or nursery school facilities

Refer to the Canadian Immunization Guide (CIG) for specific recommendations for immunoprophylaxis of close contacts of IMD cases according to the serogroup in the index case and the age and underlying conditions of the contact.

Re-vaccination Criteria for Those Previously Vaccinated Against IMD

The following provides criteria for the re-vaccination of previously vaccinated close contacts when the index case has a vaccine preventable IMD serogroup or there is a vaccine preventable outbreak of IMD:

- Those previously vaccinated with a serogroup that differs from the index case or outbreak strain should be vaccinated immediately with the appropriate vaccine;

- Those previously vaccinated with a serogroup that is the same as the index case or outbreak strain should be re-vaccinated with the appropriate vaccine:

    - If they were less than 1 year of age at last meningococcal vaccination and more than **4 weeks** has passed since their last meningococcal vaccine;

    - If they have an underlying medical condition that puts them at risk for meningococcal disease and more than **4 weeks** has passed since their last meningococcal vaccine;

    - If more than **a year** has passed since their last meningococcal vaccine, if they were not less than 1 year of age at the time of their last meningococcal vaccination and if they have no underlying medical condition that puts them at risk for meningococcal disease.

Close Contacts Requiring Chemoprophylaxis Only (Appendix E)

The following individuals should receive **chemoprophylaxis only**; immunoprophylaxis is not necessary:

- Health care workers who have had **intensive unprotected contact** (without wearing a mask) with infected patients (i.e., intubating, resuscitating or closely examining the oropharynx).

- Airline passengers sitting immediately on either side of the case (but not across the aisle) when the total time spent aboard the aircraft was at least 8 hours.

- Close contacts of a case of IMD due to serogroups not present in meningococcal vaccines, or when the serogroup in the index case has not been determined.

- Previously vaccinated close contacts who do not meet the criteria for re-vaccination as outlined above.

The primary means for prevention of sporadic meningococcal disease is antimicrobial chemoprophylaxis of close contacts of infected persons.

Because the rate of secondary disease for close contacts is highest immediately after onset of disease in the index patient, antimicrobial chemoprophylaxis should be administered as soon as possible, ideally less than 24 hours after identification of the index patient. Conversely, chemoprophylaxis administered more than 14 days after onset of illness in the index patient is probably of limited or no value.

Rifampin, ciprofloxacin, and ceftriaxone are 90% to 95% effective in reducing nasopharyngeal carriage of N. meningitidis and are all acceptable antimicrobial agents for chemoprophylaxis.

Outbreak Identification (8)

An outbreak is defined as increased transmission of *N. meningitidis* in a population, manifested by an increase in cases of the same serogroup.

Outbreaks can be subdivided into organization-based or community-based outbreaks using the criteria shown in the table below.

Types of Outbreak	
Organization-based	Increased transmission of *N. meningitidis* in an organization or institution with two or more cases of the same serogroup occurring within a 4-week interval. This includes restricted populations, such as schools, day care, sports groups or social groups, as well as nursing homes or long-term care facilities.
Community-based	Increased transmission of *N. meningitidis* in a community, with three or more confirmed cases of the same serogroup occurring within a 3-month interval AND an age-specific incidence OR specific community population incidence of approximately 10/100,000, where there is an absence of an epidemiologic link between cases. This is not an absolute threshold and should be considered in the context of other factors.

When threshold incidence rates are being calculated in order to establish whether continued transmission of *N. meningitidis* is occurring in a community, the calculation should be specific to the situation. If the cases are occurring among persons of a specific age range, the calculation should be an age-specific incidence. However, if the population is defined geographically, the calculation should use the total community population defined by that region. For the calculations, subsequent cases among close contacts should be excluded from the numerator. Age-specific incidence should be calculated for 5-year age groups (e.g. 0 to 4 year olds, 5 to 9 year olds, 10 to 14 year olds). For example, in a community with 10 cases, of which 2 live in the same household, only 9 cases are included when

calculating age-specific incidence rates for the purpose of determining whether an outbreak or ongoing transmission is occurring.

Outbreak Management (8) (9)

Outbreaks may be controlled using a meningococcal vaccine. The type of vaccine to use in an outbreak is dependent on the serogroup causing the outbreak and the age of those being vaccinated[2]. Outbreaks can be broadly classified as organization-based or community-based. Regardless of the type of outbreak, contract tracing, identification of close contacts and provision of immunoprophylaxis/chemoprophylaxis to close contacts need to be conducted as described for sporadic cases. There is no evidence to support the provision of widespread chemoprophylaxis for persons who are not close contacts. Widespread use may result in eradication of benign strains of *Neisseria* that provide protective antibodies, the generation of drug-resistant strains and an increase in the prevalence of drug-related adverse events.

Outbreak detection and management require complex decision-making that considers a variety of factors. When evidence suggests that an outbreak is occurring with increased transmission of *N. meningitidis* involving a vaccine-preventable serogroup in a delineated population, vaccination of persons at high risk should be considered. The type of association between cases helps to define the group at risk. Decisions regarding the use of vaccine in communities with a higher-than-expected rate of disease are made in consultation with the Chief Medical Health Officer.

Preventative Measures (6)(8)(9)(10)

Promote immunization for all infants, adolescents, and high-risk groups. Refer to the Canadian Immunization Guide[3] the PEI Childhood Immunization Schedule and the PEI Adult Immunization Schedule[4] for current immunization recommendations.

Provide public information about the risks of disease transmission and the importance of good hand hygiene and respiratory etiquette.

Recommend to travelers that they visit their health care provider for consultation prior to their travel as immunization may be recommended/required prior to travel to destinations where meningococcal infection is hyper-endemic.

Advocate for reduction of overcrowding in living quarters and workplaces.

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[2] Canadian Immunization Guide. Outbreak Control. Re-vaccination criteria of previously vaccinated individuals Re-vaccination criteria for those previously vaccinated against IMD.

[3] Meningococcal Vaccine: Canadian Immunization Guide
Childhood Immunization Detailed Schedule for PEI

[4] Adult Immunization Detailed Schedule for PEI

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Appendix A - Fact Sheet Invasive Meningococcal Disease (IMD)

What is invasive meningococcal disease?

It is a serious infection caused by bacteria. When the bacteria enter the body, they can cause serious infections like meningitis (infection of the brain and spine) and septicemia (infection of the blood).

What happens when you have invasive meningococcal disease?

Symptoms can appear between 2–10 days, but most often between 3–4 days after being infected. Symptoms progress very quickly and can include stiff neck, intense headache, sudden fever, moodiness, vomiting and a rapidly spreading rash that starts as dark reddish/purplish spots that can appear anywhere on the skin.

Symptoms of Invasive Meningococcal Disease:

- sudden fever
- stiff neck
- intense headache
- nausea and vomiting
- drowsiness
- moodiness/irritability
- general feeling of illness
- eyes that are sensitive to light
- dark reddish/purplish spots anywhere on the skin

Complications of Invasive Meningococcal Disease:

- death in 10% of cases
- kidney failure
- permanent brain damage
- amputation
- hearing loss
- visual impairment
- skin scarring

How does invasive meningococcal disease spread?

It spreads from someone who has the infection; when they cough, sneeze, kiss others or share items that touch your mouth such as soothers, cups and bottles.

Some people may have the bacteria but not know it because they may not feel sick. They are still able to pass the bacteria to other people who are not immunized.

How do you prevent invasive meningococcal disease?

Immunization is the best way to protect yourself, your children, and your community.

Avoid sharing personal items that touch your mouth such as water bottles, food, lipstick, toothbrushes and eating utensils. Wash your hands well and often. Avoid being close to people who have symptoms of the disease.

How is invasive meningococcal disease found and treated?

***Invasive meningococcal disease is a medical emergency*.** It is found based on symptoms and lab test results. Antibiotics are used to treat the disease. Treatment is more effective when started early.

See your health care provider **right away** if you think you or your child has the disease or have been in contact with someone who has the disease. If possible, call your healthcare provider to let them know you are on your way to see them and why.

What you should know about the meningococcal vaccines

What are the meningococcal vaccines?

There are different kinds of meningococcal vaccines available for use in Canada. These vaccines help protect against certain strains of bacteria that cause the disease. Some protect against more strains than others. The most common ones offered in Canada are Men-C-C and Men-C-ACYW-135. The Men-C-C vaccine protects against one strain of the bacteria. The Men-C-ACYW-135 protects against four strains. Talk to your healthcare provider to learn what options are available for you. Men-B vaccines are for individuals who are at high risk of IMD caused by serogroup B.

How well do the meningococcal vaccines work?

These vaccines work very well at first but the level of protection lowers over time. Some meningococcal vaccines require an extra dose (or "booster") for the best protection.

What are the benefits of these vaccines?

The meningococcal vaccines are safe, work well and are usually free. Immunization is the best way to protect against invasive meningococcal disease.

Who should get the meningococcal vaccines?

In Canada, it is recommended that children 1 to 5 years of age get at least one dose of the Men-C-C vaccine. Some provinces and territories give the vaccine before age one, in this case an additional dose is needed after the child turns 1 year of age. A booster dose is recommended around 12 years of age for the best protection. This dose could be Men-C-C or Men-C-ACYW-135 depending on your province or territory. Men-B vaccines are only for individuals who are at high risk of IMD caused by serogroup B.

If you think your child or teenager missed any of their meningococcal vaccine doses, please contact your healthcare provider.

Additional doses or other types of meningococcal vaccines may be recommended or offered, depending on your health and risk of getting the disease. Age, certain health conditions, and travel to areas where meningococcal disease is present, are things that can make it more likely to become sick with the disease.

Where can I get the vaccines?

Call your health care provider or local Public Health Unit.

What are the possible side effects of the meningococcal vaccines?

In some cases, your child may have some symptoms which are usually mild and don't last long. Your child's arm may be a bit red, sore or swollen where the injection was given. Some people may have a mild fever, headache, fatigue, or feel moody.

Talk to your health care provider about how to help relieve any symptoms after vaccination.

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Appendix B: Meningococcal C Conjugate Vaccine

What is meningococcal disease and what are the complications of this disease?

Invasive meningococcal disease is caused by a bacteria called Neisseria meningitidis (*N. meningitidis)*. There are many different groups or types of this bacteria which can cause disease and each type is identified by a letter. The bacteria can cause infection of joints (septic arthritis), blood (bacteremia or septicemia), the lining of the heart (pericarditis), the lung (pneumonia) or the brain (meningitis).

The most common illness caused by this bacterium is meningitis and there have been outbreaks of meningococcal meningitis in several Canadian provinces since 1989. Meningococcus Group C was responsible for an outbreak of bacterial meningitis in PEI during 1990 to 1992. There were deaths among young adults during that outbreak.

Approximately 10% of people who get a meningococcal disease will die and 10-20% of survivors have long term effects including hearing loss, digit or limb amputations and neurological disabilities.

What are the contents of the Meningococcal C Conjugate vaccine?

This is an inactivated vaccine containing portions of the *N. meningitidis* bacteria of serogroup C conjugated to a carrier protein which stimulates the body to make antibodies to the Meningococcal C strain. This results in protection for the vaccinated person.

As well, the vaccine contains traces of non-medicinal ingredients that keep the vaccine stable, sterile, and help the body be more effective in producing antibodies. There is no preservative and no mercury in the vaccine.

All vaccine contents are licensed for use in Canada by the Biologics and Genetics Therapies Directorate within Health Canada. A complete listing of contents is included in the product insert which is available from the public health nurse.

What are the possible reactions to the vaccine?

The most serious but rare side effect is a severe allergic reaction (anaphylaxis) which can be life threatening and which usually occurs within 15-20 minutes of receiving the vaccine.

Procedures are in place for the nurse to quickly respond to anaphylaxis by administering adrenaline.

The most common side effects after receiving the vaccine are tenderness, redness and swelling at the site where the vaccine was given. Headache, change in appetite, irritability, mild fever and diarrhea have also been reported. These symptoms generally last 1-2 days.

It is not necessary to give acetaminophen after immunization. If discomfort or fever occur acetaminophen can relieve the symptoms.

Please remain in the waiting room for 15 minutes after immunization. See a doctor or seek medical attention if any serious side effect occurs. Report any serious reaction to the public health nurse.

What are the situations in which Meningococcal C conjugate should not be given?

The vaccine should not be given to anyone who has had an anaphylactic (severe or life threatening) reaction to any component of the vaccine

The vaccine should be delayed until later if a person has an acute illness with fever. It can be administered when a person has a cold, or a chest or ear infection (if there is no fever).

What are the risks if the vaccine is not received?

The chance of getting meningococcal disease varies greatly from time to time and an outbreak can occur without warning. Since the introduction of routine immunization of children against this organism, the incidence of Meningococcal group C disease has fallen significantly. An increased number of cases occur when there is an outbreak.

Approximately 10% of people who get a meningococcal disease will die and up to one-third of survivors suffer from long term effects including hearing loss, digit or limb amputations, brain damage and neurological disabilities.

The Meningococcal C vaccine effectiveness in infants is 97% within one year of immunization.

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Appendix C - Fact Sheet Meningococcal Group A, C, Y and W-135 Conjugate Vaccine

What is meningococcal disease and what are the complications of this disease?

Invasive meningococcal disease is caused by a bacteria called Neisseria meningitidis (*N. meningitidis)*. There are many different groups or types of this bacteria which can cause disease and each type is identified by a letter. The bacteria can cause infection of joints (septic arthritis), blood (bacteremia or septicemia), the lining of the heart (pericarditis), the lung (pneumonia) or the brain (meningitis).

The most common illness caused by this bacteria is meningitis and there have been outbreaks of meningococcal meningitis in several Canadian provinces since 1989. Meningococcus Group C was responsible for an outbreak of bacterial meningitis in PEI during 1990 to 1992. There were deaths among young adults during that outbreak.

Approximately 10% of people who get a meningococcal disease will die and 10-20% of survivors have long term effects including hearing loss, digit or limb amputations and neurological disabilities.

What are the contents of the vaccine?

This is an inactivated vaccine containing portions of the N. meningitidis antigens of serogroups A, C, Y and W-135 bacteria conjugated to a carrier protein from diphtheria. This component of the vaccine is responsible for stimulating the body to make antibodies to meningococcal A, C, Y and W-135 strains of the bacteria which results in protection for the vaccinated person.

As well, the vaccine contains traces of medicinal ingredients that keep the vaccine stable, sterile, and help the body be more effective in producing antibodies. There is no preservative and no mercury in the vaccine. The product is latex free. This vaccine protects against meningococcal disease types A, C, Y and W-135. This vaccine does not protect against invasive meningococcal disease caused by *N. meningitidis* type B.

All vaccine contents are licensed for use in Canada by the Biologics and Genetics Therapies Directorate within Health Canada. A complete listing of contents is included in the product insert which is available from the public health nurse.

What are the possible reactions to the vaccine?

The most serious but rare side effect is a severe allergic reaction (anaphylaxis) which can be life threatening and which usually occurs within 15-20 minutes of receiving the vaccine. Procedures are in place for the nurse to quickly respond to anaphylaxis by administering adrenaline.

The most common side effects after receiving the vaccine are tenderness, redness and swelling at the site where the vaccine is given. Headache and mild flu-like symptoms including malaise, tiredness, nausea, muscle aches and pains have been reported. These symptoms generally last 1-2 days.

It is not necessary to give acetaminophen after immunization. If discomfort or fever occur acetaminophen can relieve the symptoms.

Please remain in the waiting room for 15 minutes after immunization.
See a doctor or seek medical attention if any serious side effect occurs.
Report serious reaction(s) to the public health nurse.

What are the situations in which Meningococcal A, C, Y and W-135 conjugate should not be given?

The vaccine should not be given to anyone who has had an anaphylactic reaction to any component of the vaccine or who has a known history of Guillain-Barre Syndrome.

The vaccine should be delayed until later if a person has an acute illness with fever. It can be administered when a person has a cold, or a chest or ear infection (if there is no fever).

What are the risks if the vaccine is not received?

The chance of getting meningococcal disease varies greatly from time to time and an outbreak can occur without warning. There had been an average of over 100 cases of meningococcal disease caused by groups A, C, Y and W-135 meningococcus in Canada each year, with an increased number of cases when an outbreak occurred.

Illness due to Meningococcus group C has decreased due to immunization programs, though cases due to group Y have become more common in Canada. This vaccine has been reported to provide antibody protection against meningococcal A, C, Y and W-135 disease at a rate of over 98% of adolescents who have received it.

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Prince Edward Island CANADA Health and Wellness

Health PEI

Appendix D Fact Sheet: Meningococcal B (Men-B) Vaccine

What is meningococcal B disease and what are the complications of this disease?

Meningococcal B infection is caused by bacteria called *Neisseria meningitidis* (*N. meningitidis*). There are many different groups or types of these bacteria which can cause disease and each type is identified by a letter. There are other vaccines available that protect you from *N. meningitis* caused by different strains of the bacteria. It can cause serious and life-threatening infections including meningitis, an infection of the lining that covers the brain, and septicemia, an infection of the blood. Permanent complications of infection include brain damage and deafness. Meningococcal infection is spread from person to person, through contact with saliva (coughing, sneezing, close face-to-face contact).

What are the contents of the Meningococcal B vaccine?

This is an inactivated vaccine (it cannot cause illness) containing portions of the *N. meningitidis* bacteria of serogroup B conjugated to a carrier protein which then stimulates the body to make antibodies. This results in protection for the vaccinated person.

As well, the vaccine contains traces of non-medicinal ingredients that keep the vaccine stable, sterile, and help the body be more effective in producing antibodies. There is no preservative and no mercury in the vaccine.

All vaccine contents are licensed for use in Canada by the Biologics and Genetics Therapies Directorate within Health Canada. A complete listing of contents is included in the product insert which is available from the public health nurse.

What are the possible reactions to the vaccine?

The most common side effects after receiving the vaccine are tenderness, redness and swelling at the site where the vaccine was given. Headache, change in appetite, irritability, mild fever, and diarrhea have also been reported. These reactions are generally mild and may last 1-2 days.

The most serious but extremely rare side effect is a severe allergic reaction (anaphylaxis) which can be life threatening and which usually occurs within 15-20 minutes of receiving the vaccine. Procedures are in place for the nurse to quickly respond to anaphylaxis by administering adrenaline.

It is not necessary to give acetaminophen after immunization. If discomfort or fever occur acetaminophen can relieve the symptoms.

Please remain in the waiting room for 15 minutes after immunization.

See a doctor or seek medical attention if any serious side effect occurs.
Report any serious reaction to the public health nurse.

Who should receive the Men-B vaccine?

Men-B vaccine is recommended for individuals at increased risk of invasive meningococcal disease because of certain medical conditions such as;

- persons with functional asplenia or no spleen
- sickle cell disease
- persons with congenital complement, properdin, factor D or primary antibody deficiencies
- persons with acquired complement deficiency due to receipt of the terminal complement inhibitor eculizumab
- individuals with HIV, especially if it is congenitally acquired

It is also recommended for those attending a post-secondary institution **and** living in residence in PEI or out-of-province.

What are the situations in which the vaccine should not be given?

The vaccine should not be given to the following:

- Those who are allergic or who have had an anaphylactic (severe or life threatening) reaction to any contents of the vaccine.
- Those who have had an anaphylactic reaction to a previous dose of the vaccine.
- Those who are acutely ill especially with a fever should return for their immunization at a later date.

The vaccine should be delayed until later if a person has an acute illness with fever. It can be administered when a person has a cold, or a chest or ear infection (if there is no fever).

What are the risks if the vaccine is not received?

Approximately 10% of people who get meningococcal disease will die and up to one-third of survivors suffer from long term effects including loss of a digit or limb function requiring amputation, hearing loss, brain damage and neurological disabilities.

Appendix E– Recommended Antibiotics for Treatment and PEP

Antibiotic	Dosage	Comments
Rifampin	Infants < 1 months: 5 mg/kg per dose orally every 12h for 2 days (4 doses) Children ≥ 1 month: Maximum of 10 mg/kg (maximum 600 mg) orally every 12h for 2 days (4 doses) Adults ≥ 18 years of age: 600 mg orally every 12h for 2 days (4 doses)	• Contraindicated in pregnancy and persons with liver disease • Interferes with oral contraceptives, some anticonvulsants and anticoagulants • Stains soft contact lenses

Ceftriaxone	<12 years of age: 125 mg IM in a single dose Children ≥ 12 years and adults: 250 mg IM in a single dose	• Alternative for:
		  ○ pregnant women
		  ○ persons with liver disease or
		  ○ allergy to rifampin
		• Dilute in 1% lidocaine to reduce pain at injection site

Ciprofloxacin	Adults ≥18years of age: 500mg orally in a single dose	• Alternative for persons allergic to rifampin or ceftriaxone or unable to give IM injection • Contraindicated in pregnancy and lactation • A single dose medication regimen may improve compliance in some populations • Safe in liver disease