

# **MENINGOCOCCAL DISEASE SURVEILLANCE PROTOCOL FOR ONTARIO HOSPITALS**

Developed by the Ontario Hospital Association and  
the Ontario Medical Association  
Joint Communicable Diseases Surveillance Protocols Committee

Approved by  
The OHA and the OMA Board of Directors  
The Ministry of Health and Long-Term Care –  
The Minister of Health and Long-Term Care

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This protocol was developed jointly by the Ontario Hospital Association and the Ontario Medical Association to meet the requirements of the *Public Hospitals Act 1990*, Revised Statutes of Ontario, Regulation 965. This regulation requires each hospital to have by-laws that establish and provide for the operation of a health surveillance program including a communicable disease surveillance program in respect of all persons carrying on activities in the hospital. The communicable disease program is to include the tests and examinations set out in any applicable communicable disease surveillance protocol. The regulation states that the communicable disease surveillance protocols that hospitals must adopt are those "published jointly by the Ontario Hospital Association (OHA) and the Ontario Medical Association (OMA) and approved by the Minister (of Health and Long-Term Care)."

This Protocol has been reviewed since the previous version; changes have been highlighted in yellow for easy identification. Protocols are reviewed on a regular basis, every two years or as required.

The protocol reflects clinical knowledge, current data and experience, and a desire to ensure maximum cost effectiveness of programs, while protecting health care workers and patients. It is intended as a minimum standard that is practical to apply in most Ontario hospital settings. It does not preclude hospitals from adopting additional strategies that may be indicated by local conditions.

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# Rationale for Meningococcal Disease Surveillance Protocol

Invasive disease caused by *Neisseria meningitidis* is an important cause of morbidity and mortality. Invasive meningococcal disease (IMD) tends to be cyclical and sporadic, with periodic localized outbreaks. Invasive meningococcal disease is caused most commonly by serogroups B, C, Y and W-135. The incidence is highest in infants and children.

In 2015, 34 cases of IMD were reported in Ontario (0.2 cases per 100 000 people). From 2005 to 2015, the rate has fluctuated between 0.2 (from 2013-2015) to 0.6 (in 2009) per 100 000 population. The epidemiology of IMD is serogroup-specific. In 2015, serogroup Y was the most common serogroup in the province (41% of cases) and was closely followed by serogroup B (38% of cases). The low incidence of serogroup C disease suggests vaccine program impact. Serogroup W disease incidence remains low (9% of cases of IMD in 2015).<sup>1</sup>

Invasive disease is characterized by sudden onset of fever, headache, nausea and vomiting, stiff neck, petechial rash, delirium, coma and shock, with case fatality rates of about 10%.<sup>2,3</sup> Of those who survive, 10-20% will have long term sequelae including hearing loss and other neurologic disabilities, and digital or limb amputations.<sup>3</sup> Up to 5 – 10% of the population are asymptomatic carriers of *N. meningitidis* in the nasopharynx<sup>4,5</sup> but only a minority of colonized persons develops invasive disease. There is some evidence that invasive disease occurs primarily in persons who are newly infected with the organism. Transmission requires close contact with droplets from the nose and throat of infected people. Incubation period is from 2 to 10 days, usually 3-4 days.

**Nosocomial transmission of *N. meningitidis* is uncommon.**<sup>6</sup> Rarely, when proper precautions were not used, *N. meningitidis* has been transmitted from patients to health care workers (HCWs) through direct contact with respiratory tract secretions of patients with IMD,<sup>7-9</sup> or through handling of laboratory cultures.<sup>10-13</sup> The risk to HCWs through casual contact is negligible. All documented transmissions to clinical personnel (physicians, nurses, paramedics) have involved contact with respiratory secretions without wearing a mask.<sup>7-9</sup> HCWs can reduce the risk of infection by wearing facial protection (i.e. surgical mask and eye protection, or face shield that covers eyes, nose, and mouth) when within one metre\* of a patient with known/suspected IMD or when performing a procedure where contamination with droplets from the oropharynx is possible, e.g. endotracheal intubation, suctioning or close examination of the oropharynx. Patients with IMD are no longer infectious after 24 hours of treatment with effective antimicrobial therapy.

Antimicrobial prophylaxis eradicates carriage of *N. meningitidis* and prevents development of invasive disease. Antimicrobial prophylaxis is not indicated for most HCWs who have

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\* Note: The recommended distance for droplet precautions in patients who have acute respiratory infections that cause coughing and sneezing is 2 metres because coughing and sneezing results in forceful projection of potentially infectious respiratory droplets. For invasive meningococcal disease, clinical evidence shows that close face-to-face contact involving a close examination or procedure is required for transmission to HCWs and that a 1 metre distance is adequate for interruption of transmission to HCWs and patients.

been in contact with an infected patient. However, HCWs who have had intensive, direct exposure without wearing facial protection to patients treated for <24 hours are at increased risk and should be protected from infection by antimicrobial prophylaxis.<sup>14</sup> Because secondary cases occur rapidly (i.e. within a week) after exposure, if prophylaxis is indicated it should be given as soon as possible, and up to 14 days post-exposure.<sup>15</sup>

Meningococcal vaccine is not routinely recommended for pre- or post-exposure prophylaxis of HCWs. However, the rate of meningococcal disease is higher than expected amongst microbiology laboratory workers who handle *N. meningitidis* cultures, even in the absence of identified breaches in laboratory safety practices. The National Advisory Committee on Immunization (NACI) recommends pre-exposure vaccination of laboratory workers who routinely handle preparations of *N. meningitidis*, i.e. microbiology medical laboratory technologists (MLTs).<sup>2,3</sup> Other laboratory workers who do not handle cultures or preparations made from cultures (e.g. technicians who are planting microbiology specimens to culture plates) should not be at increased occupational risk. Vaccines that protect against serogroups A, C, Y, W-135 and B are available in Canada. Laboratory workers should also reduce their risk of acquiring infection through manipulation of cultures containing *N. meningitidis* by adhering to laboratory biosafety standards,<sup>16</sup> and in particular ensuring that all procedures that may create infectious aerosols are performed in a biological safety cabinet.

**This protocol is only one component of an infection prevention and control program; HCWs must consistently adhere to Routine Practices.**

# Meningococcal Disease Surveillance Protocol for Ontario Hospitals

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## I. Purpose

The purpose of this protocol is to provide direction to hospitals to prevent the transmission of meningococcal disease among health care workers (HCWs) and patients. This protocol provides the minimum standard required under the Ontario Public Hospitals Act, Regulation 965.

## II. Applicability

This protocol applies to **all persons carrying on activities in the hospital**, including but not limited to employees, physicians, nurses, contract workers, students, post-graduate medical trainees, researchers and volunteers. The term HCW is used in this protocol to describe these individuals. This protocol does not apply to patients or residents of the facility, or to visitors.

There are specific considerations for microbiology medical laboratory technologists (MLTs).

When training students or hiring contract workers, the hospital must inform the school/supplying agency that the school/agency is responsible for ensuring that their student/contractors are managed according to this protocol.

**This protocol is for the use of the Occupational Health Service (OHS) in hospitals. It is expected that OHS collaborate with Infection Prevention and Control and other departments, as appropriate.**

## III. Pre-placement

There is no need for pre-placement screening for *N. meningitidis*.

Meningococcal vaccine is not routinely recommended for most HCWs.

Laboratory personnel who may be routinely exposed to preparations or cultures of *N. meningitidis* (i.e. some microbiology MLTs) should receive quadrivalent meningococcal A,C,Y,W-135 conjugate vaccine or 4CMenB vaccine or both.<sup>3</sup> Vaccine should be offered and supplied by the hospital to these individuals. Receipt or refusal of offered vaccine should be documented. MLTs should be

aware that if they are exposed to *N. meningitidis* (see Exposure, below) they must report as soon as possible to OHS.

Meningococcal vaccine does not protect against meningococcal disease caused by serogroups not contained in the vaccine. MLTs should be instructed to adhere to laboratory safety standards.<sup>16</sup>

#### IV. Continuing Surveillance

There is no need for routine screening for *N. meningitidis* of any persons carrying on activities in the hospital.

Microbiology MLTs who previously received quadrivalent polysaccharide meningococcal vaccine and/or meningococcal C conjugate vaccine should be offered quadrivalent conjugate meningococcal vaccine 5 years after polysaccharide vaccine.<sup>3</sup>

Because they may be at prolonged increased occupational risk of exposure to *N. meningitidis*, microbiology MLTs should be offered revaccination with quadrivalent conjugate meningococcal vaccine at 5 year intervals, if exposure is ongoing.<sup>3</sup>

#### V. Exposure

An occupational exposure of a HCW is defined as secretions from the nose or mouth of the infected case coming into contact with the mucous membranes of the HCW within 7 days of the onset of IMD until 24 hours after the start of effective therapy. Treatment of the infected patient with an effective antibiotic for 24 hours generally eliminates their ability to spread the bacteria.

**If respiratory secretions of the infected case did not contact an HCW's mucous membranes, that HCW was not exposed and does not need preventive antibiotics.**

If appropriate personal protective equipment (e.g., surgical mask and eye protection or face shield, gloves) has been worn within 1 metre<sup>†</sup> of patients with known/suspected IMD, there is no exposure.

**Antimicrobial prophylaxis is indicated only for HCWs who have had intensive direct contact (see above) with patients with IMD when proper precautions have not been used, including:**

- **mouth-to-mouth resuscitation**
- **open suctioning**

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<sup>†</sup> Note: The recommended distance for droplet precautions in patients who have acute respiratory infections that cause coughing and sneezing is 2 metres because coughing and sneezing results in forceful projection of potentially infectious respiratory droplets. For invasive meningococcal disease, clinical evidence shows that close face-to-face contact involving a close examination or procedure is required for transmission to HCWs and that a 1 metre distance is adequate for interruption of transmission to HCWs and patients.

- **endotracheal intubation**
- **endotracheal tube management**
- **close examination of the oropharynx.**

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.<sup>3</sup>

Microbiology MLTs who have manipulated invasive *N. meningitidis* isolates (e.g. blood, CSF isolates) in a manner that could induce aerosolization or droplet formation (including plating, subculturing and serogrouping) on an open bench and in the absence of effective protection from droplets or aerosols should consider antimicrobial prophylaxis.<sup>14</sup>

When antimicrobial prophylaxis is necessary, it must be given as soon as possible, preferably within 24 hours of exposure. Chemoprophylaxis is unlikely to be of benefit if given more than 14 days after the most recent exposure.<sup>15</sup> Nasopharyngeal cultures have no role in the investigation or management of contacts.

Antimicrobial prophylaxis includes:<sup>14</sup>

Ciprofloxacin 500 mg po, single dose  
or  
Rifampin 600mg po q12h x 4 doses  
or  
Ceftriaxone 250 mg IM, single dose

Note: Ceftriaxone is the only acceptable regimen during pregnancy.

### **Work Restrictions**

No work exclusion is indicated for exposed HCWs.

Unexposed HCWs who are incidentally found to be asymptotically colonized with *N. meningitidis* should not be excluded from work, and should not be given antibiotics. *N. meningitidis* is part of the normal commensal flora in up to 10% of the population.

## **VI. Acute Disease**

Infected HCWs and their personal healthcare providers are responsible for follow-up care if disease occurs.

### **Work Restrictions**

HCWs who develop meningococcal disease must be excluded from work until 24 hours after the start of effective therapy.

## VII. Reporting

Suspect or confirmed cases of IMD (as per Ontario Reg. 559/91 and amendments under the Health Protection and Promotion Act) must be reported to the local Medical Officer of Health as soon as possible.

In accordance with the Occupational Health and Safety Act and its regulations, an employer must provide written notice within 4 days of being advised that a worker has an occupational illness, including an occupationally-acquired infection, or has filed a claim with the WSIB with respect to an occupational illness, to the:

- Ministry of Labour,
- Joint Health and Safety Committee (or health and safety representative),  
and
- trade union, if any.

Occupationally-acquired illnesses are reportable to the Workplace Safety and Insurance Board.

## IX. Glossary

### Ontario MOHLTC Surveillance Case Definition for Invasive Meningococcal Disease<sup>17</sup>

#### Confirmed Case

Clinical evidence of invasive disease (usually manifests as meningitis, meningococemia or both; less common presentations are pneumonia with bacteremia, septic arthritis and pericarditis) with laboratory confirmation of infection with invasive disease:

- Isolation of *Neisseria meningitidis* from a normally sterile site (e.g. blood, cerebrospinal fluid [CSF], joint, pleural, or pericardial fluid)

#### OR

- Detection of *N. meningitidis* deoxyribonucleic acid (DNA) by a validated nucleic acid amplification test (NAAT) from a normally sterile site

#### Probable Case

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

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

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