

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:
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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.

The protocol is based on 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, practical standard for Ontario hospitals; however, hospitals may adopt additional strategies when 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 disease 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; the incidence in adults ≥ 20 years is 0.4/100,000 in Ontario.

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%. Up to 5 – 10% of the population are asymptomatic carriers of *N. meningitidis* in the nasopharynx, but only a small minority of colonized persons develop 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. Rarely, when proper precautions were not used, *N. meningitidis* has been transmitted from patients to health care personnel through direct contact with respiratory tract secretions of patients with invasive meningococcal disease or through handling of laboratory cultures. The risk to health care personnel through casual contact is negligible. All documented transmissions to clinical personnel (physicians, nurses, paramedics) have involved contact with respiratory secretions without wearing a mask. Personnel can reduce the risk of infection by wearing facial protection (i.e. surgical mask and eye protection) when within one meter* of a patient with known/suspected invasive meningococcal disease 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. Unprotected mouth-to-mouth resuscitation should be avoided. Patients with invasive disease are no longer infectious after 24 hours of effective antimicrobial therapy.

Antimicrobial prophylaxis eradicates carriage of *N. meningitidis* and prevents development of invasive disease. Antimicrobial prophylaxis is not indicated for most health care personnel who have been in contact with an infected patient. However, personnel 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. Because secondary cases occur rapidly (i.e. within a week) after exposure, if prophylaxis is indicated it should be given as soon as possible. Meningococcal vaccine is not routinely recommended for pre- or post-exposure prophylaxis of health care workers. 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). 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. At present, vaccines are available only against serogroups A, C, Y and W135. Laboratory workers should also reduce their risk of acquiring infection through manipulation of cultures containing *N. meningitidis* by adhering to laboratory biosafety standards, and in particular ensuring that all procedures that may create infectious aerosols are performed in a biological safety cabinet.

*Note: The recommended distance for droplet precautions in patients who have acute respiratory infections that cause coughing and sneezing is 2 meters 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 health care workers and that a 1 meter distance is adequate for interruption of transmission to health care workers and patients.

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I. Purpose

The purpose of the protocol is to provide direction to hospitals for the prevention of acquisition of infection with *Neisseria meningitidis* by health care workers from patients with invasive meningococcal disease.

II. Applicability

This protocol applies to all persons carrying on activities in the hospital who provide direct patient care, including employees, physicians, nurses, contract workers, students and post-graduate medical trainees; there are some specific considerations for microbiology medical laboratory technologists (MLTs). 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.

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 students are managed according to this protocol.

This protocol is for the use of the Occupational Health Service (OHS) in hospitals.

III. Preplacement

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

Meningococcal vaccine is not routinely recommended for most health care workers.

It is recommended that laboratory personnel who are routinely exposed to preparations or cultures of *N. meningitidis* (i.e. some microbiology MLTs) receive quadrivalent meningococcal A,C,Y,W-135 conjugate vaccine. MLT students should be aware that if they are exposed to *N. meningitidis* cultures (see Exposure, below) they must report as soon as possible to OHS.

Vaccine should be offered and supplied by the hospital. Receipt or refusal of offered vaccine should be documented.

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.

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 after an interval of 5 years after polysaccharide vaccine.¹³

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.¹⁵

V. Exposure

Transmission to health care workers from patients with invasive meningococcal disease (meningococemia, meningococcal meningitis, and meningococcal pneumonia) may occur after **intensive, direct contact where the patient's respiratory secretions contaminate the oral/nasal mucous membranes of the health care worker**. Facial protection (i.e. surgical mask and eye protection) should be worn for close contact (within 1 meter) with patients with known/suspected invasive meningococcal disease until 24 hours after the start of effective therapy.

Antimicrobial prophylaxis is indicated only for persons who have had intensive direct contact (see above) with patients with invasive meningococcal disease when proper precautions have not been used, including:

- **mouth-to-mouth resuscitation**
- **open suctioning**
- **endotracheal intubation**
- **endotracheal tube management**
- **close examination of the oropharynx.**

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.¹⁴

When antimicrobial prophylaxis is necessary, it must be given as soon as possible, preferably within 24-48 hours. Chemoprophylaxis is unlikely to be of benefit if given more than 10 days after the most recent exposure to a case. **(No work exclusion is indicated for exposed persons)**. Nasopharyngeal cultures have no role in the investigation or management of contacts.

Antimicrobial prophylaxis is:

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.

VI. Colonization or Infection with *Neisseria meningitidis*

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

Health care workers who develop meningococcal disease must be excluded from work until 24 hours after the start of effective therapy. The hospital Infection Prevention and Control service and the Local Medical Officer of Health must be notified immediately. If the infection was occupationally acquired, report to the Ministry of Labour and the Workplace Safety and Insurance Board.

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