

Appendix B: Provincial Case Definitions for Diseases of Public Health Significance

Disease: Meningococcal disease, invasive

Effective: February 2019

Meningococcal disease, invasive

1.0 Provincial Reporting

Confirmed and probable cases of disease

2.0 Type of Surveillance

Case-by-case

3.0 Case Classification

3.1 Confirmed Case

Clinical evidence of invasive disease (see Section 5.0) with laboratory confirmation of infection with invasive disease:

- Isolation of *Neisseria meningitidis* (*N. 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

3.2 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

4.0 Laboratory Evidence

4.1 Laboratory Confirmation

Any of the following will constitute a confirmed case of invasive meningococcal disease (IMD):

- Positive culture from a normally sterile site
- Positive NAAT for *N. meningitidis* from a normally sterile site

4.2 Approved/Validated Tests

- Standard culture
- NAAT for *N. meningitidis* (includes Polymerase Chain Reaction [PCR])
- Consult with laboratory about appropriate tests and specimens

Note: Isolates should be sent to the Public Health Ontario Laboratories for serogroup determination and further characterization. Isolates are also submitted by the Public Health Ontario Laboratories to the National Microbiology Laboratory for national surveillance.

4.3 Indications and Limitations

- Detection of *N. meningitidis* antigen does not allow determination of serogroup and is considered non-confirmatory laboratory evidence of disease.
- Positive antigen test results from urine and serum samples are unreliable for diagnosing meningococcal disease.
- Detection by NAAT from sterile sites, in addition to CSF and blood (e.g. joint, pleural, or pericardial fluid) may also be performed. Public Health Ontario Laboratories should be contacted before these specimens are submitted (requires consultation by Medical or Clinical Microbiologist).
- NAAT allows for detection of *N. meningitidis* in clinical samples in which the organism may be nonviable by culture, e.g. in cases treated with antimicrobials prior to collection of specimen.
- Determination of serogroup from a sterile site isolate and further characterization by a reference laboratory are important in monitoring changes in disease epidemiology, including the impact of vaccination programs, potential serogroup replacement, and antibiotic resistance.

5.0 Clinical Evidence

Clinical illness associated with IMD usually manifests as meningitis, meningococemia or both. Less common presentations are pneumonia with bacteremia, septic arthritis and pericarditis. Invasive disease may progress rapidly to purpura fulminans, shock and death.

6.0 ICD-10 Code(s)

A39 Meningococcal infection

7.0 Sources

Committee on Infectious Diseases, American Academy of Pediatrics. Section 3: Summaries of Infectious Diseases: Meningococcal Infections. In: Kimberlin DW, Brady MT, Jackson MA, Long SS, editors. Red Book: 2018 Report of the Committee on Infectious Diseases. 31 ed. Itasca, IL: American Academy of Pediatrics; 2018.

Heymann DL, editor. Control of Communicable Diseases Manual. 20 ed. Washington, D.C: American Public Health Association; 2015.

Public Health Agency of Canada. Invasive Meningococcal Disease. In: Case Definitions for Communicable Diseases under National Surveillance. Canada Communicable Disease Report. 2009;35S2.

Roush SW, Beall B, McGee L, Cassidy P, Bowen M, Icenogle J, et al. Laboratory support for the surveillance of vaccine-preventable diseases. 2017. In: Manual for the Surveillance of Vaccine-Preventable Diseases [Internet]. 6 ed. Atlanta, GA: Centers for Disease Control and Prevention, [cited March 8, 2018]. Available from:

<https://www.cdc.gov/vaccines/pubs/surv-manual/index.html>

8.0 Document History

Table 1: History of Revisions

Revision Date	Document Section	Description of Revisions
January 2014	General	New template. Sections 9.0 Additional Resources and 10.0 Document History Added.
January 2014	3.1 Confirmed Case	First sentence changed from “Laboratory confirmation of infection with invasive disease (See Section 5.0):” to “Clinical evidence of invasive disease (see Section 5.0) with laboratory confirmation of infection with invasive disease:”
January 2014	3.2 Probable Case	Changed from “Invasive disease with purpura fulminans or petechiae in the absence of a positive blood culture and no apparent cause with demonstration of N. meningitidis antigen in the CSF” to “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”
January 2014	4.1 Laboratory Confirmation	“from a normally sterile site” added to both bullets.
January 2014	4.2 Approved/ Validated Tests	“(includes PCR)” added to second bullet. Note added.
January 2014	4.3 Indications and Limitations	“and is considered non-confirmatory laboratory evidence of disease” added to first bullet. Addition of third and fourth bullets.
January 2014	7.0 Comments	Comments deleted, now N/A.
January 2014	8.0 Sources	Updated.
February 2019	General	Minor revisions were made to support the regulation change to Diseases of Public Health Significance, references were updated and Sections 7.0 and 9.0 were deleted.

