

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

Disease: Varicella (Chickenpox)

Effective: February 2019

Varicella (Chickenpox)

1.0 Provincial Reporting

Confirmed cases of disease

2.0 Type of Surveillance

Case-by-case and aggregate reporting

3.0 Case Classification

3.1 Confirmed Case

Clinical evidence of illness (see section 5.0) and laboratory confirmation of infection:

- Isolation or direct antigen detection of varicella-zoster virus (VZV) from an appropriate clinical specimen (e.g., vesicle/lesion fluid or swab)
- OR**
- Detection of VZV deoxyribonucleic acid (DNA)
- OR**
- Seroconversion or a significant rise (e.g. fourfold or greater) by any standard serologic assay in varicella-zoster Immunoglobulin G (IgG) titre between acute and convalescent sera

OR

- Positive serologic test for varicella-zoster Immunoglobulin M (IgM) antibody

OR

Clinical evidence of illness (see section 5.0) in a person with an epidemiologic link to a laboratory-confirmed case of chickenpox or VZV infection.

3.2 Probable Case

Clinical evidence of illness in the absence of laboratory confirmation or epidemiological link to a laboratory confirmed case.

Note: Probable case definitions are provided as guidelines to assist with case finding and public health management, and are not for reporting purposes.

4.0 Laboratory Evidence

4.1 Laboratory Confirmation

Any of the following will constitute a confirmed case of varicella:

- Culture isolation of VZV
- Detection of VZV DNA by nucleic acid amplification test (NAAT)
- Antigen detection of VZV DNA
- Seroconversion or a significant rise (e.g., fourfold or greater) in VZV IgG titre by any standard serologic assay
- Positive serologic test for VZV IgM antibody using capture assay

4.2 Approved/Validated Tests

- Standard culture for VZV
- Direct fluorescent antibody (DFA) test of VZV antigen
- NAAT for VZV DNA
- Commercial tests for anti-VZV IgG and IgM antibody

For further testing information including specimen collection, refer to the Public Health Ontario Laboratories Test Directory, available at <http://www.publichealthontario.ca/en/ServicesAndTools/LaboratoryServices/Pages/Index.aspx>

Note: Lesion specimens should be sent to the Public Health Ontario Laboratories for virus detection and genotyping when it is necessary to differentiate between wild-type vs. vaccine strains. Public Health Ontario Laboratories refers specimen samples to the National Microbiology Lab for genotyping.

4.3 Indications and Limitations

- Detection of VZV may be performed in non-routine specimens (e.g., sterile or respiratory sites). Consult with the microbiologist at the Public Health Ontario Laboratory prior to submitting specimen(s).
- Optimal recovery of VZV is achieved if specimens (e.g., vesicle/lesion fluid or swab) are obtained 2-3 days after rash onset and from fresh vesicles.
- For serology, an acute serum specimen for VZV IgM and IgG testing should be collected within 7-10 days of symptom onset and convalescent serum specimen for VZV IgG testing should be repeated 2-3 weeks after the initial (acute) sample.
- Caution must be taken when reviewing serological data without reference to the clinical evidence as the response to VZV reactivation (herpes zoster) may be the same as to primary varicella.
- For urgent testing in cases of VZV (e.g., pregnancy, immunocompromised), call the Public Health Ontario Laboratory Customer Service Centre prior to submission.

5.0 Clinical Evidence

Clinical illness is characterized by a pruritic rash with rapid evolution from macules to papules, vesicles and crusts; all stages may be simultaneously present; lesions are superficial and may appear in crops.

6.0 ICD-10 Code(s)

B01 Varicella

B02 Zoster

7.0 Comments

Varicella-like rashes that occur within two weeks after immunization may be due to either wild-type or vaccine-virus. Appropriate specimen(s) should be collected for laboratory determination of wild-type vs. vaccine strains. After immunization, a varicella-like rash can present at the injection site or is generalized in 3%-5% of vaccinees after the first dose and 1% after a second dose, usually within five to 26 days. A varicella-like rash occurring between 5-42 days after varicella vaccination should be reported as an adverse event following immunization (AEFI) if they meet the provincial case definition specified in Appendix B AEFI, unless wild-type virus is detected.

8.0 Sources

Centers for Disease Control and Prevention. Varicella. 2015. In: Epidemiology and Prevention of Vaccine-Preventable Diseases [Internet]. 13 ed. Washington, DC: Public Health Foundation, [cited March 8, 2018]. Available from:

<https://www.cdc.gov/vaccines/pubs/pinkbook/varicella.html>

Pathogen Regulation Directorate, Public Health Agency of Canada. Pathogen Safety Data Sheets: Infectious Substances – Varicella-zoster virus [Internet]. Ottawa, ON: Her Majesty the Queen in Right of Canada; 2011 [cited May 11, 2018]. Available from:

<https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment/varicella-zoster-virus.html>

Public Health Agency of Canada. Varicella (Chickenpox). In: Case Definitions for Communicable Diseases under National Surveillance. Canada Communicable Disease Report. 2009;35S2.

Public Health Agency of Canada, National Microbiology Laboratory. Guide to Services: Genotyping of varicella-zoster virus (VZV) to differentiate between wild-type strain and vaccine strain [Internet]. Ottawa, ON: Her Majesty the Queen in Right of Canada; 2018 [cited May 11, 2018]. Available from: <https://cnphi.canada.ca/gts/reference-diagnostic-test/5460?searchQuery=varicella>

9.0 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	<p>First sentence changed from “Laboratory confirmation of infection with clinically compatible signs and symptoms in the absence of recent immunization with varicella-containing vaccine” to “Clinical evidence of illness (see section 5.0) and laboratory confirmation of infection”.</p> <p>First bullet point changed from “Isolation or direct antigen detection of varicella-zoster virus (VZV) from an appropriate clinical specimen (e.g., vesicle/lesion fluid or swab submitted in viral transport media)” to “Isolation or direct antigen detection of varicella-zoster virus (VZV) from an appropriate clinical specimen (e.g., vesicle/lesion fluid or swab)”.</p> <p>Second bullet point changed from “Detection of VZV DNA by nucleic acid amplification test (NAT)” to “Detection of VZV deoxyribonucleic acid (DNA)”.</p> <p>Final sentence changed from “Clinically compatible signs and symptoms” to “Clinical evidence of illness (see section 5.0) in a person with an epidemiologic link to a laboratory-confirmed case of chickenpox or VZV infection”.</p>
January 2014	3.2 Probable Case	Addition of probable case.

Revision Date	Document Section	Description of Revisions
January 2014	4.1 Laboratory Confirmation	Changed from “Any of the following will constitute a confirmed case of Chickenpox: Positive for varicella-zoster virus (VZV) IgM antibody, Seroconversion or rise in VZV specific IgG titre, Positive VZV culture with immunofluorescence (IF), Positive NAT for VZV” to “Any of the following will constitute a confirmed case of varicella: Culture isolation of VZV, Detection of VZV DNA by NAAT, Antigen detection of VZV DNA, Seroconversion or a significant rise (e.g. fourfold or greater) in VZV IgG titre by any standard serologic assay, Positive serologic test for VZV IgM antibody using a capture assay”
January 2014	4.2 Approved/ Validated Tests	Second bullet point added (“Direct fluorescent antibody (DFA) test for VZV antigen”). Final two paragraphs added (“For further testing information...” and “Note” Lesions specimens should be sent to Public Health Ontario Laboratories...”).
January 2014	4.3 Indications and Limitations	First, second, third and fourth bullet points added.
January 2014	5.0 Clinical Evidence	Deletion of “and have a predominantly central to peripheral distribution” from end of sentence.
January 2014	7.0 Comments	Entire section revised.
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 Section 9.0 was deleted.

