

# Appendix A: Disease-Specific Chapters

Chapter: Chickenpox (Varicella)

## Chickenpox (Varicella)

- Communicable  
 Virulent

**Health Protection and Promotion Act:  
Ontario Regulation 558/91 – Specification of Communicable Diseases**

**Health Protection and Promotion Act:  
Ontario Regulation 559/91 – Specification of Reportable Diseases**

<b>1) Aetiologic Agent:</b>	Varicella-zoster virus, (VZV), the human (alpha) herpesvirus 3, is a member of the herpesvirus group (1).
<b>2) Case Definition:</b>	
Surveillance Case Definition	<a href="#">See Appendix B</a>
Outbreak Case Definition	Not applicable, Chickenpox is endemic in Ontario.
<b>3) Identification:</b>	
Clinical Presentation	<p>Varicella (chickenpox) is an acute disease characterized by a pruritic (itchy) vesicular rash. The rash progresses rapidly from macules to papules, vesicles to pustules and finally lesions scab over within a few days. Lesions appear in successive crops over 5-6 days following rash onset and are more abundant on the trunk, but are sometimes present on the scalp and mucous members of mouth, respiratory tract, conjunctiva and rectal and vaginal mucosa. Lesions are pruritic and if infected cause scarring. The illness may or may not have a prodromal period, which may include fever, malaise, and upper respiratory tract infection (3).</p> <p>Varicella (chickenpox) is the primary infection and is reportable, while herpes zoster (shingles), a secondary infection due to reactivation of latent varicella infection in the dorsal root ganglia, is not reportable (2).</p> <p>Serious complications include pneumonia (viral and bacterial), secondary bacterial infections, hemorrhagic complications and encephalitis (1). Fetal infection after maternal varicella infection during the first or early trimester of pregnancy occasionally results in fetal death, congenital varicella syndrome and other complications (2).</p>
Diagnosis	<a href="#">See Appendix B</a>

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#### 4) Epidemiology:

Occurrence	<p>The occurrence of chickenpox is endemic in Canada and worldwide. Chickenpox occurs most frequently in winter and early spring (1). In Ontario, from 1998-2004 an average of 18,089 cases of chickenpox were reported annually and cases occurred most often among children aged 5-9.</p> <p>The introduction of a varicella immunization program for one year olds in 2004 and for 5 year olds in 2005 has had an impact on disease incidence.</p> <p>Since 2005 there has been a gradual decrease in the number of cases reported.</p>
Reservoir	Humans (1)
Modes of Transmission	Person to person by direct contact with Varicella zoster virus through droplet or airborne spread of vesicle fluid or secretions of the respiratory tract or indirectly by freshly contaminated fomites. Scabs are not infectious (1). Transmission during pregnancy to the fetus can also occur (1).
Incubation Period	2-3 weeks; commonly 14-16 days; may be prolonged in the immunodeficient and after passive immunization against varicella (1).
Period of Communicability	As long as five days but usually one to two days before onset of rash and it continues until all lesions are crusted, usually about five days after the rash onset (1).
Susceptibility and Resistance	Susceptibility is universal in persons not previously infected or vaccinated; infection usually confers life long immunity. The virus remains latent in sensory ganglia and disease may recur years later as herpes zoster (shingles) in about 15% of adults and sometimes in children (1, 4).

#### 5) Reporting Requirements:

To local Board of Health	<p>Laboratory confirmed cases shall be reported to the medical officer of health by persons required to do so under the <i>Health Protection and Promotion Act</i>, R.S.O. 1990.</p> <p>Health units must report the following individual cases of chickenpox:</p> <ul style="list-style-type: none"><li>• All lab reported cases</li><li>• All cases with complications</li><li>• All hospitalized cases</li><li>• All deaths due to complications of varicella</li></ul> <p>Health units are required to create a new outbreak each month including the reporting of chickenpox aggregate counts regardless of whether or not any counts were observed for a given month.</p>
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	<p>Reporting processes include:</p> <ul style="list-style-type: none"> <li>• Creating new monthly outbreak;</li> <li>• Reporting information;</li> <li>• Entering aggregate (summary) chickenpox counts, and</li> <li>• Closing and confirming the outbreak.</li> </ul> <p>Health units must enter all cases of chickenpox as aggregate. This includes those that have been entered as individual cases since aggregate data cannot be linked to individual cases.</p>
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<p>To Public Health Division (PHD)</p>	<p>Report only case classifications specified in the case definition to PHD for the following cases of chickenpox:</p> <ol style="list-style-type: none"> <li>1. Laboratory confirmed cases</li> <li>2. Hospitalized cases</li> <li>3. Cases with complications</li> </ol> <p>Reports received as aggregate numbers should be reported to PHD as such.</p> <p>Individual and aggregate case counts are to be reported to the PHD using the integrated Public Health Information System (iPHIS), or any other method specified by the Ministry <b>within five (5) business days of receipt of initial notification</b> as per <i>iPHIS Bulletin</i> Number 17: Timely Entry of Cases (8).</p> <p>The minimum data elements to be reported for each case is specified in the following:</p> <ul style="list-style-type: none"> <li>• <i>Ontario Regulation 569</i> (Reports) under the Health Protection and Promotion Act (HPPA);</li> <li>• The disease-specific User Guides published by the Ministry, and</li> <li>• Bulletins and directives issued by the Ministry.</li> </ul>
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**6) Prevention and Control Measures:**

<p>Personal Prevention Measures</p>	<p>In Ontario, all one year olds and susceptible five year olds are eligible for immunization as per the publicly funded immunization schedule for Ontario (5).</p> <p>All susceptible health care workers should be immunized, preferably prior to employment, or immediately upon employment, using the 2-dose schedule, however this is not funded through the routine immunization program (6).</p> <p>Confirmed cases and susceptible contacts of confirmed cases should avoid contact with immunocompromised individuals, susceptible pregnant women particularly those in the third trimester, and avoid contact with newborns (3).</p>
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<p>Infection Prevention and Control Strategies</p>	<p>Strategies (7):</p> <ul style="list-style-type: none"> <li>• For hospitalized cases, in addition to routine practices, airborne precautions are recommended for a minimum of five days after onset of rash and until all lesions are crusted</li> <li>• Airborne and contact precautions are recommended for neonates born to mothers with varicella infection</li> </ul>
<p>Management of Cases</p>	<p>Uncomplicated individual cases of chickenpox do not require public health management. Exclusion from school or daycare is not usually recommended if children are well enough to attend.</p> <p>Unexposed, susceptible children new to the school or child care setting may be excluded for up to five days after the last case of chickenpox and should be offered immunization.</p> <p>Refer to ON Regulation 569 regarding factors to investigate for cases that are in hospital with complications. Include activities during the five days prior to symptom onset. Treatment of cases where indicated is under the direction of the attending health care provider. For cases, who are health care workers, refer to the OHA/OMA protocol listed below.</p>
<p>Management of Contacts</p>	<p>Exposure to VZV is considered significant if it involves direct face-to-face contact with persons who have chickenpox or disseminated zoster, or any direct contact with fluid from lesions or objects contaminated with this fluid. Exposure to dried scabs from varicella or zoster lesions does not constitute significant exposure (6).</p> <p>Varicella vaccine is effective in preventing illness or modifying severity if used within 3 days after exposure, and possibly up to 5 days of exposure (1); however, offering publicly funded vaccine to contacts outside the age of eligibility is a local policy decision.</p> <p>For high-risk susceptible contacts where vaccination is not indicated such as neonates, pregnant women and immunocompromised persons, varicella-zoster immune globulin (VZIG) should be offered within 96 hours of exposure (1, 2). There is no assurance that administering VZIG to a pregnant woman will prevent congenital malformation in the fetus, but it may modify varicella severity in the pregnant woman (1).</p> <p>For high risk exposures such as in hospitals see the OHA/OMA protocol listed below.</p>
<p>Management of Outbreaks</p>	<p>Not applicable, Chickenpox is endemic in Ontario; cases and contacts are managed as stated above.</p>
<p><b>7) References</b></p>	<p>(1) Heymann D, editor. Control of communicable diseases manual. 18th ed. Washington: American Public Health Association; 2004.</p> <p>(2) Pickering LK, Baker CJ, Long SS, McMillan JA, editors. Red book: 2006 report of the Committee on Infectious Diseases. 27th ed.</p>

	<p>Elk Grove Village, IL: American Academy of Pediatrics; 2006. Section 3, Summaries of infectious diseases; p. 711-25.</p> <p>(3) Gershon AA, Takahashi M, Seward J. Varicella vaccine. In: Plotkin SA, Orenstein WA, Offit P, editors. Vaccines. 4<sup>th</sup> ed. Philadelphia: Saunders; 2004. p. 783-823.</p> <p>(4) Gershon A, LaRussa P, Steinberg SP. Varicella-Zoster virus. In: Murray PR, Baron JH, Jorgenson M, Pfaller A, Tenover FC, Tenover FC, editors. Manual of clinical microbiology. 8<sup>th</sup> ed. Washington: ASM Press; 2003. p. 1319-30.</p> <p>(5) Ministry of Health and Long-Term Care. Publicly funded immunization schedules for Ontario: January 2009. Toronto: Queen's Printer for Ontario; 2008. Available from <a href="http://www.health.gov.on.ca/english/providers/program/immun/pdf/schedule.pdf">http://www.health.gov.on.ca/english/providers/program/immun/pdf/schedule.pdf</a>.</p> <p>(6) Ontario Hospital Association; Ontario Medical Association. Varicella/zoster (chickenpox/shingles) surveillance protocol for Ontario hospitals. Toronto: Ontario Hospital Association; 2008. Available from <a href="http://www.oha.com/Client/OHA/OHA_LP4W_LND_WebStation.nsf/resources/Communicable+Disease+Surveillance+Protocols/\$file/Varicella+Protocol+-+Revised+October+2008.pdf">http://www.oha.com/Client/OHA/OHA_LP4W_LND_WebStation.nsf/resources/Communicable+Disease+Surveillance+Protocols/\$file/Varicella+Protocol+-+Revised+October+2008.pdf</a>.</p> <p>(7) Health Canada, Laboratory Centre for Disease Control, Division of Nosocomial and Occupational Infections. Routine practices and additional precautions for preventing the transmission of infection in health care. Can Commun Dis Rep. 1999 Jul;25 Suppl 4:1-142. Available from <a href="http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/99pdf/cdr25s4e.pdf">http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/99pdf/cdr25s4e.pdf</a>.</p> <p>(8) Ministry of Health and Long-Term Care. Timely entry of cases. <i>iPHIS Bulletin</i>. 2007 May 11;17.</p>
<p><b>8) Additional Resources</b></p>	<p>National Advisory Committee on Immunization (NACI) update on varicella. Can Commun Dis Rep. 2004 Feb 1;30:1-26. Available from <a href="http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/04pdf/acs-dcc-30-1.pdf">http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/04pdf/acs-dcc-30-1.pdf</a>.</p> <p>National Advisory Committee on Immunization. Canadian immunization guide. 7<sup>th</sup> ed. Ottawa: Public Health Agency of Canada; 2006. Available from: <a href="http://www.phac-aspc.gc.ca/publicat/cig-gci/index-eng.php">http://www.phac-aspc.gc.ca/publicat/cig-gci/index-eng.php</a>.</p> <p><i>Health Protection and Promotion Act</i>, R.S.O. 1990, c. H.7. Available from <a href="http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90h07_e.htm">http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90h07_e.htm</a>.</p>

