

Appendix A: Disease-Specific Chapters

Chapter: Mumps

Effective: February 2019

Mumps

Communicable

Virulent

**Health Protection and Promotion Act:
O. Reg. 135/18 (Designation of Diseases)**

1.0 Aetiologic Agent

Mumps is caused by a RNA (ribonucleic acid) virus of the genus *Rubulavirus* in the *Paramyxoviridae* family.^{1,2}

2.0 Case Definition

2.1 Surveillance Case Definition

Refer to [Appendix B](#) for Case Definitions.

2.2 Outbreak Case Definition

The outbreak case definition varies with the outbreak under investigation. Please refer to the *Infectious Diseases Protocol, 2018* (or as current) for guidance in developing an outbreak case definition as needed.

The outbreak case definitions are established to reflect the disease and circumstances of the outbreak under investigation. The outbreak case definitions should be developed for each individual outbreak based on its characteristics, reviewed during the course of the outbreak, and modified if necessary, to ensure that the majority of cases are captured by the definition. The case definitions should be created in consideration of the outbreak definitions.

Outbreak cases may be classified by levels of probability (*i.e.* confirmed and/or probable).

3.0 Identification

3.1 Clinical Presentation

Fever, swelling and tenderness of one or more salivary glands are characteristic of mumps.¹ Parotitis (inflammation of the parotid gland) will develop in about 40% of those infected, 25% of which is unilateral.³ In approximately 20% to 30% of mumps cases, infections are subclinical, but remain communicable.^{1,4} Nonspecific or primarily respiratory symptoms that occur in about 50% of those who acquire infection can add to the difficulty in diagnosing mumps.^{3,4} Orchitis (testicular inflammation) is a relatively common complication among post-pubertal males (20-30%), whereas oophoritis (ovarian inflammation) among females is relatively rare.^{1,3} In general, permanent

sequelae such as infertility and sensorineural hearing loss are rare, although mumps infection in adults is more likely to be severe and result in complications.^{2,3}

Mumps was a major cause of viral meningitis prior to widespread use of mumps-containing vaccine. Mumps infection during the first trimester of pregnancy may increase the rate of spontaneous abortion, but mumps infection during pregnancy has not been associated with congenital malformations.³

3.2 Diagnosis

See [Appendix B](#) for diagnostic criteria relevant to the Case Definitions.

For further information about human diagnostic testing, contact the Public Health Ontario Laboratories or refer to the Public Health Ontario Laboratory Services webpage: <http://www.publichealthontario.ca/en/ServicesAndTools/LaboratoryServices/Pages/default.aspx>

4.0 Epidemiology

4.1 Occurrence

Between 2013 and 2017, an average of 61 confirmed cases were reported annually in Ontario.*

Please refer to Public Health Ontario's (PHO) Reportable Disease Trends in Ontario reporting tool and other reports for the most up-to-date information on infectious disease trends in Ontario.

<http://www.publichealthontario.ca/en/DataAndAnalytics/Pages/DataReports.aspx>

For additional national and international epidemiological information, please refer to the Public Health Agency of Canada and the World Health Organization.

4.2 Reservoir

Humans.¹

4.3 Modes of Transmission

Transmission is generally by droplet spread during face-to-face contact and direct contact with saliva or respiratory droplets from the nose or throat of an infected person. Mumps is spread through coughing, sneezing, sharing drinks, kissing, or from contact with any surface that has been contaminated with droplets containing the mumps virus.^{3,4}

* Data included in the epidemiological summary are from January 1, 2013 to December 31, 2017. Data were extracted from Query on February 7, 2018 and therefore are considered preliminary.

4.4 Incubation Period

The incubation period ranges from 12 to 25 days, commonly between 16 and 18 days.¹

4.5 Period of Communicability

Mumps can be communicable from seven days before to five days after the onset of parotitis.⁴ Recent evidence suggests that while mumps virus can be isolated from saliva and respiratory secretions for up to nine days after the onset of parotitis, there is a significant reduction in viral secretion by five days after symptom onset, thereby reducing the risk of transmission.^{3,5}

4.6 Host Susceptibility and Resistance

After natural infection, immunity is generally lifelong.¹ Effectiveness of mumps vaccination after one dose is estimated to be between 62% and 91% and between 76% and 95% after two doses.³ There is also evidence to suggest waning immunity after both one and two doses of vaccine.³

In Ontario, susceptibility of young adults to mumps infection identified in the cohort born between approximately 1970 and 1992 can be attributed to the receipt of only a single dose of mumps-containing vaccine, as well as reduced circulation of wild virus.⁶

5.0 Reporting Requirements

As per Requirement #3 of the “Reporting of Infectious Diseases” section of the *Infectious Diseases Protocol, 2018* (or as current), the minimum data elements to be reported for each case are specified in the following:

- *Ontario Regulation 569* (Reports) under the *Health Protection and Promotion Act* (HPPA);⁷
- The iPHIS User Guides published by PHO; and
- Bulletins and directives issued by PHO.

6.0 Prevention and Control Measures

In the event that publicly funded vaccine doses are needed for case and contact management, the board of health should contact the Ministry of Health and Long-Term Care’s (ministry) immunization program at vaccine.program@ontario.ca as soon as possible.

6.1 Personal Prevention Measures

Immunize as per the current Publicly Funded Immunization Schedules for Ontario.⁸

In Ontario, the *Immunization of School Pupils Act* (ISPA) is the legislation that governs the immunization of school pupils for the designated diseases that are included in the Act. All students without a valid exemption must have documented receipt of two doses of mumps containing vaccine according to the specified schedule.⁹

Mumps-containing vaccine is usually given as measles-mumps-rubella (MMR) or measles-mumps-rubella- varicella (MMRV) depending upon age. The first dose must be given on or after their first birthday, and the second dose is routinely given between 4 and 6 years of age.

In Ontario, the *Child Care and Early Years Act, 2014* (CCEYA) is the legislation that governs licensed child care settings. Pursuant to *Ontario Regulation 137/15* under the CCEYA, children who are not in school and who are attending licensed child care settings must be immunized as recommended by the local medical officer of health prior to being admitted. Under the CCEYA parents can provide a medical reason as to why the child should not be immunized or object to immunization on religious/conscience grounds.¹⁰

6.2 Infection Prevention and Control Strategies

For hospitalized cases, droplet precautions, in addition to routine practices, are recommended until five days after onset of parotid swelling or symptom onset if parotitis is not present.⁴

Refer to PHO's website at www.publichealthontario.ca to search for the most up-to-date information on Infection Prevention and Control.

6.3 Management of Cases

In addition to the requirements set out in the Requirement #2 of the “Management of Infectious Diseases – Sporadic Cases” and “Investigation and Management of Infectious Diseases Outbreaks” sections of the *Infectious Diseases Protocol, 2018* (or as current), the board of health shall investigate cases to determine the source of infection. Refer to Section 5: Reporting Requirements above for relevant data to be collected during case investigation.

All clinical cases should be managed as confirmed cases until laboratory evidence suggests otherwise.⁴ Cases should be advised to stay home from school or post-secondary educational institutions, child care settings, workplaces, and other group settings for five days after onset of parotid swelling or symptom onset if parotitis is not present. Self-isolation of the case will prevent exposure of susceptible individuals to the virus.⁴

A health care worker (HCW) who has had an exposure to a person who has mumps, either in the health care setting or in the community, must report to Occupational Health and/or Infection Control at the facility where they work. Refer to the Mumps Surveillance Protocol for Ontario Hospitals for the definition of an exposure.¹¹

6.4 Management of Contacts

Contacts are defined by the fulfillment of at least one of the following criteria during the infectious period (i.e., approximately seven days before to five days after onset of parotid swelling or symptom onset if parotitis is not present):⁴

- Household contacts of a case;

- Persons who share sleeping arrangements with the case, including shared rooms (e.g., dormitories);
- Direct contact with the oral/nasal secretions of a case (e.g., face-to-face contact, sharing cigarettes/drinking glasses/food/cosmetics like lip gloss, kissing on the mouth);
- Children and staff in child care and school facilities (as deemed necessary by the epidemiology of the outbreak); or
- A HCW who provided care within one metre of a case of mumps without Personal Protective Equipment (PPE). The recommended distance for droplet precautions in patients who have acute respiratory infections that cause coughing and sneezing is two metres because coughing and sneezing results in forceful projection of potentially infectious respiratory droplets. For mumps, one metre is adequate for interruption of transmission to HCWs and patients.¹¹

Susceptible contacts include:⁴

- Those born in Canada in 1970 or later who have not received two doses of mumps-containing vaccine (at least 4 weeks apart) on or after their first birthday;
- Those without past history of laboratory confirmed mumps; and
- Those without documented immunity to mumps.

It should be noted, that while persons who have received two doses of mumps containing vaccine are not considered “susceptible contacts”, there may be secondary cases in this group as a result of waning immunity, especially if they have been vaccinated greater than ten to 12 years prior to exposure.^{3,12-14}

Susceptible HCWs should follow the Mumps Surveillance Protocol for Ontario Hospitals.¹¹

Post-exposure prophylaxis with mumps immune globulin (Ig) is ineffective.^{2,4} Contacts should be advised of signs and symptoms of mumps infection that can occur within 25 days of exposure, to seek medical attention upon symptom onset if required, and to inform the local board of health.

Assessment of immunization status and immunization with a mumps-containing vaccine as appropriate for age and risk factors should be conducted for susceptible contacts.⁴ Although mumps immunization after exposure to mumps may not prevent the disease, should the exposure not result in infection, the vaccine will confer protection against future exposures.³

6.5 Management of Outbreaks

Please see the *Infectious Diseases Protocol, 2018* (or as current) for the public health management of outbreaks or clusters in order to identify the source of illness, manage the outbreak and limit secondary spread.

Outbreaks provide the opportunity to update the immunization status of contacts if required and to recommend immunization to all those who are not up to date in their mumps immunization. Based on local assessment and recommendations, an outbreak dose (for example a possible third dose) of mumps containing vaccine in an outbreak

setting may be provided to individuals who are part of a group or population who are at increased risk of acquiring mumps. In the event that publicly funded vaccine doses are needed, the board of health should contact the ministry's immunization program at vaccine.program@ontario.ca as soon as possible.

7.0 References

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8.0 Document History

Table 1: History of Revisions

Revision Date	Document Section	Description of Revisions
January 2014	General	<p>New template.</p> <p>Title of Section 4.6 changed from “Susceptibility and Resistance” to “Host Susceptibility and Resistance”</p> <p>Title of Section 5.2 changed from “To Public Health Division (PHD)” to “To the Ministry of Health and Long-Term Care (the ministry) or Public Health Ontario (PHO), as specified by the ministry”</p> <p>Section 9.0 Document History added.</p>
January 2014	2.2 Outbreak Case Definition	<p>Addition of the first paragraph.</p> <p>Addition of the fifth bullet point under the second paragraph.</p> <p>Deletion of the following sentence: “Cases should also be classified by levels of probability (i.e. confirmed, probable or suspect).”</p>
January 2014	3.1 Clinical Presentation	Entire section revised.
January 2014	3.2 Diagnosis	Addition of direction to contact Public Health Ontario Laboratories or PHO website for additional information on human diagnostic testing.
January 2014	4.1 Occurrence	Entire section revised.

Revision Date	Document Section	Description of Revisions
January 2014	4.3 Modes of Transmission	Entire section revised.
January 2014	4.4 Incubation Period	Changed from “The average length of the incubation period is 16-18 days, however it can range from 14-25 days” to “The incubation period ranges from 12 and 25 days, commonly between 16 and 18 days”.
January 2014	4.5 Period of Communicability	Entire section revised.
January 2014	4.6 Host Susceptibility and Resistance	Entire section revised.
January 2014	5.1 To Local Board of Health	“Note: Laboratory confirmed cases are to be reported by phone to the local MOH as soon as identified” added.
January 2014	6.1 Personal Prevention Measures	Entire section revised.
January 2014	6.2 Infection Prevention and Control Strategies	Addition of reference to PIDAC IPAC best practices documents.
January 2014	6.3 Management of Cases	Entire section revised.
January 2014	6.4 Management of Contacts	Entire section revised.

Revision Date	Document Section	Description of Revisions
January 2014	6.5 Management of Outbreaks	<p>The following was deleted:</p> <p>“An outbreak is defined by the usual epidemiological principles of a greater than expected number of cases that are spatially and temporally linked”.</p> <p>“PHD provides support in the management of an outbreak only if the Health Unit requires additional MMR vaccine, requests assistance of the PHD or if the outbreak spans more than one Health Unit”.</p> <p>“For more detailed information on outbreak management see the Interim Ontario Guidelines for Public Health Management of Mumps, May 25, 2007”.</p> <p>The following was added:</p> <p>“In response to an outbreak, the disease control principles are as outlined above for case and contact management, with expansion of contact surveillance and additional vaccination considerations”.</p> <p>“For an outbreak in a daycare/child care centre, susceptible children can be excluded under Section 33 of the Day Nurseries Act”.</p> <p>“Please refer to the Guidelines for the Prevention and Control of Mumps Outbreaks in Canada from the Public Health Agency of Canada (available from http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/10vol36/36s1/index-eng.php) for additional guidance on outbreak management”</p>
January 2014	7.0 References	Updated.
January 2014	8.0 Additional Resources	Updated.

Revision Date	Document Section	Description of Revisions
February 2019	General	Minor revisions were made to support the regulation change to Diseases of Public Health Significance. Common text included in all Disease Specific chapters: Surveillance Case Definition, Outbreak Case Definition, Diagnosis, Reporting Requirements, Management of Cases, and Management of Outbreaks. The epidemiology section and references were updated and Section 8.0 Additional Resources was deleted.
February 2019	6.0 Prevention and Control Measures	Updates regarding the ordering of publicly funded vaccines for case and contact management.
February 2019	6.1 Personal Prevention Measures	Updates to information on Immunization of School Pupils Act and Child Care and Early Years Act.
February 2019	6.4 Management of Contacts	Minor updates to section.
February 2019	6.5 Management of Outbreaks	Update to section on vaccine outbreak dose.

