

MUMPS

Disease Overview

Mumps infection is characterized by swelling and tenderness of one or more salivary glands and is vaccine preventable. Parotitis (inflammation of parotid salivary gland) is reported in 60-70% of patients. Parotitis may be preceded by a non-specific prodrome that lasts approximately three to five days. For more information, see Guidelines for the Prevention and Control of Mumps Outbreaks in Canada, CCDR, Volume 3651, January 2010.

Symptoms

Symptoms typically include fever, headache, malaise, myalgia, and anorexia. Primarily respiratory symptoms also occur in about half of those who acquire the infection especially children under age five. Symptoms generally last for three-10 days after onset of illness. Infection in adults is typically more severe than in children. Central nervous system (CNS) involvement is the most common extra salivary manifestation of mumps. Gonadal involvement can be in association with parotitis or the sole manifestation of mumps.

Mumps infection during the first trimester of pregnancy may increase the rate of spontaneous abortion. Although mumps virus can cross the placenta, no firm evidence exists that this results in congenital abnormalities.

Reservoir

Humans.

Mode of Transmission

Mumps virus is spread directly from person to person by respiratory droplets OR by infectious nasopharyngeal secretions that are in contact with the mucous membranes of a susceptible person (direct contact) OR indirectly via fomites.

Incubation Period

The incubation period for mumps is 16 to 18 days to prodrome signs and symptoms; range is 12 -25 days post- exposure.

Period of Communicability

Maximum infectiousness occurs between 2 days before to 5 days following the onset of parotid swelling. The mumps virus has been isolated from saliva/buccal samples from 7 days before to 9 days after onset of swelling and in urine for up to 14 days after onset of parotitis. For the purpose of contact tracing, the period of communicability is between 7 days before onset of symptoms (usually parotitis) and 5 days after onset of symptoms.

Risk Factors

Increased risk of acquiring and/or severe illness:

- Under-immunized and unimmunized children and young adults remain the groups at highest risk of infection.
- Recent travel or exposure history to an endemic or known outbreak area.

Surveillance Case Definition

Confirmed case

Clinical illness¹ and laboratory confirmation of infection in the absence of recent immunization² with mumps-containing vaccine:

- Isolation of mumps virus from an appropriate clinical specimen.
- OR
- Detection of mumps virus RNA.
- OR
- Seroconversion or a significant rise (e.g., fourfold, or greater) in mumps IgG titre by any standard serologic assay between acute and convalescent sera.
- OR
- Positive serologic test for mumps IgM antibody in a person who is either epidemiologically linked to a laboratory-confirmed case or has recently travelled to an area of known mumps activity.
- OR
- Clinical illness in a person with an epidemiologic link to a laboratory-confirmed case.

Probable case

Clinical illness

- In the absence of appropriate laboratory tests.
- OR
- In the absence of an epidemiologic link to a laboratory-confirmed case.

Diagnosis and Laboratory Guidelines

Mumps is diagnosed by clinical evidence of Mumps-compatible illness and laboratory confirmation of infection in the absence of recent immunization with the mumps-containing vaccine. A laboratory-confirmed case may not exhibit clinical illness, as up to 30% of cases are asymptomatic.

The recommended diagnostic test for mumps is RT-PCR. It detects the presence of viral RNA in the clinical specimen. While a positive RT-PCR test is enough to confirm a case, a negative result to a RT-PCR test is not enough to rule out a mumps diagnosis. The test result is affected by the timing of the collection and the quality of the sample. Vaccinated people are known to shed the virus in smaller quantity and for a shorter period of time. False negative RT-PCR and culture results can be seen if specimens are not collected within 5 days after onset of symptoms as mumps virus might be present only during first few days after illness onset.

¹ Clinical illness is characterized by acute onset of unilateral or bilateral tender, self-limited swelling of the parotid or other salivary gland, lasting > 2 days, and without other apparent cause.

² The most frequent reaction to measles-mumps-rubella (MMR) immunization is malaise and fever (with or without rash) occurring 7-12 days after immunization. Parotitis has occasionally occurred after immunization. However, this should be determined for each case, as these reactions and the time frame can vary (*Canadian Immunization Guide*, Evergreen Edition, 2012).

Serology testing is done for the presence of IgM antibodies in a serum sample. However, the test has a potential for false positive and false negatives.

False positive: a positive test for the presence of mumps IgM antibodies alone doesn't confirm a mumps virus infection unless there's a link to a confirmed case or a travel history to an area with mumps activity. Further testing using another method is needed.

False negative: a delayed IgM response has been observed in patients with mumps, therefore a negative result of an IgM serology testing does not rule out the mumps diagnosis; if the initial IgM result is negative, the serology test (IgM and IgG) should be repeated in 2-3 weeks.

A fourfold rise in IgG titre for mumps from the acute to the convalescent sera is indicative of acute mumps infection. Seroconversion (from negative to positive) can also be indicative of acute mumps infection.

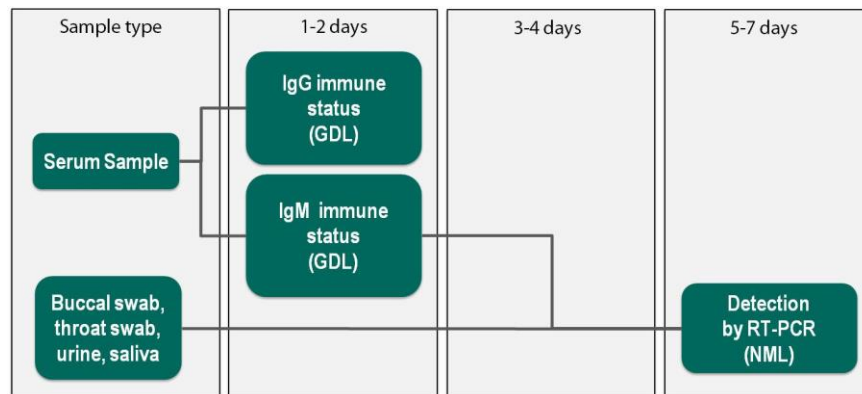
RT-PCR detection can be done on buccal swabs, throat swabs, urine or saliva.

GDL offers serology testing for mumps, both IgG and IgM. All specimens (for either serology or RT-PCR) should be sent to your regional laboratory that will take care of handling, conservation and shipping of the specimen.

Contact your laboratory for specifics on testing, specimen collection, handling and shipping.

Laboratory Testing

An overview of testing timelines for samples after the sample has been received by the laboratory. Turnaround times are averages and may change depending on the urgency of the situation.



Reporting

Per Policy 2.2 Disease and Event Notification to OCMOH and Disease and Event Reporting section.

- Enhanced Surveillance. For all confirmed cases an enhanced surveillance form should be completed, and information sent to OCMOH within 5 days of interview.
- Routine Surveillance (RDSS) for all confirmed cases.

Case Management

Education

The case or relevant caregiver should be informed about:

- The nature of the infection, the length of the communicable period, and the mode of transmission.
- Hand washing.
- Respiratory disease precautions.

Cough/sneeze etiquette.

In addition, educate cases on the following:

- Isolate themselves at home immediately.
- Avoid sharing cigarettes, drinking glasses, food, and cosmetic like lip gloss, kissing, eating utensils or any object used on the nose or mouth.
- If symptoms worsen advise the case to seek medical attention.
- Call ahead before going to any health care facility to inform the staff of mumps symptoms so they can be isolated on arrival to avoid exposing any susceptible persons.

Investigation

Upon receipt of information from a clinician or laboratory of a person suspected to have mumps, immediately begin investigation and treat a patient as a “case under investigation” for public health management purposes. Initiation of control measures must not wait laboratory confirmation of the case. For investigation purposes, the incubation period is defined as: 16-18 days (range 12 – 25 days).

Exclusion/ Social Distancing

All case(s) under-investigation should be isolated i.e. not allowed to attend day care, school, workplace or other social settings and stay home for *five days after onset* of parotitis OR until mumps is ruled out. This includes daycare workers and health care workers.

Public Health may need to liaise with Infection Control Practitioners for case management. In the health care setting, case (s) should be placed in respiratory isolation i.e. droplet precautions for five days after the onset of parotitis.

Exclusion of Health Care Worker (HCW) case(s)

- Exclude HCW from work for at least five days after the onset of salivary glands swelling. The exclusion may be extended up to 9 days if the HCW remains symptomatic or if they work with vulnerable patients (e.g. immunocompromised). Those working with immunocompromised or other vulnerable patients may be re-assigned to another area after five days, at the discretion of the employer i.e. Occupational Health.

Treatment

Immune globulin (IM or IV) is not recommended for mumps treatment.

No specific antiviral therapy is available and treatment is mostly supportive; typically cases are managed at home / in the community.

Prophylactic antibiotics to prevent bacterial infection are not recommended.

Immunization

Mumps disease typically provides life-long immunity; therefore there is no need to vaccinate individuals who had appropriately diagnosed disease.

Contact Management

Education

Educate contacts on:

- Disease, symptoms, and transmission of mumps.
- Respiratory hygiene.
- Hand hygiene.

- Avoid sharing cigarettes, drinking glasses, food, and cosmetic like lip gloss, kissing, eating utensils or any object used on the nose or mouth.

Investigation

For the purpose of contact tracing, the period of communicability is between 7 days before onset of symptoms (usually parotitis) and 5 days after onset of symptoms.

Ascertain whether or not contacts do have symptoms of mumps. If contacts have symptoms of mumps, management is as per Case Management section, until such time that mumps can be ruled out.

For the purpose of public health management, only contacts with significant exposure should be identified during the period of maximum communicability. For the purpose of contact tracing, the period of communicability is between 7 days before onset of symptoms (usually parotitis) and 5 days after onset of symptoms. This includes:

- Household contacts of case.
- Persons who share sleeping arrangements with the case, including shared rooms.
- Direct contact with the oral/nasal secretions of an infectious case (e.g., close contact with a distance of two meters; sharing cigarettes, drinking glasses, food, cosmetics like lip gloss; kissing on the mouth or any object used on the nose or mouth).
- Children and staff in day care or school facilities (as deemed necessary by the epidemiology of the outbreak).
- Those individuals exposed in a health care setting that had unprotected face to face interaction within one meter of infectious case.

Exclusion/ Social Distancing

Health care settings:

- When a susceptible HCW is exposed to a case of mumps, a risk assessment must be made to determine whether the HCW may return to work. Best practice is to exclude the non-immune HCW from any work in the health care setting from the 10th day after the first exposure until the 26th day (inclusive) after the last exposure to the case of mumps. Assessment of immunity can occur during this exclusion period and if found to be immune then they can return to work. These time intervals reflect the range of the incubation period and the potential period of communicability before the possible onset of symptoms.

Workplace, school, or day care:

- Exclusion of susceptible contacts to a mumps case is not indicated.

Prophylaxis

Immune globulin is not recommended for mumps for post exposure prophylaxis (PEP).

Post exposure MMR vaccination does not prevent or alter the clinical severity of mumps. It may be considered if repeated exposure to mumps is anticipated. If exposure to mumps does not cause infection, post-exposure vaccination with MMR vaccine should induce protection against subsequent infection.

Management of Special Situations

Assess Susceptibility

Immune	Susceptible
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Individuals born before 1970 are generally presumed to have acquired natural immunity to mumps; however, exceptions occur.	Individuals born in 1970 or later with unknown immunization history; evidence of receiving only 1 dose of mumps - containing vaccine or not receiving any doses.
Individuals born in 1970 or later with documented evidence of receiving 2 valid doses of live mumps-containing vaccine after their first birthday and given at least 1 month apart.	
Individuals with clinical diagnosis of acute mumps and laboratory confirmed mumps infection (regardless of birth date).	

- Serologic testing is not recommended before or after receiving mumps-containing vaccine.
- Offer a MMR vaccine to susceptible contacts that do not have a contraindication to the vaccine. (E.g. Contraindications include immunocompromised individuals, pregnant women etc.).
- MMR vaccine may be given to individuals with HIV without significant immunosuppression; consultation with an Infectious Disease Specialist is required.
- Although vaccination after exposure to mumps may not prevent the disease, it is not harmful. Should the exposure not result in an infection, the vaccine will confer protection against future exposures.
- The presence of pre-existing anti-mumps antibody is not a contraindication to mumps immunization.
- Mumps vaccine is available in MMR or MMRV combination vaccines and it can be obtained from the Central Serum Depot and local sub-depots.
- On rare occasions, mumps –containing vaccine can cause parotitis which may be clinically indistinguishable from mumps infection. Parotitis associated with mumps vaccine most commonly occurs within 10 to 14 days of immunization. Virus isolation and typing will distinguish wild from vaccine strain virus. The serologic response to vaccine is indistinguishable from wild type infection because IgM can be elevated by vaccine or infection.

Health care workers within a hospital or other health care facility (HCW)

- HCWs should have their immune status recorded, ideally before exposure occurs.
- HCWs who had significant exposure to a case of mumps within the infectious period and who cannot provide documentation that they have received 2 doses of mumps-containing vaccine on or after their first birthday or other evidence of immunity to mumps, should receive 1 or 2 doses of MMR (based on prior history and if not contraindicated).

Pregnant women

- Pregnant women should receive MMR after delivery if not considered immune.

Schools and child day care centers

- Immunization is the intervention of choice to prevent future cases of mumps outbreaks in schools and childcare centers. Immunize those not up to date according to the New Brunswick Routine Immunization Schedule.

Travel to areas with high mumps activity

- Advise to contact local travel clinic. During outbreaks or for travel to regions where mumps is a concern, the vaccine may be given as early as six months of age. Under these circumstances, the

routine two dose series must be then restarted on or after the first birthday, for a total of three doses. Children 12 months of age or older should have two doses separated by at least 28 days.

- For travel purposes adults should review their vaccination records to ensure they are up to date.

Outbreak Management

Activate the local outbreak plan when an outbreak has been declared.