

MUMPS SURVEILLANCE PROTOCOL FOR ONTARIO HOSPITALS

Developed by the Ontario Hospital Association and the
Ontario Medical Association
Joint Communicable Diseases Surveillance Protocols Committee

Approved by:
The OHA and The OMA Board of Directors
The Ministry of Health and Long-Term Care –
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This protocol was developed jointly by the Ontario Hospital Association and the Ontario Medical Association to meet the requirements of the *Public Hospitals Act 1990*, Revised Statutes of Ontario, Regulation 965.

This protocol is based on current scientific and medical knowledge and a desire to ensure maximum cost effectiveness of programs while protecting health care workers. It is intended as a minimum practical standard for Ontario hospitals. However, hospitals may adopt additional strategies when indicated by local conditions.

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Rationale for Mumps Surveillance Protocol

Mumps is an acute viral illness, caused by mumps virus, characterized by fever and swelling of one or more salivary glands, usually the parotid gland. Orchitis occurs in 20-30% of post-pubertal males, with testicular atrophy in about one-third of these cases and rarely sterility; oophoritis occurs in 5% of post-pubertal females. Pancreatitis, usually mild, occurs in 4% of cases. Aseptic meningitis occurs in 10% of cases. Mumps infection in the first trimester of pregnancy is associated with spontaneous abortion (25%); there is no evidence that mumps causes congenital malformation. About one-third of infections are subclinical. Mumps occurs worldwide and humans are the only host. In temperate climates, winter and spring were peak seasons for mumps in the pre-vaccine era, but seasonality is no longer evident in North America.

Mumps is spread by large respiratory droplet and direct contact with saliva of an infected person. Virus is also excreted in the urine. The incubation period is usually about 16–18 days (range 14–25 days). The period of communicability is from 7 days before to 5 days after onset of parotitis with maximum infectiousness between 2 days before to 4 days after onset.

Mumps vaccine was licensed for use in Canada in 1969 and trivalent measles-mumps-rubella vaccine (MMR) in 1972. In clinical trials, a single dose of mumps vaccine induced antibody in 95% of susceptible people; post-marketing surveillance has reported vaccine effectiveness as 80% after a single dose and 95% after 2 doses. The “cold chain” (maintenance of the vaccine within the temperature range specified by the manufacturer) is essential for viability of these live virus vaccines and their ability to confer immunity. In Ontario, there has been a substantial reduction in cases since the introduction of vaccine in the 1970s; from 2005-2010, the annualized rate of mumps was 0.7 cases/100,000 population and 37% of mumps cases were twenty years of age or older.

In recent years, outbreaks of mumps have occurred in both highly vaccinated and under immunized populations, largely involving adolescents and young adults in both the United States and Canada. In 2007, 2008 and 2009/10, Ontario experienced outbreaks of mumps; in 2007, cases were linked to importation of mumps from Atlantic Canada, in 2008 to an under-immunized community and in 2009/10 to a population of young adult males. Attack rates and complication rates of cases have been lower in these outbreaks than for the pre-vaccine era, suggesting that mumps vaccine has mitigated illness. Outbreaks in the U.S. have been much more extensive than outbreaks in Canada, which have been mostly self-limited. The reasons for these outbreaks are unclear, but may be due to variable vaccine coverage, close living quarters (e.g. college dormitories), subclinical disease in vaccine recipients, waning immunity, variation in vaccine lot effectiveness and/or failure of the cold chain in vaccine distribution.

Most cases of mumps in health care workers (HCWs) are community acquired. Mumps transmission in health care facilities has also been documented, including transmission to HCWs, and mumps poses a small but real risk to both patients and staff particularly when there are community outbreaks of mumps with introduction of mumps into the facility. The HCWs at highest risk are those most likely to come in contact with mumps patients. Further transmission from HCWs to patients has been reported. Identification and isolation of patients with mumps is only partially effective in preventing transmission because mumps virus can be isolated from saliva prior to onset of symptoms and an estimated 30% of cases are asymptomatic but still capable of transmission. Identification of susceptible HCWs and immunization with mumps vaccine will help protect both HCWs and patients.

The Canadian National Advisory Committee on Immunization (NACI), having considered the changing Canadian epidemiology of mumps, recommends a second dose of mumps vaccine, including for HCWs as they are more likely to encounter cases of mumps than the general population when those cases seek health care. It should be noted that the decision in the 1990's to adopt a 2-dose schedule of MMR for measles resulted in a 2-dose schedule for mumps for children born in or after 1992.

HCWs should consider the diagnosis of mumps in patients presenting with fever and parotitis, even in immunized individuals, and promptly institute droplet/contact precautions. **This protocol is only one component of an infection prevention and control program; health care workers must consistently adhere to Routine Practices.**

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I. Purpose

The purpose of this protocol is to provide direction to hospitals to prevent the transmission of mumps virus among health care workers (HCWs) and patients.

II. Applicability

This protocol applies to all persons carrying on activities in the hospital, including employees, physicians, nurses, contract workers, students, post-graduate medical trainees and volunteers. The term HCW is used in this protocol to describe these individuals. This protocol does not apply to patients or residents of the facility or to visitors.

When training students or hiring contract workers, the hospital must inform the school/supplying agency that the school/agency is responsible for ensuring that their students/contractors are managed according to this protocol.

This protocol is for the use of the Occupational Health Service (OHS) in hospitals.

III. Pre-placement

At the time of hiring, occupational health must ask all HCWs for evidence of immunity. Only the following should be accepted as proof of mumps immunity:

- documentation of receipt of 2 doses of mumps vaccine (or trivalent measles-mumps-rubella (MMR) vaccine) given at least 4 weeks apart on or after the first birthday, or
- laboratory evidence of immunity, or
- documentation of laboratory confirmed mumps.

If this documentation is not available, the OHS must offer mumps immunization to the HCW, given as trivalent measles-mumps-rubella (MMR) vaccine. If a HCW is already immune to any of the vaccine components, there is no increased risk of adverse reaction from vaccination. Females of childbearing age must first assure the OHS that they are not pregnant, and will not become pregnant for one month after receiving this vaccine. This documentation and any indicated immunization should be done for all new HCWs. Catch-up documentation of existing HCWs should be considered, particularly for groups of HCWs at higher

likelihood of seeing mumps cases, e.g. Family Practice and Emergency Department staff and those who routinely provide care in those areas.

Only immune HCWs should be assigned to care for patients with suspected or confirmed mumps; susceptible HCWs should be excluded.

IV. Continuing Surveillance

No routine continuing surveillance of any HCWs carrying on activities in the hospital is required. Follow-up is required for susceptible female HCWs unable to be vaccinated due to pregnancy. These HCWs have a responsibility to report to the OHS when they are no longer pregnant. The OHS must ensure that these women are offered mumps immunization when they are no longer pregnant.

Hospitals should consider giving a second dose of mumps containing vaccine (i.e. MMR) to HCWs who have previously only received one dose of mumps containing vaccine and do not have documented laboratory evidence of immunity, as HCWs may be exposed to mumps when patients with mumps seek care. HCWs who received a second dose of MMR for measles or rubella immunization are considered immune to mumps. Further, for those born before 1970 who do not have documented laboratory evidence of immunity and have never received mumps containing vaccine, 2 doses of MMR should be considered particularly for groups of HCWs at higher likelihood of seeing mumps cases, e.g. Family Practice and Emergency Department staff and those who routinely provide care in those areas.

V. Exposure

If the presence of a susceptible HCW within 1 meter of a patient with suspected or confirmed mumps is essential for patient care, personal protective equipment to prevent droplet transmission must be worn (i.e. surgical mask and eye protection).

Any HCW who has an exposure (see Glossary) to a person who has mumps, either in the health care setting or in the community, must report this exposure to the OHS. (See Appendix)

Immune HCWs (with evidence of immunity as defined in III above) may continue to work. However, since mumps has occurred in previously vaccinated persons, immune, exposed HCWs should be advised of the symptoms of mumps and to report to OHS immediately if symptoms develop.

HCWs who have received 1 dose of mumps-containing vaccine should be given a second dose, then they may return to work immediately. Susceptible exposed HCWs, i.e. those who have negative serology for mumps antibodies and who have never received mumps containing vaccine, should receive mumps vaccine

as soon as possible after the exposure and a second dose in 4 weeks. Although mumps immunization after exposure may not prevent disease, should the exposure not result in an infection, the vaccine should provide protection against future exposures.

Susceptible exposed HCWs must be excluded from any work in the hospital from the 12th day after the first exposure through the 26th day after the last exposure¹², regardless of whether they received vaccine after the exposure.

VI. Acute Disease

If clinical mumps develops, the HCW must remain off work until 5 days after the onset of parotid swelling¹². Infected HCWs and their personal physicians are responsible for follow-up care.

OHS should inform Infection Prevention and Control of HCWs with suspected or confirmed mumps when exposure of patients or other HCWs may have occurred.

Mumps is reportable to the local Medical Officer of Health. If mumps was acquired due to an occupational exposure, it is reportable to the Ministry of Labour and Workplace Safety and Insurance Board.

Glossary

Surveillance Case Definition for Mumps (Ontario MOHLTC)

Confirmed case:

1. Laboratory confirmed mumps infection in the absence of recent immunization with:
 - (a) Isolation of the virus from appropriate specimens; or
 - (b) Demonstration of a four-fold or greater increase or seroconversion in serum mumps IgG antibody titre; or
 - (c) Positive mumps-specific IgM antibodies; or
 - (d) Detection of viral antigen by reverse transcription polymerase chain reaction (RT-PCR); or
 - (e) Clinical illness in a person who is epidemiologically linked with another laboratory confirmed case.Clinically compatible signs and symptoms include:
 - (i) fever;
 - (ii) tender, self-limited swelling of the salivary glands lasting two or more days;
 - (iii) and no other apparent cause.

Note: A laboratory-confirmed case does not need to meet the clinical case definition.

Probable case: Clinical illness in the absence of appropriate laboratory tests and not epidemiologically linked to a laboratory confirmed case.

Symptoms of Mumps

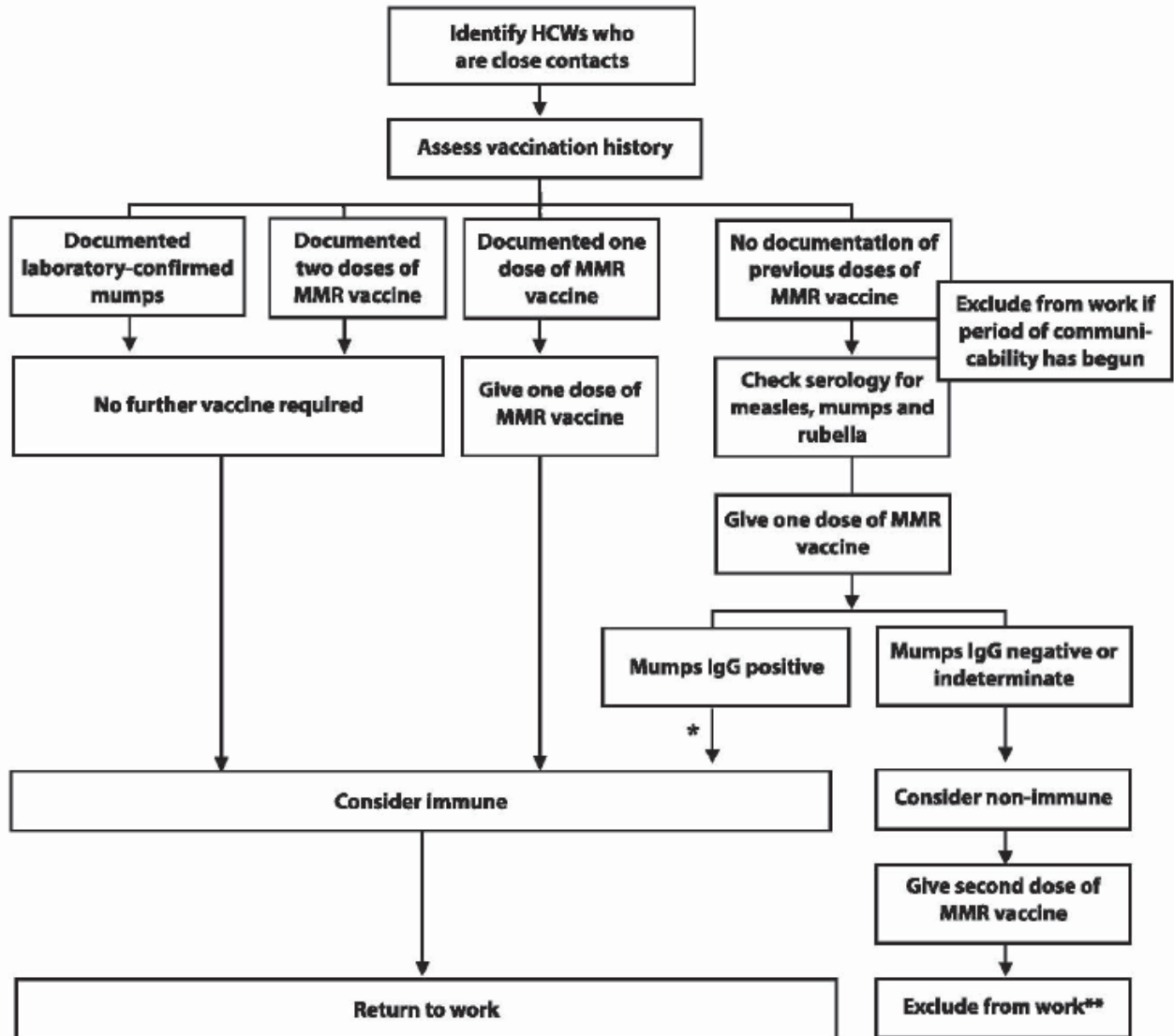
Mumps is characterized by fever and swelling and tenderness of one or more of the salivary glands, usually the parotid glands which may be unilateral or bilateral. In post-pubertal males, orchitis (inflammation of one or both testicles) occurs in 20-30% of cases.

Definition of Exposure

Exposure is defined as direct or droplet contact of the oral or nasal mucous membranes of a susceptible HCW with infectious saliva from the 2 days before up to 5 days after the onset of parotid swelling in the source patient. Consider a susceptible HCW who provided care within **1*** meter of a case of mumps without personal protective equipment to be exposed.

***Note: The recommended distance for droplet precautions in patients who have acute respiratory infections that cause coughing and sneezing is 2 meters because coughing and sneezing results in forceful projection of potentially infectious respiratory droplets. For mumps, 1 meter is adequate for interruption of transmission to HCWs and patients.**

Appendix: Management of HCWs who are close contacts of a case of mumps



* May need a second dose of MMR vaccine for measles protection.

** Contacts should be excluded from day 10 after the first contact of a case to day 26 after the last contact with a case (where day of exposure is day 1). The HCW may have returned to work prior to receiving the second dose of MMR.

Source: Guidelines for the Prevention and Control of Mumps Outbreak in Canada. Public Health Agency of Canada, 2010. Reproduced with the permission of the Minister of Health, 2011.

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