Ministry of Health

Ontario Public Health Standards:
Requirements for Programs, Services and Accountability

Infectious Disease Protocol

Appendix 1: Case Definitions and Disease-Specific Information

Disease: Rubella

Effective: May 2022

Ontario

Rubella

☒ Communicable
☐ Virulent

Health Protection and Promotion Act (HPPA)
Ontario Regulation (O. Reg.) 135/18 (Designation of Diseases)

Provincial Reporting Requirements

☒ Confirmed case
☒ Probable case

Ontario is currently documenting the elimination of rubella and is involved in enhanced surveillance for this disease. Any confirmed or probable case of rubella identified by the public health unit should be reported immediately via telephone to Public Health Ontario (PHO).

As part of elimination documentation, it is essential to document travel history and other exposure history to assess the source of infection, as well as immunization status, on every rubella case.

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:

- O. Reg. 569 (Reports) under the HPPA;[3]
- The iPHIS User Guides published by (PHO; and
- Bulletins and directives issued by PHO.

Type of Surveillance

Case-by-case

Case Definition

Confirmed Case

Laboratory confirmation of infection in the absence of immunization with rubella-containing vaccine in the last 7 - 42 days:

- Isolation of rubella virus in culture from clinical samples (i.e., throat swabs, nasopharyngeal swabs/aspirates, urine);

OR

- Detection of rubella virus ribonucleic acid (RNA) by nucleic acid amplification test (NAAT);

OR

- Positive serologic test for rubella Immunoglobulin M (IgM) antibody using a recommended assay in a person with an epidemiologic link to a laboratory-confirmed case or has recently travelled to an area of known rubella activity;

OR

- A significant (i.e., fourfold or greater) rise in rubella Immunoglobulin G (IgG) antibody level or a seroconversion using a recommended IgG assay in paired acute and convalescent sera.

OR

- Clinically compatible signs and symptoms with an epidemiologic link to a laboratory-confirmed case.

Probable Case

Clinically compatible signs and symptoms in a person with recent travel to an area of known rubella activity.

Outbreak Case Definition

Rubella is not an endemic disease in Canada; therefore one confirmed case is considered an outbreak.

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).

Clinical Information

Clinical Evidence

Clinically compatible signs and symptoms are characterized by fever and rash, and at least one of the following:

- arthralgia/arthritis;
- lymphadenopathy;
- conjunctivitis.

Clinical Presentation

A mild febrile viral disease presenting with an erythematous maculopapular rash and few constitutional symptoms including low-grade fever, headache, malaise, mild runny nose (coryza) and red eyes (conjunctivitis). The rash starts on the face, becomes generalized in 24 hours and lasts a median of 3 days.[1,2] Serious complications are rare, with up to 50% of infections being subclinical, however encephalitis can occur as well as arthritis/arthralgia, particularly among adult females. The main goal of immunization is the prevention of rubella infection in pregnant women which may give rise to congenital rubella syndrome (CRS) or congenital rubella infection (CRI) in the infant.

CRS can result in miscarriage, stillbirth and fetal malformations, including congenital heart disease, cataracts, deafness and intellectual disabilities. The greatest risk of fetal damage following maternal infection is highest in the first trimester (90%) which is reduced as the pregnancy progresses and is very uncommon after the 20th week.[1] Refer to the Disease-Specific Chapter for Rubella, congenital syndrome.

Laboratory Evidence

Laboratory Confirmation

- Any of the following will constitute a confirmed case of rubella:
- Positive for rubella IgM antibody (with an epidemiologic link);
- Seroconversion or rise in rubella IgG titre;
- Positive rubella virus culture with immunofluorescence (IF);
- Positive for rubella virus by direct NAAT.

Approved/Validated Tests

- Commercial tests for rubella IgM and IgG antibodies.
- Standard culture for rubella virus.
- NAAT for rubella virus RNA.
- Consult with laboratory about appropriate specimens for each testing methodology.

Indications and Limitations

- IgM serology has the potential for false positive findings. Further confirmation (IgG paired serology or rubella virus detection) is required in cases specifically where there is no established epidemiological link (e.g., recent travel/exposure history).
- Because of the implications of acute rubella infection in a pregnant woman and the potential for a false positive IgM result, avidity testing of Rubella IgG antibodies is recommended for pregnant women with a positive IgM result when there is no change in observed rubella IgG levels. Although in North

America most people consider a rubella IgG level of >10 IU/ml to confer immunity against rubella infection, the actual level that correlates with protection has not been fully defined.

For further information about human diagnostic testing, contact the Public Health Ontario Laboratories.

Case Management

Confirm the diagnosis and ensure that appropriate specimens have been collected for diagnosis according to the Laboratory Evidence section above.

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 Provincial Reporting Requirements above for relevant data to be collected during case investigation.

Advise case to avoid contact with pregnant females; and exclude from work, school and other activities for 7 days from the onset of the rash.[1,2]

There is no specific treatment for rubella infection.[1]

Contact Management

Contact identification and tracing:

- Contact history during period of communicability;
- Assessment of type of contact and probability of transmission;
- Identification of contacts for follow-up and determine immunization status of contacts;
- Occupation of contact; and
- Residency/attendance at a facility or institution.

A contact of a rubella case is any susceptible person who has had close contact with the case during the period of communicability.

Transmission is via droplet spread and direct contact with infected persons. Nasopharyngeal secretions are infectious as well as the urine of CRS infants.[2]

Contact management:

- Pregnant contacts should be advised to consult with their physician promptly to confirm rubella susceptibility status and where this is negative, perform serology to determine if infected. Routine use of immunoglobulin for susceptible women exposed to rubella early in pregnancy is not recommended;[8]
- Assess immunization status of identified contacts and immunize where appropriate;
- Alert contacts about signs and symptoms; and
- Advise contact to seek medical attention upon symptom onset and inform the local board of health.

Outbreak Management

Given rubella elimination from Canada, one case is considered an outbreak. However, given the communicability of rubella, clusters of cases can occur.

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.

Prevention and Control Measures

In the event that publicly funded vaccine doses are needed for case and contact management, the public health unit should contact the Ministry of Health's (ministry) immunization program at vaccine.program@ontario.ca as soon as possible.

Personal Prevention Measures

Immunize as per the current *Publicly Funded Immunization Schedules for Ontario*.[4]

In Ontario, the *Immunization of School Pupils Act* (ISPA) is the legislation that governs the immunization of school pupils for the designated diseases included in the Act.

All students without a valid exemption must have documented receipt of one dose of rubella containing vaccine.[5]

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.[6]

Control of rubella infection is needed primarily to prevent infection in susceptible pregnant females and congenital rubella syndrome.[1] Educate women of childbearing years about the importance of knowing their rubella immunization status. Screening of all pregnant women is recommended to determine susceptibility to rubella and facilitate post-partum immunization of susceptible women. This is important especially for adolescent females and women who have emigrated from countries where rubella is still endemic.[2]

Infection Prevention and Control Strategies

Hospitals should obtain documented proof of immunity to rubella as a condition of employment for reasons of patient safety as per the Rubella Surveillance Protocol for Ontario Hospitals.[7]

For hospitalized cases, in addition to routine practices, droplet precautions are recommended for 7 days after onset of the rash.[2]

Routine practices and respiratory isolation precautions are recommended for hospitalized CRS cases; only persons with documented immunity to rubella should have contact with these infants.

Refer to PHO's website to search for the most up-to-date information on Infection Prevention and Control (IPAC).

Disease Characteristics

Aetiologic Agent - Rubella virus (family *Togaviridae*; genus *Rubivirus*).[1]

Modes of Transmission - Person to person via direct or droplet contact from nasopharyngeal secretions. Infants with congenital rubella syndrome may shed virus for up to one year after birth.[1]

Incubation Period - From 14-21 days.[1]

Period of Communicability - The rubella virus is very contagious and transmission can occur one week before and at least four days after the appearance of the rash. Infants with CRS may shed virus for up to one year after birth,[1] refer to the Disease-Specific Chapter on Rubella, congenital syndrome.

Reservoir - Humans.[1]

Host Susceptibility and Resistance - Rubella-susceptible persons are all individuals who have not received at least one dose of rubella-containing vaccine. Immunity is usually permanent after immunization and natural infection.[1]

Please refer to PHO's Reportable Disease Trends in Ontario reporting tool for the most up-to-date information on infectious disease trends in Ontario.

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

Comments

- Provincial and territorial ministries of health provide active, weekly case-by-case notification (including zero-notification) to the Canadian Measles/ Rubella Surveillance System (CMRSS).
- Weekly reporting is completed from CMRSS to the Pan-American Health Organization, in accordance with the elimination of rubella and congenital rubella syndrome in the Western Hemisphere.

References

1. Heymann DL, editor. Control of Communicable Diseases Manual. 20 ed. Washington, D.C: American Public Health Association; 2015.
2. Committee on Infectious Diseases, American Academy of Pediatrics. Section 3: Summaries of Infectious Diseases: Rubella. In: Kimberlin DW, Brady MT, Jackson MA, Long SS, editors. Red Book: 2018 Report of the Committee on Infectious Diseases. 31 ed. Itasca, IL: American Academy of Pediatrics; 2018.
3. Health Protection and Promotion Act, R.S.O. 1990, Reg. 569, Reports, (2018). Available from: https://www.ontario.ca/laws/regulation/900569
4. Ontario, Ministry of Health and Long-Term Care. Publicly Funded Immunization Schedules for Ontario: December 2016. Toronto, ON: Queen's Printer for Ontario; 2016. Available from: http://www.health.gov.on.ca/en/pro/programs/immunization/schedule.aspx
5. Immunization of School Pupils Act, R.S.O. 1990, c.I.1, (2018). Available from: https://www.ontario.ca/laws/statute/90i01
6. Child Care and Early Years Act, 2014, S.O. 2014, c. 11, Sched. 1, (2018). Available from: https://www.ontario.ca/laws/statute/14c11
7. Ontario Hospital Association, Ontario Medical Association. Rubella Surveillance Protocol for Ontario Hospitals. Toronto, ON: Ontario Hospital Association; 2017. Available from: https://www.oha.com/labour-relations-and-human-resources/health-and-safety/communicable-diseases-surveillance-protocols
8. National Advisory Committee on Immunization, Public Health Agency of Canada. Part 4- Active Vaccines: Rubella Vaccine. 2016. In: Canadian Immunization Guide [Internet]. Evergreen ed. Canadian Immunization Guide: Her Majesty the Queen in Right of Canada, [cited April 30, 2018]. Available from: https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines.html?page=7

Case Definition Sources

Centers for Disease Control and Prevention. National Notifiable Disease Surveillance System: Rubella (German Measles) - 2013 Case Definition [Internet]. Atlanta, GA: U.S. Department of Health & Human Services; 2013 [cited March 13, 2018]. Available from: https://ndc.services.cdc.gov/case-definitions/rubella-2013/

National Advisory Committee on Immunization, Public Health Agency of Canada. Part 4- Active Vaccines: Rubella Vaccine. 2016. In: Canadian Immunization Guide [Internet]. Evergreen ed. Canadian Immunization Guide: Her Majesty the Queen in Right of Canada, [cited April 30, 2018]. Available from: https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines.html?page=7

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

Document History

Revision Date	Document Section	Description of Revisions
April 2022	Entire Document	New template. Appendix A and B merged. No material content changes.
April 2022	Epidemiology: Occurrence section	Removed.
April 2022	ICD Codes	Removed.