Ministry of Health and Long-Term Care

Infectious Diseases Protocol

Appendix A: Disease-Specific Chapters

Chapter: Rubella, congenital syndrome

Effective: February 2019

Ontario

Rubella, congenital syndrome

☒ Communicable

☐ Virulent

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

1.0 Aetiologic Agent

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

2.0 Case Definition

2.1 Surveillance Case Definition

Refer to Appendix B for Case Definitions.

2.2 Outbreak Case Definition

Rubella is not an endemic disease in Canada; therefore one confirmed case of Congenital Rubella Syndrome (CRS) 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).

3.0 Identification

3.1 Clinical Presentation

CRS can result in miscarriage, stillbirth and fetal malformations, including congenital heart disease, cataracts, deafness and intellectual disabilities. Fetal infection can occur at any stage of pregnancy. 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] Infected infants who appear normal at birth may later show eye, ear or brain damage. Congenital infection may give

rise to such problems as diabetes mellitus and panencephalitis later in life. Congenitally infected infants may shed the virus in the urine and in nasopharyngeal secretions for one year or more.[2]

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

Occurs in up to 90% of infants born to women infected with rubella virus during the first trimester of pregnancy.[1,3] Defects are rare with infection after the 20th week of gestation.[1]

In Ontario, between 2013 and 2017 one case of CRS was reported.*

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

Canada, as well as the Americas, have successfully eliminated transmission of rubella virus and CRS. Endemic transmission of rubella and CRS has been interrupted by high vaccine coverage as a part of routine infant and childhood immunization programs. Rubella and CRS continue to be endemic in other areas of the world and therefore importation of rubella is an ongoing concern.

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; source is maternal viremia.[1]

4.3 Modes of Transmission

Transplacental passage of rubella virus from maternal blood.[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

Not applicable

4.5 Period of Communicability

Birth to 9-12 months of age, rarely longer. A small number of infants with CRS continue to shed virus in nasopharyngeal secretions and urine for one year or more and can transmit infection to susceptible contacts.[1]

4.6 Host Susceptibility and Resistance

Fetuses of rubella-susceptible pregnant women who have not received at least one dose of rubella-containing vaccine. Immunity is usually permanent after immunization and natural infection.[1]

5.0 Reporting Requirements

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

As part of elimination documentation, it is essential to document maternal rubella and travel history to assess the potential source of infection for every CRS 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:

- *Ontario Regulation 569* (Reports) under the *Health Protection and Promotion Act* (HPPA);[5]
- 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

Refer to the Disease-Specific Chapter for Rubella for prevention of maternal infection during pregnancy.

Prevention strategies:

- Women should avoid pregnancy for at least 4 weeks following immunization.[2]

- Susceptible women should be discouraged from traveling to rubella-endemic countries the month prior to conception and during pregnancy.

6.2 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.[6]

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.

6.3 Management of Cases

Confirm the diagnosis and ensure that appropriate specimens have been collected for diagnosis according to case definition.

Investigate the maternal history according to the Disease-Specific Chapter for Rubella.

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. The following disease-specific information should also be obtained during case management:

- Determine whether the mother received rubella containing vaccine 4 weeks prior to conception;
- Antenatal serological test results; and
- Travel history or exposure to a person who travelled 30 days prior to conception or during pregnancy.

Infants with congenital rubella infection should be isolated from non-immune pregnant women, infants and children, and should be considered infectious until there are 2 sets of negative tests. Urine and nasopharyngeal (NP) specimens in addition to serology should be collected shortly after birth and again in 1-2 months. If the test results are not negative the infant is considered infectious and should continue to be isolated from non-immune persons. Regular testing should be done until tests are negative.

There is no specific treatment for congenital rubella except for symptomatic and supportive care.[4]

6.4 Management of Contacts

Refer to the Disease-Specific Chapter for Rubella.

6.5 Management of Outbreaks

Not applicable

7.0 References

1. Heymann DL, editor. Control of Communicable Diseases Manual. 20 ed. Washington, D.C: American Public Health Association; 2015.
2. 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
3. Plotkin SA, Orenstein WA, Offit PA, editors. Vaccines. 6 ed. Philadelphia, PA: Saunders; 2012.
4. 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.
5. Health Protection and Promotion Act, R.S.O. 1990, Reg. 569, Reports, (2018). Available from: https://www.ontario.ca/laws/regulation/900569
6. 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

8.0 Document History

Table 1: History of Revisions

Revision Date	Document Section	Description of Revisions
January 2013	General	New template. Title of Section 4.6 changed from “Susceptibility and Resistance” to “Host Susceptibility and Resistance” 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” Section 9.0 Document History added.
January 2013	2.2 Outbreak Case Definition	Changed from “N/A” to “Rubella is not an endemic disease in Canada; therefore one confirmed case of congenital rubella syndrome is considered an outbreak. Public health units should notify PHO, as specified by the ministry, when a case is identified.”

Revision Date	Document Section	Description of Revisions
January 2013	3.1 Clinical Presentation	Entire section revised.
January 2013	4.1 Occurrence	Second paragraph changed from “CRS occurs rarely in Ontario, with a range of zero to two reported cases per year from 1998-2007. The last two cases were reported in 2004” to “Canada, as well as the Americas, has made great progress in its goal of rubella and CRS elimination…”
January 2013	4.6 Host Susceptibility and Resistance	Entire section revised.
January 2013	5.1 To local Board of Health	Addition of: “Laboratory confirmed cases are to be reported by phone to the local medical officer of health as soon as identified.”
January 2013	5.2 To the Ministry of Health and Long-Term Care (the ministry) or Public Health Ontario (PHO), as specified by the ministry	First paragraph changed from “Report only case classifications specified in the case definition to PHD” to “Ontario is currently documenting the elimination of rubella and CRS and is involved in enhanced surveillance for this disease. Any confirmed or probable case of CRS identified by the public health unit should be reported via telephone to PHO, as specified by the ministry, within one (1) business day of receipt of initial notification.” Timeframe for reporting into iPHIS changed from “within five (5) business days of receipt of initial notification” to “within **one (1) business day** of receipt of initial notification” Addition of the third paragraph: “As part of elimination documentation, it is essential to document…” Final paragraph: Changed from “The disease-specific User Guides published by **the ministry**; and, Bulletins and directives issued by **the ministry**” to “The disease-specific User Guides published by **PHO**; and, Bulletins and directives issued by **PHO**”
January 2013	6.1 Personal Prevention Measures	Entire section revised.
January 2013	6.2 Infection Prevention and Control Strategies	Entire section revised.

Revision Date	Document Section	Description of Revisions
January 2013	6.3 Management of Cases	Addition of first two sentences: • "Confirm the diagnosis and ensure…" • "Investigate the maternal …" Third paragraph changed from "Refer to Ontario Regulation 569 for relevant data to collect. Ensure that the investigation includes: Confirming the diagnosis as per the case definition; Determining the mother's immunization and antenatal serological status; and Determining the possible source and exposure to rubella during her pregnancy including clinical details of her infection and possible setting/location of exposure" to "Collect appropriate data as per the Ontario Regulation 569 (Reports) under the HPPA and include the following in the investigation… prior to conception or during pregnancy."
January 2013	6.4 Management of Contacts	Content removed and changed to: "Refer to Appendix A, Disease-Specific Chapter for Rubella."
January 2013	7.0 Reference	Updated.
January 2013	8.0 Additional Resources	Updated.
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	Minor update to section per change in timing in the Canadian Immunization Guide.


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