Appendix A: Disease-Specific Chapters

Chapter: Rubella

Revised January, 2013
Rubella

☒ Communicable
☐ Virulent

Health Protection and Promotion Act:
Ontario Regulation 558/91 – Specification of Communicable Diseases

Health Protection and Promotion Act:
Ontario Regulation 559/91 – Specification of Reportable Diseases

1.0 Aetiologic Agent

Rubella virus (family Togaviridae; genus Rubivirus) (1).

2.0 Case Definition

2.1 Surveillance Case Definition

See Appendix B

2.2 Outbreak Case Definition

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

Public health units should notify PHO, as specified by the ministry, when a case is identified. If secondary transmission occurs, an outbreak case definition will be developed in consultation with PHO based on a review of the epidemiology of identified cases and may evolve over time to reflect the changing dynamics of the outbreak.

The outbreak case definition varies with the outbreak under investigation. The outbreak case definition should be created in consideration of the provincial surveillance case definition; for example, confirmed outbreak cases should at a minimum meet the criteria specified for the provincial surveillance confirmed case classification. Consideration should be given to the following when establishing an outbreak case definition:

1. Clinical and/or epidemiological criteria;
2. The time frame of occurrence;
3. The geographic location(s) or place(s) where cases live or became ill/exposed;
4. Special attributes of cases (e.g. age, underlying conditions); and
5. Further strain typing as appropriate, which may be used to support linkage.

Cases should also be classified by levels of probability (i.e. confirmed, probable or persons under investigation).
3.0 Identification

3.1 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 in the infant (CRI), refer to Appendix A, Disease-Specific Chapter on CRS.

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).

3.2 Diagnosis
See Appendix B

4.0 Epidemiology

4.1 Occurrence
Worldwide, rubella occurs primarily in unimmunized groups and outbreaks are most frequent in late winter and early spring (2).

Immunization was introduced in Canada in 1969 and since the mid 1970s incidence in Canada has remained relatively low.

Canada, as well as the Americas, has made great progress in its goal of rubella elimination, and endemic transmission of rubella has been interrupted by high vaccine coverage as a part of routine infant and childhood immunization programs. The last indigenous cases of rubella were reported in Canada in 2005.

The incidence of rubella has declined in Ontario since a two-dose MMR immunization program was introduced in 1996. From 1998-2009, the number of confirmed cases ranged from 2 - 17 per year, with the exception of 2005 when an outbreak of 313 cases occurred in an un-immunized community comprised mostly of school-aged children.

For more information on infectious diseases activity in Ontario, refer to the current version of the annual provincial epidemiology report and the Monthly Infectious Diseases Surveillance Reports.

4.2 Reservoir
Humans (1).
4.3 Modes of Transmission
Person to person via direct or droplet contact from nasopharyngeal secretions. Infants with congenital rubella syndrome may shed virus for months after birth (1).

4.4 Incubation Period
From 14-21 days (1).

4.5 Period of Communicability
The rubella virus is very contagious and transmission can occur 1 week before and at least 4 days after the appearance of the rash. Infants with CRS may shed virus for months after birth (1), refer to Appendix A, Disease-Specific Chapter on CRS.

4.6 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).

5.0 Reporting Requirements

5.1 To local Board of Health
Confirmed and suspect cases shall be reported to the medical officer of health by persons required to do so under the Health Protection and Promotion Act, R.S.O. 1990.

Note:
Laboratory confirmed cases are to be reported by phone to the local medical officer of health as soon as identified.

5.2 To the Ministry of Health and Long-Term Care (the ministry) or Public Health Ontario (PHO), as specified by the ministry
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 via telephone to PHO, as specified by the ministry, within one business day of receipt of initial notification.

Cases shall also be reported using the integrated Public Health Information System (iPHIS), or any other method specified by the ministry within one business day of receipt of initial notification as per iPHIS Bulletin Number 17: Timely Entry of Cases (4).

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.
The minimum data elements to be reported for each case is specified in the following:

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

## 6.0 Prevention and Control Measures

### 6.1 Personal Prevention Measures

Immunize as per the current *Publicly Funded Immunization Schedules for Ontario* (5). Under the *Immunization of School Pupils Act*, all students must have documented receipt of one dose of rubella containing vaccine after the first birthday. Children attending Day Nurseries should, at a minimum, be immunized according to the current *Publicly Funded Immunization Schedules for Ontario* (5).

With recent immunization, the most frequent reaction (approximately 5% of immunized children) is malaise and fever with or without rash lasting up to 3 days and occurring 6 - 23 days after MMR immunization. Rash and lymphadenopathy occur occasionally (3). These events should be reported as an adverse event following immunization (AEFI) if they meet the reporting criteria specified in Appendix B, Provincial Case Definition for AEFIs.

Control of rubella infection is needed primarily to prevent congenital rubella syndrome in susceptible pregnant females (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 female adolescents and women who immigrate from countries where rubella is still endemic (2).

### 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).

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.

### 6.3 Management of Cases

Confirm the diagnosis and ensure that appropriate specimens have been collected for diagnosis according to Appendix B, Provincial Case Definition for Rubella.
Investigate the case to determine source of infection, including inquiring about travel history or exposure to persons who have recently travelled and documenting location of travel. Collect appropriate data as per the *Ontario Regulation 569 (Reports)* under the HPPA, and include the following in the investigation:

- Symptoms and date of symptom onset;
- Travel history;
- History of exposure or risk behaviours;
- Earliest and latest exposure dates;
- Determine whether case is pregnant (if yes, refer to Appendix A, Disease-Specific Chapter on CRS);
- Case’s immunization status;
- Occupation; and
- Residency/attendance at a facility or institution.

Immunization status of all cases should be determined; including total number of doses of rubella-containing vaccine received and dates of receipt.

Case counselling:

- 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).

### 6.4 Management of Contacts

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 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 to susceptible women exposed to rubella early in pregnancy is not recommended (3);
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 public health unit.

6.5 Management of Outbreaks
An outbreak is defined by the usual epidemiological principles of a greater than expected number of cases that are spatially and temporally linked. Given rubella elimination from Canada, one case is considered an outbreak. However, given the communicability of rubella, clusters of cases can occur. The Public Health Division of the ministry and PHO provide support in the management of an outbreak when the public health unit requires additional rubella-containing vaccine, requests assistance or if the outbreak spans more than one public health unit.

As per this protocol outbreak management shall comprise of, but not be limited to, the following general steps:
- Confirm diagnosis and verify the outbreak;
- Establish an outbreak team;
- Develop an outbreak case definition;
- Implement prevention and control measures;
- Implement and tailor communication and notification plans depending on the scope of the outbreak;
- Conduct epidemiological analysis on data collected;
- Conduct environmental inspections of implicated premise where applicable;
- Coordinate and collect appropriate clinical specimens where applicable;
- Prepare a written report;
- Declare the outbreak over in collaboration with the outbreak team; and
- For an outbreak in a school, susceptible students can be excluded under Section 12 of the Immunization of School Pupils Act.

7.0 References


8.0 Additional Resources


9.0 Document History

Table 1: History of Revisions

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<tr>
<th>Revision Date</th>
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<tr>
<td>January 2013</td>
<td>General</td>
<td>New template.</td>
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<tr>
<td></td>
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<td>Title of Section 4.6 changed from “Susceptibility and Resistance” to “Host Susceptibility and Resistance”</td>
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<td>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”</td>
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<td>Section 9.0 Document History added.</td>
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| 2.2 Outbreak Case Definition | Addition of first two paragraphs:  
• Rubella is not an endemic disease in Canada…  
• Public health units should notify PHO…  
Third paragraph changed from “The outbreak case definition varies with the outbreak under investigation. Consideration should be given to…” to “The outbreak case definition varies with the outbreak under investigation. **The outbreak case definition should be created in consideration of the provincial surveillance case definition; for example, confirmed outbreak cases should at a minimum meet the criteria specified for the provincial surveillance confirmed case classification.** Consideration should be given to…”  
Addition of bullet # 5 in third paragraph: Further strain typing as appropriate… |
<p>| 3.2 Clinical Presentation | Entire section revised. |
| 4.1 Occurrence | Addition of third paragraph: Canada, as well as |</p>
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<td></td>
<td>the Americas, has made great progress in its goal of rubella elimination… Addition of fifth paragraph: For more information on infectious diseases activity in Ontario, refer to the current version of the annual provincial epidemiology report…</td>
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<td>4.4 Incubation Period</td>
<td>Changed from “From 14-17 days, with a range of 14-21 days” to “From 14-21 days.”</td>
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<td>4.5 Period of Communicability</td>
<td>Changed from “For about 1 week before onset and at least 4 days after onset of rash, sometimes 5-7 days after onset of rash; rubella is a highly communicable infection” to “The rubella virus is very contagious and transmission can occur 1 week before and at least 4 days after the appearance of the rash. Infants with CRS may shed virus for months after birth”</td>
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<td>4.6 Host Susceptibility and Resistance</td>
<td>First sentence changed from “Unimmunized individuals are susceptible to infection” to “Rubella-susceptible persons are all individuals who have not received at least one dose of rubella-containing vaccine.”</td>
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<td>5.2 To the Ministry of Health and Long-Term Care (the ministry) or Public Health Ontario (PHO), as specified by the ministry</td>
<td>First paragraph changed from “The local health unit shall notify the PHD by phone as soon as possible after receiving a report of a suspect or probable case of Rubella, and after ruling out any other similar illness. Report only case classifications specified in the case definition to PHD” to “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 via telephone to PHO, as specified by the ministry, within one (1) business day of receipt of initial notification” Addition of 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…”</td>
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<td>6.2</td>
<td>Infection Prevention and Control</td>
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<td>Addition of third paragraph: “Routine practices and respiratory isolation precautions are recommended for hospitalized CRS cases…”</td>
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<td>6.5</td>
<td>Management of Outbreaks</td>
<td>Second sentence of first paragraph changed from “Provide pubic health management of outbreaks or clusters in order to identify the source of illness, stop the outbreak and limit secondary spread” to “Given rubella elimination from Canada, one case is considered an outbreak. However, given the communicability of rubella, clusters of cases can occur. The Public Health Division of the ministry and PHO provide support in the management of an outbreak…”</td>
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