# Respiratory and Direct Contact

## Rubella



## Notification Timeline:

**From Lab/Practitioner to Public Health:** Within 48 hours (or immediate if an outbreak is suspected).

**From Public Health to Ministry of Health:** Within 72 hours (or immediate if an outbreak is suspected).

## Public Health Follow-up Timeline: Initiate within 24-48 hrs.

## Information

**Case Definition** (Public Health Agency of Canada, May 2008)

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|---|---|
| **Confirmed Case** | Laboratory confirmation of infection in the absence of recent immunization[1] with rubella containing vaccine:<br>• isolation of rubella virus from an appropriate clinical specimen<br>**OR**<br>• detection of rubella virus RNA<br>**OR**<br>• seroconversion or a significant (e.g., fourfold or greater) rise in rubella IgG titre by any standard serologic assay between acute and convalescent sera<br>**OR**<br>• positive serologic test for rubella IgM antibody using a recommended assay* in a person with an epidemiologic link to a laboratory-confirmed case or who has recently travelled to an area of known rubella activity.<br>**OR**<br>Clinical illness[2] in a person with an epidemiologic link to a laboratory-confirmed case. |
| **Probable Case** | Clinical illness[2]<br>• in the absence of appropriate laboratory tests<br>**OR**<br>• in the absence of an epidemiologic link to a laboratory-confirmed case<br>**OR**<br>• in a person who has recently travelled to an area of known rubella activity. |

[1] The most frequent reaction to measles-mumps-rubella (MMR) immunization is malaise and fever (with or without rash) occurring 7-12 days after immunization. However, this should be determined for each case, as these reactions and time frames can vary (*Canadian Immunization Guide*, 2006).

[2] Clinical illness is characterized by fever and rash, and at least one of the following:

- arthralgia/arthritis
- lymphadenopathy
- conjunctivitis

*IgM serology has the potential for false-positive findings. If the clinical presentation is inconsistent with a diagnosis of rubella or in the absence of recent travel/exposure history, IgM results must be confirmed by the other listed confirmatory methods. Rubella avidity serology is recommended for IgM positive results in pregnant women. Most acute rubella cases develop IgM after 5 days post rash onset. Therefore, a suspected rubella case in which serum collected < 5 days after rash onset initially tests IgM negative should have a second serum collected > 5 days after onset for retesting for IgM. Further strain characterization is indicated for epidemiologic, public health and control purposes.

**Causative Agent**
Rubella virus, an RNA virus of the genus *Rubivirus*.

**Symptoms**
Adults may experience a 1 to 5 day prodrome of mild fever, malaise, headache, and conjunctiva. Characteristic postauricular and suboccipital lymphadenopathy is followed by a diffuse maculopapular rash 5 to 10 days later. Children usually have few or no symptoms.

**Complications** (American Academy of Pediatrics, 2009)

- Encephalitis.
- Thrombocytopenia.
- Maternal rubella during pregnancy can result in miscarriage, fetal death or a variety of congenital anomalies. Refer to Congenital Rubella Syndrome/Infection in the Respiratory and Direct Contact section of the manual.

**Incubation Period**
Usually 16-18 days, but ranges from 14-23 days, (American Academy of Pediatrics, 2009).

**Reservoir/Source**
Humans.

**Mode of Transmission**
Spread by direct or droplet contact with nasopharyngeal secretions of an infected individual. In congenital rubella syndrome, the virus is transmitted to the fetus during pregnancy in 25% of cases of women who were exposed to rubella during their first trimester of pregnancy.

**Period of Communicability**
Approximately 1 week before to 4-5 days after onset of the rash.

**Specimen Collection and Transport**
To facilitate rapid testing, laboratory requisitions should be clearly marked "suspect case of rubella" when sending specimens for rubella testing.

To confirm the diagnosis the following specimens should be submitted to Saskatchewan Disease Control Laboratory (SDCL):

- Submit 5 mL serum samples for rubella IgM and IgG (acute and convalescent).
  - IgM response begins with onset of rash and will persist for 1 to 2 months. Only a small proportion of cases will have IgM present in serum samples collected on the day the rash appears. The proportion with IgM rises rapidly until the great majority of cases have IgM by day 5 post-onset of rash.
  - IgG response begins about 1 week after the onset of symptoms and will persist for a lifetime.
  - Convalescent sera should be drawn 10 to 20 days after the initial serology to assess the rise in IgG titre (seroconversion). This interval may be shorter if maternal rubella is being investigated.
  - Rubella specific IgM serology is the standard test for routine diagnosis of rubella but demonstration of a significant increase in the rubella specific IgG titre is a reliable alternative serologic method for diagnosis.
- Nasopharyngeal secretions, for isolation of rubella virus. Collect nasopharyngeal swab or a throat swab, and place in virus transport medium, within 4 days after the onset of symptoms. Refer to the SDCL Compendium of Tests at http://sdcl-testviewer.ehealthsask.ca/ for specimen collection instructions.
- Refrigerate specimens immediately and ship on ice to SDCL. Specimen must be received within 24 hr of collection.

## Methods of Control/Role of Investigator

### Prevention and Education

Refer to the Respiratory and Direct Contact Introduction and General Considerations section of the manual that highlights topics for client education that should be considered as well as provides information on high-risk groups and activities.

### Immunization

- Immunize infants, children and adults according to the recommended schedule. Refer to Saskatchewan Immunization Manual.[1]
- Because of the implication of congenital rubella syndrome, special attention to immune status should be paid to women in their preconception, prenatal and postnatal period. If necessary, immunizations should be offered in accordance with the Saskatchewan Immunization Manual.[1]
- Postpartum women who are non-immune should be given rubella-containing vaccine before discharge from hospital. Refer to Saskatchewan Immunization Manual[1] for details.

### Education

- Education should be provided regarding respiratory etiquette and measures to prevent transmission of rubella.
- Educate the public about the disease and the need for active immunization with a rubella-containing vaccine. Immunization information fact sheets can be used to guide discussion.

### Management

The primary goal of rubella control is to prevent defects in the infants of women who acquire the disease while pregnant. Educate all individuals who are considered contacts. Provide information about rubella to all individuals who may have been exposed to the virus, especially women who may be pregnant or of reproductive age.

[1] http://www.ehealthsask.ca/services/manuals/Pages/SIM.aspx.

Information about the signs and symptoms of the disease and the importance of isolation from other possible contacts, including health care workers, daycares and schools and especially other pregnant women is essential.

### I. Case

**History**

- Determine case status and immunization history including a review of the number and dates of rubella-containing vaccine.
- Determine the source of infection. Discuss social events, visitors from out of province, travel out of province and any contact with others who have been ill or with infants who may have congenital rubella syndrome.
- Discuss in detail the dates, names and places where the individual may have been in contact with others during the period of communicability and record contact details on the Attachment – Contact Follow-up Form in the Respiratory and Direct Contact Introduction and General Considerations section of the manual.

**Immunization**

Investigate immunization history, record date and place.

**Treatment/Supportive Therapy**

None. Supportive care in the home if symptoms of fever and headache indicate encephalitis, the case should seek medical attention.

**Exclusion**

Exclude cases from school, daycare, and work for 7 days following the onset of rash (Health Canada 1999, American Academy of Pediatrics 2009).

**Referrals**

In case of infection with wild rubella virus early in pregnancy, referral to family physician for appropriate counselling should be provided.

### II. Contacts/Contact Investigation

**Contact Definition/Categorization**

- Anyone who is likely to have been exposed to the nose or throat secretions of a person with rubella during their infectious period.

- Investigate all household and close contacts, with special emphasis on exposure to pregnant women, and determine susceptibility. See Definition of Susceptible Contacts. The following settings should be considered:
  - work, school, childcare centres;
  - social events;
  - medical or clinical facilities may be considered as well.
- Individuals are considered immune if they:
  - were born in Canada prior to 1970;
  - were born in Canada in 1970 or later and have documented evidence of immunization with live rubella-containing vaccine after their first birthday;
  - were born outside Canada and have documented evidence of immunization with live rubella-containing vaccine after their first birthday,
  - have laboratory-documented evidence of rubella or laboratory evidence of immunity.

**Definition of Susceptible Contacts**

- Infants less than one year of age.
- Immunocompromised individuals.
- Persons born in Canada in 1970 or later and people born outside of Canada who do not have:
  - documented evidence of vaccination with one dose of live rubella-containing vaccine received after their first birthday
    **OR**
  - laboratory evidence of immunity
    **OR**
  - a history of laboratory-confirmed rubella.

**Prophylaxis/Testing/Immunization**

- All pregnant women who have been exposed to the virus should have a blood test for rubella antibody if not already documented. Immune globulin may be suggested for those who are non-immune in consultation with the infectious disease specialist and gynaecologist. The value of this approach has not been established.

- Immunize all susceptible contacts with the exception of pregnant or immunosuppressed individuals. All individuals who have been exposed to the virus and who have no medical contraindications to the rubella vaccine should be given rubella-containing vaccine immediately.[2] Post pubertal females should be advised not to get pregnant for 1 month after receiving rubella-containing vaccine.
- Follow up all contacts within one week to confirm that they have been immunized and/or that they have or have not developed symptoms.

**Exclusion**

Exclude all suspected cases from school, daycare or work. If possible do not send them home on public transportation or on the school bus.

### III. Environment

**Child Care Centres/Institutional Control Measures**

- Investigate immune status of health care/daycare workers and immunize all who are non-immune, except in the case of pregnancy or immunosuppression.
- Health care workers who are susceptible must not work with patients suspected or confirmed to have rubella. These workers can become infected and may also become a source for transmission (Health Canada, 2002).
- Inform parents of children in daycare centres of the need for susceptible children 12 months of age or older to be immunized immediately.
- Cases in a hospital or institution should be managed under strict contact and droplet isolation precautions.

**Epidemic Measures**

- Ensure prompt reporting of all confirmed and suspected cases. The medical community and general public should be made aware of rubella epidemics in order to identify and protect any pregnant women who may be susceptible.
- Active surveillance for infants with congenital rubella syndrome (CRS) should be carried out until 9 months after the last reported case of rubella.

[2] Although live-virus rubella vaccine given after exposure has not been demonstrated to prevent illness, vaccine theoretically could prevent illness if administered within 3 days of exposure. If this exposure does not result in illness, immunization will provide protection in the future (American Academy of Pediatrics, p. 582, 2009).

- There is a special concern when rubella cases are identified in unimmunized or underimmunized communities and additional control measures may be implemented.

## References


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