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# Alberta Public Health Disease Management Guidelines

Rubella



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Health and Wellness Promotion Branch

Public Health and Compliance Branch

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**Rubella** | Alberta Health, Government of Alberta

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# Case Definition

## Confirmed Case

In the absence of recent immunization<sup>(A)</sup> with rubella-containing vaccine:

- Detection of rubella virus RNA via nucleic acid test (NAT) such as reverse transcription polymerase chain reaction (RT-PCR) or isolation of rubella virus from an appropriate clinical specimen<sup>(B)</sup>  
**OR**
- Positive serologic test for rubella-specific IgM antibody<sup>(C)</sup> in a person with an epidemiologic link to a laboratory-confirmed case or who has recently travelled to an area of known rubella activity  
**OR**
- Seroconversion or a significant rise (e.g., fourfold or greater) in rubella IgG titre by any standard serologic assay between acute and convalescent sera  
**OR**
- Clinical illness<sup>(D)</sup> in a person who is epidemiologically linked to a laboratory confirmed case

**OR**

Detection of wild-type rubella virus through genotyping, regardless of recent immunization with a rubella containing vaccine

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<sup>(A)</sup> Recent immunization is defined as receiving a rubella-containing vaccine with 28 days.

<sup>(B)</sup> Refer to the [Public Health Laboratories \(ProvLab\) Guide to Services](#) for current specimen collection and submission information.

<sup>(C)</sup> IgM serology has the potential for false positive findings (see diagnosis section).

<sup>(D)</sup> Clinical illness is characterized by fever and rash, and at least one of the following:

- arthralgia/arthritis,
- lymphadenopathy, and/or
- conjunctivitis.

# Reporting Requirements

## Physicians/Health Practitioners and Others

A physician, health practitioner or others shall notify the Medical Officer of Health (MOH) (or designate) of the zone, of all confirmed and probable cases in the prescribed form by mail, fax or electronic transfer within 48 hours (two business days).

## Laboratories

All laboratories shall report all positive laboratory results by mail, fax or electronic transfer within 48 hours (two business days) to the:

- Chief Medical Officer of Health (CMOH) (or designate), and
- MOH (or designate) of the zone.

## Alberta Health Services and First Nations and Inuit Health Branch

- The MOH (or designate) of the zone where the case currently resides shall forward the initial Notifiable Disease Report (NDR) of all confirmed and probable cases to the CMOH (or designate) within four weeks of notification and the final NDR (amendment) within ten weeks of notification.
- For out-of-province and out-of-country reports, the following information should be forwarded to the CMOH (or designate) by phone, fax or electronic transfer within 48 hours (two business days) including:
  - name,
  - date of birth,
  - out-of-province health care number,
  - out-of-province address and phone number,
  - positive laboratory report, and
  - other relevant clinical/epidemiological information.

# Epidemiology

## Etiology

Rubella is an RNA virus, a member of the genus *Rubivirus* in the *Togaviridae* family.<sup>(1)</sup>

## Clinical Presentation

Asymptomatic or subclinical Rubella (German measles) infections occur in up to 50% of cases. Adults may experience 1 to 5 days of prodromal symptoms such as low-grade fever, malaise, conjunctivitis, headache and mild coryza. Infection in children usually presents with few or subclinical symptoms. Rubella is characterized by a maculopapular rash that begins on the face and spreads down the rest of the body and lasts a median of three days. Rubella infection can often be mistaken for other rash illnesses such as measles, parvovirus B19, scarlet fever, enterovirus, human herpesvirus 6/7 and dengue. Lymphadenopathy, which may precede rash by 5 to 10 days usually, involves postauricular, posterior cervical and occipital lymph nodes.<sup>(1-3)</sup>

Serious complications in non-pregnant adults and children are rare. Rubella infection in susceptible pregnant women may result in Congenital Rubella Infection/Syndrome (CRI/CRS) in the fetus or fetal death.<sup>(1,3)</sup>

For more information refer to the [Public Health Disease Management Guidelines on Congenital Rubella Infection/Syndrome](#).

## Diagnosis

Rubella can resemble other rash illnesses; therefore, laboratory diagnosis is required in order to confirm infection. Rubella virus isolation or detection by RT-PCR is useful for the confirmation of rubella infection as well as for subsequent genotyping and molecular epidemiologic purposes. The ideal samples are throat or nasal specimens and urine collected as soon as possible after symptom onset.<sup>(3,4)</sup>

Most patients will be IgM antibody positive by day **five** after rash onset; retesting should be considered if the clinical suspicion is high and the patient has tested negative within this window period. IgM serology, performed in the absence of compatible symptoms, has the potential for false positive findings. If the clinical presentation is inconsistent with rubella manifestations or in the absence of recent travel/exposure history, positive IgM results must be confirmed by other confirmatory methods.<sup>(3)</sup> Acute and convalescent IgG and IgM should be obtained. When IgM antibodies are negative or unavailable, testing of paired acute and convalescent sera for IgG antibody should be performed.<sup>(5)</sup>

## Treatment

Supportive/symptomatic treatment.

## Reservoir

Humans.<sup>(1)</sup>

## Transmission

Rubella is transmitted by droplet spread and/or direct contact with nasopharyngeal secretions of infected individuals.<sup>(1)</sup> Transmission may also occur from those with subclinical illness.<sup>(6)</sup> Vertical transmission from an infected mother to her fetus results in CRI/CRS.<sup>(7)</sup>

## Incubation Period

The incubation period is from 14 to 17 days, with a range of 12 to 23 days.<sup>(3,5)</sup>

## Period of Communicability

Rubella is communicable from seven days before to at least seven days after onset of rash, and is highest when the rash is erupting.<sup>(2,6)</sup>

## Host Susceptibility

In general, individuals of any age who have not had rubella infection or who have not been immunized against rubella are at risk of infection. Adults born before 1957 are generally presumed to be immune to rubella; however, some of these individuals may still be susceptible.<sup>(8)</sup> Susceptible travellers to regions where rubella is still endemic are at an increased risk of acquiring rubella.

Immunity from vaccine or wild type virus infection confers long-term, probably lifelong protection. Reinfection with rubella virus is rare. CRS from reinfection is also rare.<sup>(1,2,7)</sup>

## Incidence

Rubella vaccine was first introduced in Alberta in 1971.<sup>(7,14)</sup> Two significant outbreaks that occurred in Manitoba in 1992/93 and 1996/97 impacted rubella rates in Alberta. Both the Alberta and Manitoba outbreaks had a similar age distribution, with most cases occurring among unimmunized individuals 15 to 19 years of age.<sup>(8,11)</sup> Reported cases have significantly declined since then. Annual case counts may be accessed through the [Interactive Health Data Application](#) (IHDA).

# Public Health Management

## Key Investigation

- The main goals of investigating rubella infections are to:
  - identify any infections that may have occurred in pregnant women, and
  - prevent exposure of susceptible pregnant women, and thereby prevent cases of CRI/CRS.<sup>(3)</sup>
- Ensure appropriate specimens have been collected (e.g., throat swab, NP swab, blood, CSF, urine).
- Obtain a history of illness including symptoms and date of rash onset.
- Determine rubella-specific immunization history including:
  - number of doses,
  - date administered,
  - where the person was immunized (e.g., out of country),
  - type of immunization provider (e.g., public health, doctor's office, travel clinic), and
  - if not immunized, determine reason why.
- Determine possible source of infection, taking into consideration the incubation period:
  - recent immigration,
  - recent history of travel during the incubation period,
  - contact with others who have recently traveled, or
  - recent contact with a confirmed case of rubella.
- Identifying a source of rubella infection may not always be possible as many rubella cases are asymptomatic.<sup>(3)</sup>
- Determine occupation (e.g., those who may have contact with pregnant women).
- Determine pregnancy status of female cases. If pregnant:
  - determine number of week's gestation at onset of illness, and
  - cases should be followed to determine pregnancy outcome (CRS, termination of pregnancy or normal infant). For more information, refer to the [Public Health Disease Management Guidelines on Congenital Rubella Infection/Syndrome](#).
- Determine the period of communicability (seven days before to at least seven days after onset of rash).
- Identify contacts that may have had **significant exposure** (see Table 1 for definition) to the case during the period of communicability. Contacts include, but are not limited to individuals:
  - living in the same household,
  - attending the same class or social function,
  - who share sleeping arrangements with the case (e.g., dormitories), and
  - working side-by-side.
- Every effort should be made to identify all **susceptible** pregnant contacts (see Table 1 for definition).<sup>(3)</sup>



Table 1: Definitions

Significant Exposure	Susceptible	Proof of Immunity
<ul style="list-style-type: none"> <li>• Direct contact with the oral/nasal secretions of a case (e.g., face-to-face contact, sharing cigarettes/drinking glasses/food/cosmetics like lip-gloss, kissing on the mouth), or</li> <li>• Unprotected face-to-face interaction (i.e., within two meters of an infectious case of rubella).</li> </ul>	<ul style="list-style-type: none"> <li>• Any person born 1957* or later (with the exception of Health care workers [HCWs]**) without documented proof of immunity.</li> </ul>	<p>Any person with:</p> <ul style="list-style-type: none"> <li>• written documentation of receipt of at least one dose of a rubella-containing vaccine administered on or after the first birthday, or</li> <li>• laboratory evidence of immunity, or</li> <li>• laboratory-confirmed rubella infection in the past.</li> </ul>

\* Adults born before 1957 are generally presumed to have immunity to rubella; however some of these individuals may still be susceptible.

\*\* In accordance with the [Alberta Communicable Diseases Regulation](#), regardless of year of birth, health care workers (HCWs) who have face-to-face contact with patients in health care facilities are required to have documented immunity to rubella.<sup>(8)</sup>

## Management of a Case

- Provide information about disease transmission and infection control measures to minimize transmission including:
  - practicing proper hand hygiene,
  - avoiding sharing drinking glasses or utensils, and
  - covering coughs and sneezes with a tissue or forearm.
- Hospitalized cases should be isolated in a private room and managed using routine practices and droplet precautions.
- The MOH **may exclude** rubella cases from public places and from settings where they are likely to expose pregnant women, for seven days from the onset of the rash or until they are satisfied that they are no longer infectious.
- Infected individuals should be advised to avoid contact with pregnant women and other susceptible individuals.
- HCWs infected with rubella should notify site-specific Occupational Health and Safety or Infection Prevention and Control for the facility for which they work.

### Health Care Worker (HCW) Definition

HCW includes the following:

- All health practitioners (as defined in the *Alberta Public Health Act*, “any person who provides health care or treatment to any person”); and
- All individuals at increased risk for exposure to, and/or transmission of, a communicable disease because they work, study, or volunteer, in one or more of the following health care environments:
  - hospital,
  - nursing home, supportive living accommodation, or home care setting,
  - mental health facility,
  - community setting,
  - office or clinic of a health practitioner, and
  - clinical laboratory.

## Management of Pregnant Contacts

- Determine if the pregnant contact has laboratory-confirmed evidence of rubella immunity, regardless of their immunization status. Rubella IgG testing is usually ordered during routine prenatal screening.
- If an IgG test was not done or if the result is unavailable, testing for the presence of rubella IgG and IgM should be done as soon as possible to determine immunity or early infection.
- Susceptible (IgG negative) pregnant women should be referred to their physician/healthcare provider for further assessment and management of the pregnancy.
- Immune globulin (IG) given after exposure does not prevent rubella infection and is therefore not recommended for routine post exposure prophylaxis.<sup>(2)</sup>
- Recommend post-partum immunization for susceptible pregnant contacts to protect against subsequent exposure.

## Management of Non-Pregnant Contacts

- Contacts should be educated about signs and symptoms of infection and instructed to call Public Health if symptoms do occur.
- Non-pregnant contacts, with no proof of immunity (refer to 1), should be offered one dose of rubella-containing vaccine as soon as possible. Refer to the [Alberta Immunization Policy \(AIP\)](#) for current recommendations.

- Post-exposure immunization does not prevent or alter severity of current exposure, but will protect against subsequent exposures.
- Advise post-pubertal female contacts to avoid getting pregnant for one month after receiving rubella-containing vaccine.
- Serologic testing is not routinely recommended before or after receiving rubella-containing vaccine.<sup>(7)</sup>
- IG given after exposure does not prevent rubella infection and is therefore not recommended for routine post exposure prophylaxis.<sup>(2)</sup>

## Management of Non-Pregnant HCW Contacts

- The MOH **may exclude** susceptible HCWs beginning seven days after exposure until:<sup>(3)</sup>
  - 23 days after last exposure (i.e., longest incubation period) **OR**
  - seven days after rash onset (if rubella develops in the HCW after exposure).
- If the HCW is immunized post exposure, they should continue to be excluded for 23 days after exposure, as the effectiveness of post-exposure vaccination in preventing rubella infection has not been shown.<sup>(3)</sup>

## Management of Outbreaks

- Since rubella was eliminated in Canada in 2005, one case of rubella is now considered a potential outbreak.<sup>(5,7)</sup>
- During an outbreak, active surveillance of potential cases should be done by investigating any rash illness in order to identify susceptible pregnant women.
- Identify the population at risk and offer rubella-containing vaccine to all non-pregnant individuals with no proof of immunity (refer to 1).

## Preventative Measures

- Educate the public about the risks of rubella infection.
- HCWs (regardless of year of birth) should have rubella immunity assessed upon hire. If found to be susceptible (i.e., NO documented history of immunization or serologic evidence of immunity or laboratory confirmation of disease), they should be offered immunization as recommended in the current [AIP](#).
- Screen antibody status of all pregnant women to determine susceptibility.
  - Advise susceptible pregnant women to avoid individuals with rubella and report any contact with a case to their physician immediately.
  - Offer rubella-containing vaccine to susceptible pregnant women in the immediate postpartum period.

## Appendix 1: Revision History

Revision Date	Document Section	Description of Revision
September 2021	General	<ul style="list-style-type: none"><li>• Updated Template</li><li>• Diagnosis and Treatment section moved to Epidemiology</li><li>• Updated web links</li></ul>
	Key Investigation	<ul style="list-style-type: none"><li>• Definition of significant exposure moved to Table 1</li></ul>

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