Wisconsin Department of Health Services
Division of Public Health
P-01978 (Rev 09/2017)

Communicable Disease Case Reporting and Investigation Protocol

RUBELLA AND CONGENITAL RUBELLA SYNDROME (CRS)

I. IDENTIFICATION AND DEFINITION OF CASES

A. **Clinical Description:** Rubella is a viral illness that is characterized by a mild, maculopapular rash along with lymphadenopathy, and a slight fever. The rash usually starts on the face, becomes generalized within 24 hours, and lasts a median of three days; it occurs in 50% to 80% of infected people. Lymphadenopathy, which may precede rash, often involves posterior auricular or suboccipital lymph nodes, can be generalized, and lasts between five and eight days. About 25% to 50% of infections are asymptomatic. Rubella is transmitted primarily through droplet or direct contact from nasopharyngeal secretions or urine of an infant with CRS.

Clinical diagnosis of rubella virus is unreliable and should not be considered in assessing immune status. Up to half of all infections may be subclinical or unapparent. Many rubella infections are not recognized because the rash resembles many other rash illnesses.

CRS is an illness resulting from rubella virus infection during pregnancy. When rubella infection occurs during early pregnancy, serious consequences such as miscarriages, stillbirths, and a constellation of severe birth defects in infants can result. CRS usually presents with more than one sign or symptom consistent with congenital rubella infection. Transplacental infection resulting in CRS occurs in infants who are born to women with rubella occurring at 20 weeks or less of gestation.

B. **Laboratory Criteria:** Laboratory confirmation of rubella virus infection is defined by one of the following:

- Positive serologic test for rubella IgM antibody, or
- Detection of rubella ribonucleic acid sequence by polymerase chain reaction (PCR) in clinical specimens**,** or
- Isolation of rubella virus from a clinical specimen, or
- A significant rise in rubella specific IgG antibody concentration between acute and convalescent specimens collected at least 10 days apart.

C. **Wisconsin Surveillance Case Definitions:**

Rubella

- **Confirmed**: A case with or without symptoms that has laboratory evidence of rubella infection confirmed by one or more of the following laboratory tests:
  - Isolation of rubella virus, or
  - Detection of rubella-virus specific nucleic acid by PCR, or
  - IgG seroconversion[†] or a significant rise between acute- and convalescent-phase titers in serum rubella IgG antibody level by any standard serologic assay, or
  - Positive serologic test for rubella IgM antibody,[†*]

  OR

  An illness characterized by all of the following:
  - Acute onset of generalized maculopapular rash, and
  - Temperature greater than 99.0°F, and
  - Arthralgia, arthritis, lymphadenopathy, or conjunctivitis, and
  - Epidemiologic linkage to a laboratory-confirmed case of rubella.

  [†] Not explained by MMR vaccination during the previous six to 45 days.
  [*] Not otherwise ruled out by more specific testing in a public health laboratory.

- **Probable**: In the absence of a more likely diagnosis, an illness characterized by all of the following:
  - Acute onset of generalized maculopapular rash, and
  - Temperature greater than 99.0°F, if measured, and
  - Arthralgia, arthritis, lymphadenopathy, or conjunctivitis, and
  - Lack of epidemiologic linkage to a laboratory-confirmed case of rubella, and
  - Noncontributory or no serologic or virologic testing.

- **Suspected:** Any generalized rash illness of acute onset that does not meet the criteria for probable or confirmed rubella or any other illness.

CRS

- **Confirmed**: An infant with a least one of the symptoms clinically consistent with congenital rubella syndrome listed above, and laboratory evidence of congenital rubella infection demonstrated by one of the following:
  - Isolation of rubella virus, or
  - Detection of rubella-specific IgM antibody, or
  - Infant rubella antibody level that persists at a higher level and for a longer time than expected from passive transfer of maternal antibody (i.e., rubella titer that does not drop at the expected rate of a twofold decline per month), or
  - A specimen that is PCR-positive for rubella virus.
- **Probable**:
  - An infant who does not have laboratory confirmation of rubella infection but has at least two of the following, without a more plausible etiology: Cataracts or congenital glaucoma, congenital heart disease (most commonly patent ductus arteriosus or peripheral pulmonary artery stenosis), hearing impairment, or pigmentary retinopathy,

    OR
  - An infant who does not have laboratory confirmation of rubella infection but has at least one or more of the following, without a more plausible etiology: Cataracts or congenital glaucoma, congenital heart disease (most commonly patent ductus arteriosus or peripheral pulmonary artery stenosis), hearing impairment, or pigmentary retinopathy, AND one or more of the following: Purpura, hepatosplenomegaly, microcephaly, developmental delay, meningoencephalitis, or radiolucent bone disease.
- **Suspected:** An infant who does not meet the criteria for a probable or confirmed case but who has one or more of the following findings: Cataracts, congenital glaucoma, congenital heart disease (most commonly patent ductus arteriosus or peripheral pulmonary artery stenosis), hearing impairment, pigmentary retinopathy, purpura, hepatosplenomegaly, jaundice, microcephaly, developmental delay, meningoencephalitis, or radiolucent bone disease.
- **Infection only:** An infant without any clinical symptoms or signs of rubella but with laboratory evidence of infection demonstrated by one of the following:
  - Isolation of rubella virus, or
  - Detection of rubella IgM antibody, or
  - Infant rubella antibody level that persists at a higher level and for a longer period of time than expected from passive transfer of maternal antibody (i.e., rubella titer that does not drop at the expected rate of a two-fold decline per month), or
  - A specimen that is PCR-positive for rubella virus.

NOTE: In probable cases, either or both of the eye-related findings (cataracts and congenital glaucoma) count as a single complication. In cases classified as infection only, if any compatible signs or symptoms (e.g., hearing impairment) are identified later, the case is reclassified as confirmed.

II. REPORTING

A. **Wisconsin Notifiable Disease Category I – Methods for Reporting:** This disease shall be reported **IMMEDIATELY BY TELEPHONE** to the patient's local health officer or to the local health officer's designee upon identification of a case or suspected case, per Wis. Admin. Code § DHS 145.04 (3) (a). In addition to the immediate report, complete and fax, mail or electronically report an Acute and Communicable Disease Case Report (DHS F-44151) to the address on the form, or enter the data into the Wisconsin Electronic Disease Surveillance System (WEDSS), within 24 hours.

B. **Responsibility for Reporting**: According to Wis. Admin. Code § DHS 145.04(1), persons licensed under Wis. Stat. ch. 441 or 448, laboratories, health care facilities, teachers, principals, or nurses serving a school or day care center, and any person who knows or suspects that a person has a communicable disease identified in Appendix A.

C. **Clinical Criteria for Reporting**: Clinically compatible illness. Cases should be reported immediately upon consideration of rubella or CRS in the differential diagnosis.

D. **Laboratory Criteria for Reporting:** Laboratory evidence of infection (e.g., PCR, IgM, or culture).

III. CASE INVESTIGATION

A. **Responsibility for case investigation**: It is the responsibility of the local health department (LHD) to investigate or arrange for investigation of suspected or confirmed cases as soon as is reasonably possible. A case investigation may include information collected by phone, in person, in writing, or through review of medical records or communicable disease report forms, as necessary and appropriate.

B. **Required Documentation:**
1. Complete the Wisconsin Electronic Disease Surveillance System (WEDSS) disease incident investigation report, including appropriate, disease-specific tabs.
2. Upon completion of investigation, set WEDSS disease incident process status to "Sent to State."

C. **Additional Investigation Responsibilities:**
1. Contact your Immunization Program Regional Representative: https://www.dhs.wisconsin.gov/lh-depts/counties.htm

IV. PUBLIC HEALTH INTERVENTIONS AND PREVENTION MEASURES

A. In accordance with Wis. Admin. Code § DHS 145.05, local public health agencies should follow the methods of control recommended in the current editions of *Control of Communicable Diseases Manual*, edited by David L. Heymann, published by the American Public Health Association, and the American Academy of Pediatrics' *Red Book: Report of the Committee on Infectious Diseases*, unless otherwise specified by the state epidemiologist.

B. Implement control measures immediately and before laboratory confirmation. If the results are negative, the decision to continue control measures should be made in consultation with the treating health care provider, the LHD, and the Bureau of Communicable Diseases..

C. Exclude and isolate the case-patient during the infectious period through seven days after rash onset, counting the day of rash onset as day zero. Recommend these individuals restrict contact with pregnant women and persons without adequate proof of rubella immunity for seven days after rash onset. The case-patient may return to normal activities on the eighth day after rash onset.

D. Clinical specimens should be sent to the Wisconsin State Laboratory of Hygiene.

E. Gather information from the case-patient about possible sources of the infection.

F. Define the dates during which the case-patient was infectious, from seven days before through seven days after rash onset, counting the day of rash onset as day zero.

G. Identify all individuals who were exposed to the case-patient during the infectious period.

H. Identify susceptible pregnant females, especially those in the first trimester, as soon as possible. Test them serologically for susceptibility or early infection. Ensure women infected during pregnancy receive counseling from a health care provider about the risks of intrauterine rubella infection. (Particularly in child care or school settings, remember to determine whether any teachers, student teachers, staff, or students are pregnant.)

I. Surveillance for CRS should be implemented when confirmed or probable cases are documented in a setting where pregnant women might have been exposed.

J. Infants with CRS should be considered infectious until they are at least 1 year old or until two cultures of clinical specimens obtained one month apart after the infant is older than three months of age are negative for rubella virus. Infants should be excluded from child care facilities until he or she is no longer considered infectious.

K. Identify other contacts who are at high risk of rubella infection and ensure that they are properly referred.
   1. Immunosuppressed individuals should be referred to their health care providers.
   2. Infants <12 months of age should be referred to their pediatricians.

L. Identify contacts who are susceptible to rubella infection. These are individuals without proof of immunity, including those with medical or religious exemptions to immunization. Proof of immunity is defined in Table 1.

Table 1. Immunity

	Definition
Vaccination	Documentation of age-appropriate, prior vaccination against rubella Ages 12 months and older: 1 dose (this does not apply to health care workers).
Laboratory	Laboratory evidence of immunity or laboratory confirmation of disease
Birthdate	Birth in the United States before January 1, 1957

M. Immunize all who do not have proof of immunity to rubella who are ≥12 months of age and who do not have a contraindication for rubella vaccination, with attention to the following:
   1. Rubella vaccine given within 72 hours of exposure may prevent disease.
   2. Vaccinate even if it is >72 hours post-exposure. It will protect against exposure to the next potential generation of cases.
   3. Contacts who are vaccinated may return to work or school immediately. Those who refuse vaccination should be excluded for 23 days after the onset of rash of the last reported case-patient in the outbreak setting.

N. In health care settings, exposed health care personnel without adequate presumptive evidence of immunity should be excluded from duty beginning seven days after exposure to rubella and continuing through either 23 days after last exposure or seven days after rash appears. Exposed health care personnel who are vaccinated as part of control measures should be excluded from direct patient care for 23 days after the last exposure to rubella because effectiveness of post-exposure vaccination in preventing rubella infection has not been shown. In addition, because birth before 1957 does not guarantee rubella immunity, during outbreaks in health care settings, health care facilities should recommend one dose of MMR vaccine for unvaccinated personnel born before 1957 who lack laboratory evidence of rubella immunity or laboratory confirmation of infection or disease.

V. CONTACTS FOR CONSULTATION

A. Local health departments and tribal health agencies: https://www.dhs.wisconsin.gov/lh-depts/index.htm

B. Regional Immunization Program representatives: https://www.dhs.wisconsin.gov/lh-depts/counties.htm

C. Bureau of Communicable Diseases, Immunization Program: 608-267-9959 After hours number 608-258-0099

D. Wisconsin State Laboratory of Hygiene: 1-800-862-1013; after hours emergency number 608-263-3280

VI. RELATED REFERENCES

A. Heymann DL, ed. Rubella. In: *Control of Communicable Diseases Manual*. 20th ed. Washington, DC: American Public Health Association, 2015: 527-532.

B. Pickering LK, ed. Rubella. In: *Red Book*: *2015 Report of the Committee on Infectious Diseases*. 30th ed. Elk Grove Village, IL: American Academy of Pediatrics, 2015: 688-695.

C. Centers for Disease Control and Prevention. Epidemiology and Prevention of Vaccine-Preventable Diseases. Hamborsky J, Kroger A, Wolfe S, eds. 13th ed. Washington D.C. Public Health Foundation, 2015.

D. Centers for Disease Control and Prevention Manual for the Surveillance of Vaccine-Preventable Diseases Rubella website: https://www.cdc.gov/vaccines/pubs/surv-manual/chpt14-rubella.html

E. Centers for Disease Control and Prevention Manual for the Surveillance of Vaccine-Preventable Diseases CRS website: https://www.cdc.gov/vaccines/pubs/surv-manual/chpt15-crs.html

F. Centers for Disease Control and Prevention. Rubella Surveillance Worksheet. Retrieved July 24, 2017, from https://www.cdc.gov/vaccines/pubs/surv-manual/appx/appendix16-2-rubella-wrsh.pdf

G. Wisconsin Immunization Program Rubella webpage: https://www.dhs.wisconsin.gov/immunization/rubella.htm