

# PUBLIC HEALTH REFERENCE SHEET

## Rubella



<b>Name</b>	Rubella virus
<b>Reservoir &amp; Transmission</b>	Humans Droplet transmission
<b>Incubation Period</b>	Average 17 days (range: 12–23 days)
<b>Common Symptoms</b>	Acute onset maculopapular rash and fever >99.0°F, and any of arthralgia, arthritis, lymphadenopathy, conjunctivitis
<b>Gold Standard Diagnostic Test</b>	PCR, ELISA
<b>Risk Groups</b>	Infants; unimmunized individuals
<b>Geographic Significance</b>	Africa, South and Southeast Asia

### What is rubella?

Rubella is an enveloped, positive-stranded RNA virus belonging to genus *Rubivirus* and family *Matonaviridae* (formerly belonged to *Togaviridae*). Rubella is a vaccine preventable illness that can cause birth defects, epidemics, and death. Also called “German measles” and “Three-Day Measles,” rubella and measles are caused by different viruses.

### What is the occurrence of rubella?

In the U.S., endemic rubella virus transmission was interrupted in 2001 and elimination was verified in 2004, but imported cases continue to occur. During 2016–2019, a median of 5 (range, 1–7) imported rubella cases were reported annually in the U.S., and 8 cases of congenital rubella syndrome (CRS) were reported during the same period. As of February 2022, almost 50% of countries had eliminated rubella and CRS, but 19 countries had not started using the rubella vaccine. Rubella virus continues to circulate widely. Globally, >100,000 infants are born each year with CRS, and >80% of those are born in Africa and some countries in South and Southeast Asia.

### How is rubella transmitted?

Rubella is transmitted primarily through direct, or droplet contact from nasopharyngeal secretions. Humans are the only natural hosts. In temperate climates, infections usually occur during late winter and early spring. People infected with rubella are most contagious when the rash is erupting but can be contagious from 7 days before to 7 days after the rash appears.

### Who is at risk for rubella?

Unvaccinated individuals are at risk for rubella. If a woman is infected with rubella while pregnant, she can pass it to her developing fetus, resulting in CRS. A pregnant woman exposed, or potentially exposed, to rubella should be immediately referred to their healthcare provider.

### What are the signs and symptoms of rubella?

About 25% to 50% of infections are asymptomatic. Rubella 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 3 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 5 and 8 days.

In children, rubella is usually mild, with few noticeable symptoms. Symptoms that may occur 1 to 5 days before the rash appears include a low-grade fever, headache, mild pink eye, general

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discomfort, swollen and enlarged lymph nodes, cough, and/or runny nose. A red rash may start on the face, spread to the rest of the body, and last about 3 days.

Most adults who contract rubella usually have a mild illness. Before a rash appears on the face and spreads to the rest of the body, some adults develop a headache, pink eye, and general discomfort followed by low-grade fever and sore throat.

### What are potential complications of rubella?

Arthralgia or arthritis may occur in up to 70% of adult women with rubella, but this is rare in children and men. Other rare complications include thrombocytopenic purpura and encephalitis. When rubella infection occurs during pregnancy, especially during the first trimester, serious consequences include miscarriages, fetal deaths/stillbirths, and severe birth defects known as CRS. The most common congenital defects are cataracts, heart defects, and hearing impairment and may include intellectual disability, and liver or spleen damage.

### How is rubella diagnosed?

Clinical diagnosis of rubella is unreliable as it is clinically indistinguishable from measles (rubeola), parvovirus B19 (Fifth Disease), and several other diseases with a febrile rash; therefore, cases must be laboratory confirmed. Virus detection and serologic testing can be used to confirm acute or recent rubella infection. Serologic tests can also be used to screen for rubella immunity.

Rubella virus can be detected from nasopharyngeal swabs, throat swabs, or urine specimens for viral detection by polymerase chain reaction (PCR) testing and molecular typing, as well as blood for serology testing. Cerebrospinal fluid specimens should be reserved for persons with suspected rubella encephalitis. Efforts should be made to obtain clinical specimens for virus detection from all case-patients at the time of the initial investigation. The virus may be detected from 1 week before to 2 weeks after rash onset. However, maximum viral shedding occurs up to day 4 after rash onset.

Real-time reverse transcriptase (RT)-PCR and RT-PCR can be used to detect rubella virus and has been extensively evaluated for its usefulness in detecting rubella virus in clinical specimens.

Molecular typing is recommended because it provides important epidemiologic information to track the epidemiology of rubella in the U.S. since the rubella virus no longer continuously circulates in this country. By comparing virus sequences obtained from new case-patients with other virus sequences, the origin of virus types can be tracked. This information may help in documenting the maintenance of the elimination of endemic transmission. In addition, genotyping methods are available to distinguish wild-type rubella virus from vaccine virus.

### How is rubella treated?

There is no specific antiviral therapy for rubella infection. Mild symptoms can be managed with supportive care to include managing fever with acetaminophen. Aspirin is contraindicated in children and teenagers because of the risk of developing Reye's Syndrome.

### How can rubella be prevented?

Vaccination prevents rubella. However, rubella vaccine should not be given during pregnancy. Promptly isolate people suspected of having rubella. Conduct case contact investigations to prevent further spread of the disease.

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### What are some public health considerations?

- Isolate people suspected to have rubella.
- Specify whether the patient presented with congenital rubella syndrome (CRS).
- Specify whether the patient is pregnant.
- Document relevant travel and deployment history occurring within the incubation period.
- Note the patient's rubella immunization history.
- Patients who have laboratory evidence of recent measles infection are excluded.

Because rubella has been eliminated in the U.S., consider one case a potential outbreak. Identify the source of infection for every confirmed case of rubella. Case-patients or their caregivers should be asked about contact with other known cases. Since many rubella cases are asymptomatic, a source may not be identified. When no history of contact with a known case can be elicited, look for potential sources of exposure in unidentified cases in populations at high risk (e.g., foreign born persons), and at the place and time in which transmission would have occurred.

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