Rubella
(German measles, 3 Day Measles)

Organism: Togavirus of the genus Rubivirus. Rubella is dangerous because of its ability to damage an unborn baby, causing congenital rubella syndrome (CRS), which may include: deafness, cataracts, heart defects, liver and spleen damage and mental retardation.

Incubation period: 16 to 18 days.

Infectious period: 7 days before and 7 days after the onset of the rash. Infants born with (CRS) should be considered contagious until they are at least 1 year old, unless two consecutive clinical specimens obtained at least 1 month apart after the child is 3 months old are negative for rubella virus.

Transmission route: Respiratory via direct droplet contact from inhalation of nasopharyngeal secretions. Fomite transmission from touching tissues or sharing drinking glass, cup, bottle used by someone with rubella.

Treatment: Supportive.

Information Needed for the Investigation

Verify the Diagnosis
- Was there an acute onset of generalized maculopapular rash, a temperature of > 99 F (37.2 C) together with arthralgia/arthritis, lymphadenopathy (postauricular lymph nodes) or conjunctivitis? Was there an exposure to a confirmed case? Rash may be very faint, fine, or lacy.

Determine the Extent of Illness
- Request a digital photo of the rash.
- Determine immunization status, recent travel, and potential exposure.
- Develop a line list of close contacts and their immunization status.
- Check if patient attends school, childcare, work, and has participated in other social activities. Instruct patient to stay home for seven days after onset of rash.
- Contact the Regional Nurse Manager, the local Public Health Nurse, healthcare provider, Infection Preventionist (IP) and the Immunization Program Manager.

Laboratory Specimens
- Rubella PCR is the method of choice for rapid clinical diagnosis at Alaska State Virology Laboratory (ASVL). Throat or nasopharyngeal swabs are the preferred specimens. Specimens should be collected using a Dacron® swab placed in a tube containing universal transport media (UTM). Specimens should be submitted (on cool packs) to Alaska State Virology Laboratory (ASVL) as soon as possible. ASVL will send these specimens to a CDC contract lab for PCR testing.
ASVL no longer performs IgM antibody testing for acute infection. IgG antibody testing for immunity is available at ASVL (Table 1).

- Clinicians who send specimens for testing at commercial laboratories should consult the commercial labs for specimen collection guidance.

### Table 1. Specimens for rubella testing submitted to ASVL

<table>
<thead>
<tr>
<th>Test Method</th>
<th>Serology (Rubella IgG Antibody)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. This test is used to determine immune status.</td>
<td></td>
</tr>
<tr>
<td>2. The test is performed at ASVL by EIA.</td>
<td></td>
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</tbody>
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<table>
<thead>
<tr>
<th>Organism(s)</th>
<th>Rubella Virus</th>
</tr>
</thead>
</table>

| PCR (Rubella Virus Antigen) |
| 1. This test is used to determine active infection. |
| 2. Testing will be performed at a CDC contract lab. |

<table>
<thead>
<tr>
<th>Specimen</th>
<th>Serology</th>
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</thead>
<tbody>
<tr>
<td>1. Serum (1 ml minimum)</td>
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<tr>
<td>2. Nasopharyngeal Swab (NP)</td>
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<table>
<thead>
<tr>
<th>Storage/Transport</th>
<th>Serology</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ship serum at room temp or on cool packs (4°C).</td>
<td></td>
</tr>
<tr>
<td>2. ASVL will overnight the sample to the CDC Contract Lab.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Results</th>
<th>Serology</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Negative</td>
<td></td>
</tr>
<tr>
<td>- No significant level of detectable antibody.</td>
<td></td>
</tr>
<tr>
<td>- Presumed to be susceptible to primary infection.</td>
<td></td>
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<tr>
<td>2. Equivocal - a borderline result</td>
<td></td>
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<tr>
<td>- Result falls w/in ±10% of the positive threshold.</td>
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</tr>
<tr>
<td>- Resubmission may be indicated.</td>
<td></td>
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<tr>
<td>3. Positive</td>
<td></td>
</tr>
<tr>
<td>- Indicates immunity by vaccination or infection.</td>
<td></td>
</tr>
</tbody>
</table>

| PCR |
| 1. Negative |
| - Antigen to the Rubella Virus was not detected. |
| - No sign of active infection. |
| 2. Positive |
| - Antigen to the Rubella Virus was detected. |
| - Presence of the antigen indicates active infection. |

<table>
<thead>
<tr>
<th>Turnaround Time</th>
<th>Serology: 2-3 days from date of receipt at ASVL.</th>
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</thead>
<tbody>
<tr>
<td>PCR: 2 days from date of receipt at CDC Contract Lab.</td>
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</tbody>
</table>


Contact and Control Measures

- Exclude persons from school, work, and childcare for seven days after the onset of rash.
- If given within 72 hours of exposure to measles, measles vaccine may provide some protection. In most settings, post-exposure vaccination is preferable to use of immune globulin. Immune globulin can be administered within 6 days of exposure. Immune globulin is indicated for susceptible household or other close contacts of patients with measles, particularly contacts younger than 1 year of age, pregnant women and immunocompromised people for whom risk of complications is highest. Immune Globulin (Human) is available at the SOE Depot. http://www.talecris-pi.info/inserts/gamastans-d.pdf
- Draw serum on any pregnant woman whose rubella status is unknown and who is a contact. Repeat in 2-3 weeks to check for rise in antibody titer. Refer to Obstetrician.
Infants born with congenital rubella syndrome (CRS) should be considered contagious until they are at least 1 year old, unless clinical specimens are repeatedly negative for rubella virus.

Hospital Considerations
- Use Droplet Precautions for 7 days after onset of rash.
- Healthcare personnel without evidence of immunity who have been exposed to measles should be relieved from patient contact and excluded from the facility from the 5th day after the first exposure to the 21st day after the last exposure, regardless of whether they received vaccine or immune globulin (Ig) after the exposure. Susceptible Health Care Workers (HCWs) should not enter the room if immune care providers are available.
- No recommendation is available for personal protective equipment (i.e. masks) considered effective in protecting susceptible HCWs.
- See contact and control measures above for vaccination recommendations.
- Infants born with congenital rubella syndrome (CRS) should be considered contagious until they are at least 1 year old.

Reporting Requirements
- FTR: write up outbreak cases.
- AK-STARS: enter all suspect, probable and confirmed cases.
- CDC Case Definition is used to define suspect, probable and confirmed cases.

Resource

Rubella (German measles)

2010 Case Definition CSTE Position Statement Number: 09-ID-55

Case classification

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

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 or 37.2°C, 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.

Confirmed:
- A case with or without symptoms who 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 polymerase chain reaction; or
  - significant rise between acute- and convalescent-phase titers in serum rubella immunoglobulin G antibody level by any standard serologic assay; or
  - positive serologic test for rubella immunoglobulin M (IgM) antibody;
  OR
- An illness characterized by all of the following:
  - acute onset of generalized maculopapular rash; and
  - temperature greater than 99.0°F or 37.2°C;
  - arthralgia, arthritis, lymphadenopathy, or conjunctivitis; and
  - epidemiologic linkage to a laboratory-confirmed case of rubella.

Epidemiologic Classification of Internationally-Imported and U.S.-Acquired

Internationally imported case: An internationally imported case is defined as a case in which rubella results from exposure to rubella virus outside the United States as evidenced by at least some of the exposure period (12–23 days before rash onset) occurring outside the United States and the onset of rash within 23 days of entering the United States and no known exposure to rubella in the U.S. during that time. All other cases are considered U.S.-acquired cases.
**U.S.-acquired case:** A U.S.-acquired case is defined as a case in which the patient had not been outside the United States during the 23 days before rash onset or was known to have been exposed to rubella within the United States.

U.S.-acquired cases are subclassified into four mutually exclusive groups:

- **Import-linked case:** Any case in a chain of transmission that is epidemiologically linked to an internationally imported case.
- **Imported-virus case:** A case for which an epidemiologic link to an internationally imported case was not identified but for which viral genetic evidence indicates an imported rubella genotype, i.e., a genotype that is not occurring within the United States in a pattern indicative of endemic transmission. An endemic genotype is the genotype of any rubella virus that occurs in an endemic chain of transmission (i.e., lasting ≥12 months). Any genotype that is found repeatedly in U.S.-acquired cases should be thoroughly investigated as a potential endemic genotype, especially if the cases are closely related in time or location.
- **Endemic case:** A case for which epidemiological or virological evidence indicates an endemic chain of transmission. Endemic transmission is defined as a chain of rubella virus transmission continuous for ≥12 months within the United States.
- **Unknown source case:** A case for which an epidemiological or virological link to importation or to endemic transmission within the U.S. cannot be established after a thorough investigation. These cases must be carefully assessed epidemiologically to assure that they do not represent a sustained U.S.-acquired chain of transmission or an endemic chain of transmission within the U.S.

**Note:** Internationally imported, import-linked, and imported-virus cases are considered collectively to be import-associated cases. States may also choose to classify cases as "out-of-state-imported" when imported from another state in the United States. For national reporting, however, cases will be classified as either internationally imported or U.S.-acquired.

**Comment**
Serum rubella IgM test results that are false positives have been reported in persons with other viral infections (e.g., acute infection with Epstein-Barr virus [infectious mononucleosis], recent cytomegalovirus infection, and parvovirus infection) or in the presence of rheumatoid factor. Patients who have laboratory evidence of recent measles infection are excluded.

**See also:**
- 2009 case definition
- 2007 case definition
- 1996 case definition
- 1990 case definition
Rubella Fact Sheet
(German measles)

What is rubella?
Rubella is a fever-producing, rash illness caused by a virus of the Rubivirus genus. The illness is usually mild, but if it occurs during the first 3 months of pregnancy, it can cause serious defects in the unborn child. Rubella occurs more often in the winter and spring months.

How do you get it?
You get rubella by exposure to airborne droplets from the nose or throat from a person infected with rubella virus. Rubella can also be transmitted by direct contact.

What are the symptoms of rubella?
The symptoms include rash, low-grade fever, body and joint aches, headache, runny nose and reddened eyes. Painful swelling of the lymph nodes at the back of the neck often precedes development of the skin rash. The rash, which lasts for 3 days or less, usually starts on the face and spreads from head to foot. Up to 50 percent of individuals who get the disease do not develop a rash. Many persons with rubella may have few or no symptoms.

When do symptoms start?
The symptoms usually start 16 to 18 days following exposure to the rubella virus, but the onset can range from 14 to 23 days.

For how long is a person contagious?
A person is contagious from 7 days before, to 7 days after, the onset of rash.

If you get rubella once, can you get it again?
No. Having the disease once protects you against repeated infection.

Is there a vaccine for rubella?
Yes. Rubella vaccine is usually given in a combination measles-mumps-rubella (MMR) vaccine at 1 year old.

What happens if you get rubella?
The disease is most serious if a woman is infected in the first 3 months of pregnancy because it can cause complications to the unborn baby. These complications, called congenital rubella syndrome (CRS), can include deafness, mental retardation, heart defects, cataracts, or death.

Should a person with rubella be excluded from school or work?
Yes, for 7 days after onset of rash.

How can you keep from getting it?
Get vaccinated. All women of childbearing age should be vaccinated for rubella before getting pregnant.