

## RUBELLA FACT SHEET (German measles)

**Agent:** Rubella virus.

**Brief Description:** A mild febrile viral disease with a diffuse punctate (pinpoint) and maculopapular rash sometimes resembling that of measles or scarlet fever. Children usually present few or no constitutional symptoms, but adults may experience a 1 to 5 day prodrome of low grade fever, headache, malaise, mild coryza, and conjunctivitis. Rubella is important because of its ability to produce anomalies in the developing fetus. These abnormalities are termed Congenital Rubella Syndrome (CRS).

Congenital rubella syndrome occurs when a pregnant mother becomes infected and passes the virus to her fetus. The primary congenital defects are ophthalmologic (cataracts, glaucoma, retinopathy), cardiac (patent ductus arteriosus, peripheral pulmonary artery stenosis), auditory (sensorineural deafness) and neurologic (behavioral disorders, meningoencephalitis, mental retardation). Other congenital defects include radiolucent bone disease and growth retardation. The occurrence of these defects is 50% if the mother is infected in the first month of pregnancy, 20% to 30% if infected in the second month and 5% if infected in the third to fourth month. Defects are rare when maternal infection occurs after the 20<sup>th</sup> week.

**Reservoir:** Humans.

**Mode of Transmission:** Contact with nasopharyngeal secretions of infected persons. Infection is transmitted by droplet spread or direct contact with patients. Infants with congenital rubella syndrome shed large quantities of virus from body secretions for up to one year, and can therefore serve as a source of infection for susceptible persons caring for them. Rubella may also be transmitted by sub-clinical cases (approximately 30% to 50% of all rubella infections).

**Incubation Period:** Sixteen to 18 days, with a range of 12 to 23 days.

**Clinical Case Definition:** An illness with ALL of the

following characteristics:

- Acute onset of generalized maculopapular rash, and
- Temperature  $> 37.2^{\circ}\text{C}$  ( $99^{\circ}\text{F}$ ), if measured, and
- Arthralgia, arthritis, lymphadenopathy, or conjunctivitis.

Cases meeting the measles case definition are excluded. Also excluded are cases with serology that is compatible with recent measles virus infection. All rubella cases should be confirmed by a laboratory test (serology).

### Lab Criteria for Diagnosis:

- Positive serologic test for rubella IgM antibody, or
- Significant rise in rubella antibody level by any standard serologic assay, or
- Isolation of rubella virus

### Diagnostic Testing:

#### A. Serology

1. Specimen: Blood - acute sera (at least 5cc whole blood) for IgM and IgG titers collected at the onset of illness and convalescent sera (IgG) collected 14-21 days later. Please note that a single IgM test will confirm the diagnosis. False-positive rubella IgM tests have been found in persons with parvovirus infections, a positive heterophile test for infectious mononucleosis, or a positive rheumatoid factor.
2. Outfits: Other serology outfit, order #0504.
3. Form: 3432 (revised 4/00).
4. Lab Test Performed: Titers for Rubella - IgG and IgM (must write IgM request on the form).
5. Lab Performing Test: Immunology Laboratory, Georgia Public Health Laboratory (GPHL) in Decatur.

6. Transport Requirements: Sera can be kept at ambient temperature, refrigerated, or frozen. Specimen should be non-hemolyzed.

#### B. Culture / Polymerase Chain Reaction (PCR)

1. Specimen: Nasopharyngeal swab/aspirate, throat, urine, or cerebrospinal fluid (CSF).
2. Outfit: Viral transport media.
3. Form: Form 3595R.
4. Lab Test Performed: Culture or PCR.
5. Lab Performing Test: Immunology Laboratory, GPLH in Decatur.
6. Transport Requirements: Specimen should be kept in viral transport medium.

#### Case Classification:

- **Suspect:** any generalized rash illness of acute onset.
- **Probable:** a case that fits the clinical description, has no or noncontributory serologic or virologic testing, and is not epidemiologically linked to a laboratory-confirmed case.
- **Confirmed:** a case that is laboratory confirmed or that meets the clinical case definition and is epidemiologically linked to a laboratory-confirmed case.

**Period of Communicability:** Rubella is moderately contagious. The disease is most contagious as the rash is erupting, but can be transmitted about 1 week before to 5-7 days after onset of rash. Infected children should be excluded from school until 7 days after rash onset.

**Vaccination:** Children should receive rubella vaccine at 12-15 months of age, and 4-6 years of age. It is usually given combined with measles and mumps vaccine (MMR). Adults born in 1957 or later should receive at least one dose of MMR vaccine unless they have documentation of vaccination with at least one MMR, or other acceptable evidence (laboratory results) of immunity to measles, mumps, and rubella. Efforts should be made to identify and vaccinate

susceptible adolescents and adults, particularly women of childbearing age who are not pregnant. Women who are pregnant or who plan to become pregnant within three months should not receive the vaccine, due to the theoretical risk for causing birth defects in the developing fetus. Emphasize vaccinating susceptible males and females in colleges, employment and health care settings.

**Post-exposure Prophylaxis:** Live attenuated vaccine given after exposure **has not** been demonstrated to prevent illness. However, non-pregnant people exposed to rubella may still theoretically benefit from the vaccine if given up to three days after exposure. Immunization of a person who is incubating natural rubella or who already is immune is not associated with increased risk of adverse effects. The risk of congenital rubella when a pregnant woman is exposed is significant. Exposed pregnant women **should not** be given live virus vaccine. An intramuscular dose of 20 ml of immune globulin (IG) may decrease clinically apparent infection, but no studies show that such a dose protects the fetus. It should only be used in cases where therapeutic abortion is not an option.

**Treatment:** None.

#### Investigation:

- **Case Investigation:**
  1. **Establish a diagnosis:** Because the clinical diagnosis of rubella is unreliable, cases **must** be confirmed by a laboratory test (serology).
  2. **For adult women, obtain accurate pregnancy status:** All women of childbearing age should be evaluated for pregnancy status. If a pregnant woman is infected, immediate referral to her medical care provider is necessary.

3. **Obtain accurate and complete immunization histories.**
4. **Identify the source of infection:** Case-patients and their caregivers should be asked about contact with other known cases. Since 20%-50% of cases are asymptomatic, identification of a source will not always be possible.
5. **Assess potential for transmission and identify contacts:** Contacts of case-patients during the infectious period (7 days before to 7 days after rash onset) should be identified. Transmission can occur in households, communities, workplaces, and prisons.
6. **Obtain specimens for virus isolation:** Nasopharyngeal swabs and urine should be collected within 4 days after rash onset and submitted for virus isolation. Isolates are essential to identify virus types and track the epidemiology of rubella in the United States, especially as we progress towards elimination of the virus in geographical regions.
7. **Laboratory evaluation of exposed pregnant women:** Pregnant women who have been exposed should have serologic testing (an IgG and IgM test) at the time of exposure, an IgG titer 2 to 3 weeks later, and another IgG titer 6 weeks after exposure. If the first IgG test is positive, the woman is immune. If the first test is negative, the second and third test will determine whether infection has occurred in the absence of an IgM test. A positive IgM indicates a recent or acute infection.
8. **Pregnancy Outcome Registry for women diagnosed with rubella during pregnancy:** All pregnant women infected with rubella during pregnancy should be monitored to document the pregnancy outcome (e.g., termination, CRS, or normal infant) on Centers for Disease Control and Prevention (CDC) Form 71.17, "Congenital Rubella Case Report Form," and forward to the Epidemiology Branch.

- **Outbreak Investigation:**

Strategies to control rubella outbreaks include defining at-risk populations, ensuring susceptibles are rapidly vaccinated, and maintaining active surveillance for new cases. Outbreak control measures should be implemented immediately when **one case of rubella is confirmed** in a community.

**Reporting:** Report all suspect, probable or confirmed cases **IMMEDIATELY** by phone to the local health department, District Health Office, or the Epidemiology Branch at 404-657-2588. If calling after regular business hours, it is very important to report cases to the Epidemiology Branch answering service. After a verbal report has been made, please transmit the case information electronically through the State Electronic Notifiable Disease Surveillance System (SENDSS) at <http://sendss.state.ga.us>, or complete and mail a GA Notifiable Disease Report Form (#3095). Additionally, districts should report all congenital rubella cases on CDC Form 71.17, "Congenital Rubella Case Report Form," and forward to the Epidemiology Branch. **\*\***(Georgia code requires notification of rubella diagnosis within 7 days; however, immediate notification enables a prompt case investigation and public health response.)

**Reported Cases of Rubella in Georgia, 1993-1999**

Year	Number of Cases
1993	0
1994	7
1995	0
1996	0
1997	0
1998	0
1999	0

## References:

1. American Academy of Pediatrics. Rubella. In: Peter G, and Pickering L, Eds. 2000 Red Book: Report of the Committee on Infectious Diseases. 25<sup>th</sup> Ed. Elk Grove Village, IL: American Academy of Pediatrics; 2000: 495-500.
2. CDC. Case Definitions for Infectious Conditions Under Public Health Surveillance. *MMWR* Vol. 46(RR10), 1997: 1-55.
3. CDC. Manual for the surveillance of vaccine-preventable disease. Centers for Disease Control and Prevention: Atlanta, GA, 1999.
4. Chin J, ed. Rubella. In: Control of Communicable Diseases Manual. 17<sup>th</sup> ed. Washington, DC: American Public Health Association, 2000: 435-440.

## Links:

- **CDC National Center for Infectious Diseases Rubella Information** – [http://www.cdc.gov/ncidod/diseases/submenus/sub\\_rubella.htm](http://www.cdc.gov/ncidod/diseases/submenus/sub_rubella.htm)
- CDC National Immunization program – <http://www.cdc.gov/nip/publications/pink/rubella.pdf>

