RUBELLA, CONGENITAL

(See also **RUBELLA, ACUTE OR POSTNATAL**)

Agent: Rubella virus.

Identification:

a. **Symptoms**: Congenital rubella syndrome (CRS) is manifested by cataracts, congenital glaucoma, congenital heart disease, microphthalmia, microcephaly, deafness, mental retardation. Thrombocytopenic purpura, hepatosplenomegaly with jaundice, and bone defects may be noted at birth. Occurs in up to 85% of infants born to women experiencing rubella during first trimester of pregnancy. Defects are rare with infection after the 20th week of gestation.

b. **Differential Diagnosis**: Other causes of congenital infection including AIDS, toxoplasmosis, cytomegalovirus, herpes, and syphilis.

c. **Diagnosis**: Laboratory confirmation of congenital rubella infection can be established by: (1) presence of IgM-specific antibodies at birth and if negative, at 1 month of age, (2) demonstration of rubella-specific IgG antibodies that persist at high concentrations or longer duration than expected from passive transfer of maternal antibodies (after 9 months), (3) isolation of rubella in viral RT-PCR from nasopharyngeal swab, blood sample, urine, or CSF (only done by CDC Rubella lab) and (4) detection of rubella virus RNA by PCR of nasopharyngeal, throat swabs and urine.

Incubation period: Not applicable.

Reservoir: Human.

Source: Maternal viremia.

Transmission: Transplacental passage of rubella virus from maternal blood.

Communicability: Birth to 9-12 months of age, rarely longer.

Specific Treatment: None.

REPORTING PROCEDURES

- **Congenital Rubella Syndrome Report Notification:** All providers must report suspected or confirmed congenital rubella syndrome cases to the LA County Department of Public Health's Vaccine Preventable Disease Control (VPDC) Program within 1 working day of identification via the CalREDIE provider portal, secure email, fax, or telephone (17 § CCR 2500).
  - **Weekdays**: Call 213-351-7800
  - **After Hours**: Call 213-974-1234 option 8
  - **Email**: vpdc@ph.lacounty.gov
  - **Fax Number**: 213-351-2782

  Report Form: CONGENITAL RUBELLA SYNDROME CASE REPORT (CDC 71.17)

- **Epidemiologic Data to Collect**:

  a. Mother's medical history: age at delivery, date of exposure to rubella, date of rubella-like illness, immune globulin prophylaxis, vaccination history, prenatal screening result, travel history (from 21 days before conception until the first 24 weeks of pregnancy).

  b. Infant's history: anomalies and other clinical findings, age diagnosed.

  c. Laboratory findings, tests performed, and dates.

CONTROL OF CASE, CONTACTS & CARRIERS

Investigate cases and pregnant contacts within 7 days.

CASE: Isolate from non-immune pregnant people, non-immune infants and children, and settings where they may be encountered.

Infants with congenital rubella should be considered infectious until they are one year of age unless urine and nasopharyngeal RT-PCR for rubella virus taken after 3 months of age are repeatedly negative. Contact Vaccine Preventable

Disease Control Program for testing intervals.

Infants with congenital rubella often require multiple visits to medical specialists. Medical appointments should be booked for the last appointment of the day and the child should not wait in the waiting room. Healthcare personnel seeing the child should have documentation of 1 MMR on or after their first birthday, or serologic evidence of a positive rubella IgG.

CONTACTS: The goal of rubella case investigation is to prevent exposure of susceptible pregnant women to rubella, and thereby prevent cases of CRS. It is essential that potentially susceptible, exposed pregnant women be identified, evaluated, and counseled. Identify settings where transmission may have occurred (e.g., day care, work, church, school, college, health care facility).

Ensure that susceptible persons are rapidly vaccinated and maintain active surveillance for 2 incubation periods after the last case's infectious period. All persons at risk who cannot readily provide laboratory evidence of immunity or a documented history of vaccination on or after their first birthday should be considered susceptible and should be vaccinated if there are no contraindications.

Immunization of contacts will not necessarily prevent illness or infection from current exposure but it is recommended to provide protection against subsequent exposures should current exposure not result in infection. The value of immune globulin (IG) has not been established, so it is not indicated except for susceptible pregnant people who will not consider abortion.

1. **Pregnant Contacts**: Draw a blood sample immediately for antibody test to establish immunity if not previously known. Request the laboratory to save an aliquot of frozen blood for future testing. If susceptible, re-draw blood 3 weeks later for paired serological testing with first blood specimen. If antibody not detectable in second specimen, repeat test again 3 weeks later. Conduct paired serological test of the first and third blood specimens. If antibody is present in the second or third specimen, but not the first specimen, recent infection is assumed to have occurred. Counsel and/or refer patient to personal physician for possible abortion.
2. **School Exclusion of Un-immunized Contacts**: In schools where a case of rubella has been reported, exclude all unimmunized persons from 7 days after first exposure to 23 days after last exposure to last reported case, unless the individual can demonstrate proof of rubella immunity. Immunization after exposure has not been shown to be effective in preventing disease.

CARRIERS: There are rare reports of children with CRS continuing to shed virus for years in nasal secretions.

PREVENTION-EDUCATION

1. Avoid exposure of CRS infants to non- immune pregnant persons.
2. Immunize all susceptible children and adults.
3. Advise women of childbearing age to avoid becoming pregnant for 4 weeks after receiving the vaccine. Inadvertent immunization is not an indication for abortion.
4. Educate caretakers on how to disinfect fomites soiled with body secretions.

DIAGNOSTIC PROCEDURES

Clinical and epidemiologic histories are required to aid the laboratory in test selection.

1. **Serology**: Demonstration of rubella-specific IgM antibodies in the infant's cord blood or sera is lab confirmation of rubella. IgM antibody persists for at least 6-12 months in infants with CRS. Documentation of persistence of serum rubella IgG beyond 9 months (the time expected with passive transfer of maternal antibody) is also indicative of CRS.

   Specimen Container: Serum separator tube (SST, a red-top or gold-top vacutainer tube).

   Laboratory Form: Test Requisition and Report Form H-3021

   Test Requested:

- **IgG:** Under IMMUNOSEROLOGY/VIROLOGY, select "Rubella IgG Antibody".
- **IgM:** Under MOLECULAR EPIDEMIOLOGY, select "Title 17 Submission", then under OTHER (SPECIFY), select "Rubella IgM Antibody, EIA".

Material: Whole clotted blood (2 mL) or serum (1 mL).

Storage & Transport: Store specimen refrigerated at 2-8°C. Transport specimen on cold packs to PHL as soon as possible.

2. **RT-PCR for Respiratory Swab**: Virus can be detected from nasopharyngeal swabs, throat swabs, and urine from birth to 3 months of age. Nasopharyngeal swabs are preferred. Any positive PCR result will be genotyped. Consult with Vaccine Preventable Disease Control Program.

   Specimen Container: Nasopharyngeal or throat swabs must be a Dacron or synthetic tip with aluminum or plastic shaft. Place swab in sterile collection tube with liquid viral or universal transport media.

   Laboratory Forms: Test Requisition and Report Form H-3021 AND VRDL General Purpose Specimen Submittal Form

   Test Requested:
   - **H-3021:** Under MOLECULAR EPIDEMIOLOGY, "Title 17 Submission", then under OTHER (SPECIFY), "Rubella PCR".
   - **VRDL:** Under Disease Suspected, "Rubella (German measles)", then under Test(s) Requested, "Rubella PCR".

   Material: 2-3 mL of Universal or Viral Transport Medium.

   Storage & Transport: Freeze or refrigerate specimens promptly after collection. Consult with Vaccine Preventable Disease Control to ensure samples are packages according to instructions for Biological Substance – Category B (UN 3373) shipment. Transport refrigerated specimens on cold packs or frozen specimens on dry ice to PHL as soon as possible.

3. **RT-PCR for Urine:** Urine for rubella PCR testing will be sent to CDC for confirmation.

   Specimen Container: Up to 50 mL of urine should be collected in a sterile, leakproof container.

   Laboratory Forms: Test Requisition and Report Form H-3021 AND CDC Specimen Submission Form (to be filled out by LAC PHL)

   Test Requested: Under MOLECULAR EPIDEMIOLOGY, "Title 17 Submission", then under OTHER (SPECIFY), "Rubella PCR".

   Material: Transport medium is not required for urine.

   Storage & Transport: Urine specimens should be stored refrigerated at 2-8°C immediately after collection. **Do not freeze urine specimens.** Transport specimen on cold packs to PHL as soon as possible.