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CONGENITAL RUBELLA SYNDROME (CRS) QUICKSHEET

Kentucky Public Health
Prevent. Promote. Protect.

DISEASE DESCRIPTION

When rubella infection occurs during early pregnancy, serious consequences–such as miscarriages, stillbirths, and a constellation of severe birth defects in infants–can result. The risk of congenital infection and defects is highest during the first 12 weeks of gestation and decreases thereafter; defects are rare after infection in the 20th week (or later) of gestation.

COMMON CONGENITAL DEFECTS

- cataracts
- congenital heart disease
- hearing impairment
- developmental delay

ETIOLOGIC AGENT

Rubella virus from genus Rubivirus

TRANSMISSION

Developing fetus is infected with the rubella virus during pregnancy

EPIDEMIOLOGY

Infants may shed virus for up to a year

RUBELLA VACCINES

MMR (MMR-II)

MMRV (ProQuad)

CONTROL MEASURES

- Patients with Congenital Rubella Syndrome (CRS) should be considered contagious until they are 1 year of age or until two cultures or PCR samples of clinical specimens obtained 1 month apart after the infant is older than 3 months of age are negative for rubella virus
- Parents and caregivers should be made aware of the potential hazard of their infants to susceptible, pregnant contacts
- Persons having contact with infants with Congenital Rubella Syndrome (CRS) should have documented evidence of immunity to rubella

EXCLUSION

- Health officials should consider excluding infants with Congenital Rubella Syndrome (CRS) from child-care facilities until he or she is no longer considered infectious
- Isolation should be enforced during any hospital admission before the child's first birthday, unless two cultures or PCR samples of clinical specimens obtained 1 month apart are negative for rubella virus after infant is older than 3 months of age.

KENTUCKY DEPARTMENT OF PUBLIC HEALTH
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CASE CLASSIFICATION

SUSPECTED CASE

An infant that does not meet the criteria for a probable or confirmed case but who has one of more of the following clinical findings:

- cataracts or 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.

PROBABLE CASE

- An infant without an alternative etiology that does not have laboratory confirmation of rubella infection but has at least 2 of the following*:
  - 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 without an alternative etiology that does not have laboratory confirmation of rubella infection but has at least one or more of the following:
  - 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,
- jaundice,
- microcephaly,
- developmental delay,
- meningoencephalitis, **OR**
- radiolucent bone disease.

*Either or both of the eye-related findings (cataracts and congenital glaucoma) count as a single complication.

CONFIRMED CASE

An infant with at least one symptom (listed above under suspected case) that is clinically consistent with Congenital Rubella Syndrome (CRS); and laboratory evidence of congenital rubella infection as demonstrated by:

- isolation of rubella virus, **OR**
- detection of rubella-specific immunoglobulin M (IgM) antibody, **OR**
- infant rubella antibody level that persists at a higher level and for a longer period than expected from passive transfer of maternal antibody (i.e., rubella titer that does not drop at the expected rate of a twofold dilution per month), **OR**
- a specimen that is PCR positive for rubella virus.

OTHER CRITERIA- INFECTION ONLY*

An infant without any clinical symptoms or signs but with laboratory evidence of infection as demonstrated by:

- isolation of rubella virus, OR
- detection of rubella-specific immunoglobulin M (IgM) antibody, OR
- infant rubella antibody level that persists at a higher level and for a longer period than expected from passive transfer of maternal antibody (i.e., rubella titer that does not drop at the expected rate of a twofold dilution per month), OR
- a specimen that is PCR positive for rubella virus.

*In cases classified as infection only, if any compatible signs or symptoms (e.g., hearing loss) are identified later, the case is reclassified as confirmed.

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EPIDEMIOLOGIC CLASSIFICATION

INTERNATIONALLY IMPORTED CASE

To be classified as an internationally imported Congenital Rubella Syndrome (CRS) case, the mother must have acquired rubella infection outside the U.S. or in the absence of documented rubella infection, the mother was outside the United States during the period when she may have had exposure to rubella that affected her pregnancy (from 21 days before conception and through the first 24 weeks of pregnancy).

U.S.-ACQUIRED CASE

A US-acquired case is one in which the mother acquired rubella from an exposure in the United States. US-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
- *Import-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 US-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.

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CASE INVESTIGATION AND SPECIMENS

SPECIMEN COLLECTION FOR LABORATORY TESTING

Test Name	Specimens to take	Timing for specimen collection	Transport requirements
Culture/PCR **Preferred specimen*	Nasopharyngeal swab/wash, urine, blood, cataracts	As soon as possible for confirmation; to monitor shedding in positive cases; after 3 months, every month until cultures are repeatedly negative	Viral transport media; ship frozen or on ice
IgM antibody	Serum	As soon as possible, within 6 months of birth	Maintain at 4°C and ship on ice
IgG antibody	Serum	After 9 months of age, but before vaccination with MMR vaccine	Maintain at 4°C and ship on ice

CASE INVESTIGATION

1. Confirm the clinical presentation of the patient.
2. Collect the following information:
    a. Demographic information
    b. Reporting source
    c. Clinical symptoms or syndromes
    d. Laboratory (performed on both mother and infant)
    e. Maternal history
        i. Dates of rubella vaccinations
        ii. Number of doses of vaccine given
        iii. If not vaccinated, reason
        iv. Country of vaccination
        v. History of documentation of rubella infection or disease during pregnancy
        vi. Rubella laboratory results
        vii. History of pregnancies within and outside the United States
    f. Travel outside the U.S. during pregnancy (countries visited with dates)
    g. Contact with foreign travelers during pregnancy
3. Collect specimens, if possible, within 24 hours of birth

The Congenital Rubella Syndrome (CRS) Case Report Worksheet can serve as a guide for data collection during investigation of reported cases.