

# Rubella

## Investigation Guideline

**CONTENT:**

**VERSION DATE:**

**Investigation Protocol:**

- Investigation Guideline 01/2013
- Rubella Rapid Assessment Worksheet 01/2013

**Supporting Materials found in attachments:**

- Fact Sheet 01/2013
- Parent Notification, Sample Letter 02/2012
- Physician Notification, Sample Letter 02/2012

**Revision History:**

<b>Date</b>	<b>Replaced</b>	<b>Comments</b>
01/2013	07/2012	Updated Case Definition and serology collection guidance in Laboratory Section. Formatted Rapid Assessment Form and Fact Sheet.
07/2012	02/2012	Added reporting form. Fixed minor typographical errors.
02/2012	03/2009	Revised format. Updated rapid assessment worksheet. Added VAERS information. Replaced BSE with BEPHI. Removed references to KS-EDSS. Added notification section. Replaced case definition with CDC 2010 version.

# Rubella (German Measles), Including Congenital Rubella Syndrome Disease Management and Investigative Guidelines

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## CASE DEFINITION, Rubella (CDC 2013)

### Case Classification:

#### 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
- IgG seroconversion<sup>†</sup> or a significant rise between acute- and convalescent-phase titers in serum rubella IgG antibody level by any standard serologic assay; or
- Positive serologic test for rubella IgM antibody<sup>‡</sup>

#### 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; and
- Arthralgia, arthritis, lymphadenopathy, or conjunctivitis; and
- Epidemiologic linkage to a laboratory-confirmed case of rubella.

<sup>†</sup> Not explained by MMR vaccination during the previous 6-45 days.

<sup>‡</sup> Not otherwise ruled out by more specific testing in a public health laboratory.

#### 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.

#### Suspected:

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

### Epidemiologic Classification:

**Internationally imported case:** A case in which rubella results from exposure to rubella virus outside the U.S. as evidenced by at least some of the exposure period (12–23 days before rash onset) occurring outside the U.S. and the onset of rash within 23 days of entering the U.S. 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 U.S. during the 23 days before rash onset or was known to have been exposed to rubella within the U.S.

*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.*

## CASE DEFINITION, Rubella, Congenital Syndrome (CDC 2010)

- **Confirmed:** An infant with at least one symptom ([listed below](#)) that is clinically consistent with congenital rubella syndrome; 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.
- **Probable\*:**
  - An infant without an alternative etiology that does not have laboratory confirmation of rubella infection but has at least 2 of the symptoms listed in [Group 1](#).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 symptoms listed in Group 1 AND one or more of the symptoms listed in [Group 2](#).
- **Suspected:** An infant that does not meet the criteria for a probable or confirmed case but who has one or more of the following clinical findings [listed below](#). ([Group 1](#) or [Group 2](#)).
- **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.

### Clinical Symptoms Group 1:

- cataracts or congenital glaucoma,\*
- congenital heart disease (most commonly patent ductus arteriosus or peripheral pulmonary artery stenosis),
- hearing impairment, or
- pigmentary retinopathy

### Clinical Symptoms Group 2:

- purpura,
- hepatosplenomegaly,
- jaundice,
- microcephaly,
- developmental delay,
- meningoencephalitis, or
- radiolucent bone disease

\* In probable cases, either or both of the eye-related findings (cataracts and congenital glaucoma) count as a single complication. 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.

## LABORATORY ANALYSIS

Specimens are not required to be sent to the State Public Health Laboratories (KHEL), but they will assist with preliminary testing and shipment of samples to the CDC.

- When rubella is first suspected:
  - Collect: blood specimens and throat swab(s).
  - Notify public health. (For testing to occur at KHEL, all case information must be immediately reported to 1-877-427-7317.)
- Specimens for culture and/or PCR (1) and serology (2):
  - (1) Throat swabs are the preferred clinical samples. CSF specimens should be reserved for encephalitis cases only,
    - Virus isolation (to allow for viral typing at the CDC) should be attempted on all sporadic cases and, at least, on some cases during an outbreak.
    - Preferred collection of throat swabs is within 4 days of rash onset.
      - Virus may be isolated from 1 week before to 2 weeks after rash onset. However, maximum viral shedding occurs up to day 4 after rash onset.
    - Use Dacron or synthetic swab placed in Viral Transport Media (VTM).
    - Keep all specimens on wet ice or at 4°C until shipment
    - Ship as soon as possible on cold packs.
      - *If not shipped within 48 hours of collection refer to [CDC guidance](#) for proper procedure in freezing specimens.*
  - (2) Blood, 5 ml collected in clot separator tubes containing a gel serum separator that is centrifuged within 2 hours of collection and shipped at 2-8°C with cold packs.
    - Centrifuged specimens must be received at KHEL within 48 hours. Do not ship on Fridays or freeze the serum separator tubes.
    - IgM serology: Collect within 7-10 days after onset of illness.
      - Note:** IgM may not be detectable before day 5 after rash onset.
    - IgG serology: Collect paired sera (acute & convalescent)
      - Acute: Collect 7-10 days after illness;
      - Convalescent: collect 14-21 days (minimum 7 days) after acute.
    - Rubella, congenital: Serum (**not** cord blood) collected from mother and infant within one week of birth. With positive or equivalent results, second serum collected from the baby at age 4 to 6 months.
      - Note:** IgM may not be detectable before 1 month of age and may persist until 6-12 months of age. IgM at >6 months of age may also indicate a postnatal infection that would require further evaluation.
    - Exposed pregnant females: Refer to [Managing Special Situations Section – Pregnancy and Rubella](#) and the algorithm on pg. [15](#).
- False-positive rubella IgM tests have been reported with other viral infections (e.g., measles, Epstein-Barr virus [infectious mono], parvovirus and cytomegalovirus), or in the presence of rheumatoid factor. When a false-positive rubella IgM is suspected, consider the following tests:
  - Rheumatoid factor, parvovirus IgM, and heterophile testing.
  - Other confirmatory rubella testing (i.e., avidity tests or cultures)**Note: Do not wait for results of confirmatory testing to begin the investigation.**
- For additional information and/or questions concerning laboratory analysis:
  - Call KHEL at (785) 296-1620 or refer to [www.kdheks.gov/labs/lab\\_ref\\_guide.htm](http://www.kdheks.gov/labs/lab_ref_guide.htm)
  - CDC Collection of Specimens for Typing of Rubella Virus (Appendix 15): [www.cdc.gov/vaccines/pubs/surv-manual/appx/appendix15-rubella.pdf](http://www.cdc.gov/vaccines/pubs/surv-manual/appx/appendix15-rubella.pdf)
  - CDC Laboratory Support for the Surveillance of Vaccine-Preventable Diseases:

## EPIDEMIOLOGY

Rubella occurs worldwide. In the United States, cases peak in the late winter and early spring. Most cases occur in young, unvaccinated adults in college and occupational settings. Serologic surveys indicate that approximately 10% of the U.S.-born population older than 5 may be susceptible to rubella. Most reported rubella cases in the U.S. since the mid-1990s have occurred among young Hispanic adults who were born in areas where rubella vaccine is routinely not given. The risk of Congenital Rubella Syndrome (CRS) is highest in infants of susceptible, foreign-borne women.

## DISEASE OVERVIEW

### A. Agent:

Rubella virus causes rubella.

### B. Clinical Description:

For most, a mild febrile viral disease with a diffuse punctate and maculopapular rash that is clinically indistinguishable from febrile rash illness due to measles, dengue, parvovirus B19, human herpesvirus 6, coxsackie virus, echovirus, adenovirus, or scarlet fever. Children usually present few or no constitutional symptoms, but adults may experience a 1–5 day prodrome of low-grade fever, headache, malaise, mild coryza and conjunctivitis. Post-auricular, occipital and posterior cervical lymphadenopathy is the most characteristic clinical feature, and precedes the rash by 5–10 days. Leukopenia is common and thrombocytopenia can occur, but hemorrhagic manifestations are rare. Arthralgia complicates a substantial proportion of infections, particularly among adult females. Encephalitis is seen in 1:6000 cases, and occurs with a higher frequency in adults. Up to 50% of rubella infections are subclinical.

The public health significance of rubella is not from acute disease but rather the damaging effects of an in utero infection. A fetus infected early in pregnancy has a high probability of developing congenital rubella syndrome (CRS), a syndrome characterized by: low birth weight, eye defects, deafness, cardiac and CNS defects, hepatitis, hepatomegaly, thrombocytopenic purpura, splenomegaly, and bone lesions.

### C. Reservoir: Humans.

### D. Mode(s) of Transmission:

Contact with nasopharyngeal secretions of infected people through droplet spread or direct contact with patients. Infants with CRS shed large quantities of virus in their pharyngeal secretions and urine, and serve as a source of infection.

### E. Incubation Period:

Range 14-21 days; average 14-17 days.

### F. Period of Communicability:

The infectious period is usually from 7 days before to 4 days after rash onset; highly communicable. Infants with CRS may shed the virus for several months.

### G. Susceptibility and Resistance:

Disease gives lifelong immunity. A single dose of a rubella vaccine is thought to provide lifelong immunity; but persistent immunity may require contact with endemic cases. Infants born to immune mothers are ordinarily protected for 6–9 months, depending on the amount of maternal antibodies acquired.

H. **Treatment:** No specific treatment is available.

## NOTIFICATION TO PUBLIC HEALTH AUTHORITIES

All confirmed or **suspected** rubella cases shall be reported within **4 hours by phone to KDHE:**

1. Health care providers and hospitals: report to the local public health jurisdiction or KDHE-BEPHI (see below)
2. Local public health jurisdiction: report to KDHE-BEPHI (see below)
3. Laboratories: report to KDHE-BEPHI (see below)
4. KDHE-BEPHI will contact the local public health jurisdiction by phone within one hour of receiving a Rubella report.

**Kansas Department of Health and Environment (KDHE)  
Bureau of Epidemiology and Public Health Informatics (BEPHI)  
Phone: 1-877-427-7317**

### **Further responsibilities of state and local health departments to the CDC:**

*As a nationally notifiable condition, rubella cases require an IMMEDIATE, URGENT or STANDARD report to the Center of Disease Control and Prevention (CDC) depending on the circumstances.*

1. Rubella cases require **IMMEDIATE, URGENT** reporting.
  - KDHE epidemiologist must call the CDC EOC at 770-488-7100 within 24 hours of a case meeting the confirmed criteria.
  - **Local public health jurisdiction** will report information requested on the disease reporting forms as soon as possible, completing the forms within 7 days of receiving a notification of a rubella report.
  - KDHE-BEPHI will file an electronic case report the next regularly scheduled electronic transmission.\*
2. Congenital Rubella cases require **STANDARD** reporting.
  - Local public health jurisdiction will report information requested on the supplemental form as soon as possible, ensuring that the electronic form is completed within 7 days of receiving a notification of a Congenital Rubella report
  - KDHE-BEPHI will file an electronic report within the next reporting cycle. \*

\* (KDHE-BEPHI files electronic reports weekly with CDC.)

## INVESTIGATOR RESPONSIBILITIES

**Note: Investigation should begin as soon as possible; do not delay pending lab testing. Control measures must be initiated  $\leq$ 24 hours of initial report.**

- 1) Report all confirmed, probable and suspected cases to the KDHE at 1-877-427-7317 within 4 hours of the initial report.
- 2) Use current [case definition](#), to confirm diagnosis with the medical provider.
- 3) Conduct [case investigation](#) to identify potential source of infection.
- 4) Conduct [contact investigation](#) to locate additional cases and/or contacts.
  - Determine if case is involved in a high-risk occupation or if another special situation is involved (i.e. contact with pregnant women).
  - Identify primary contacts within 24 hours of notification.
- 5) Identify whether the source of infection is major public health concern,
  - Daycare/school, travel association, or direct patient care provider.
  - Under-immunized population within the community.
  - Distinguish between failure to vaccinate and vaccine failure.
- 6) Initiate [control and prevention measures](#) to prevent spread of disease.
  - Assure prophylactic measures were received by contact(s).
  - Ensure appropriate medical management has occurred for exposed pregnant women.
  - Identify and exclude susceptible (i.e., unimmunized children and staff) when rubella has been identified in a school or daycare facility.
  - Follow up with case(s) and contacts to assure compliance with [work and/or school restrictions](#).
- 7) Complete and report all information requested in EpiTrax.
- 8) As appropriate, use the [notification letter\(s\)](#) and the disease [fact sheet](#) to notify the case, contacts and other individuals or groups.
  - Alert physicians, hospital emergency rooms, student infirmaries, and local officials of the potential for additional cases; encourage them to consider rubella in persons with a rash illness. This includes making special arrangements for patient flow to minimize transmission between cases and susceptible contacts.
  - Health care workers should be advised to immediately report any suspected case of rubella or congenital rubella syndrome.

## STANDARD CASE INVESTIGATION AND CONTROL METHODS

The [Rubella Rapid Assessment Worksheet](#) can assist with the collection of data on rubella cases.

### Case Investigation

- 1) Contact the medical provider who reported or ordered testing of the case.
  - Obtain information from the provider or medical chart.
    - With hospitalization, obtain medical records, including admission notes, progress notes, lab report(s), and discharge summary.
    - Note any other diagnosis being considered and related labs.
  - Examine the symptoms that the medical provider attributes to rubella:
    - Rash: date of onset and duration
      - o Describe: location of rash, origination, type or character of lesions
    - Any other symptoms with date of onset:
      - o Fever [*highest measurement*], arthralgia, lymphadenopathy and conjunctivitis
    - For CRS collect information on:
      - o Case: cataracts, hearing impairment, development delay, type of congenital heart defect, purpura, radiolucent bone disease, hepatosplenomegaly, meningoencephalitis, and microcephaly
      - o Mother: documentation of rubella during pregnancy
  - Examine laboratory testing and coordinate further testing if needed.
    - Clinical diagnosis of rubella is unreliable, cases must be laboratory confirmed, especially if they are not epi-linked to a lab confirmed case.
    - Coordinate additional laboratory testing during the following situations:
      - o No testing has been done for rubella immunoglobulin, coordinate testing to confirm the case.
      - o A possibility exists of a [false-positive IgM](#), recommend testing to rule out other agents and/or collection of throat specimen for PCR.
      - o Virus isolation (to allow for viral typing at CDC) should be attempted on all sporadic cases and on some cases during an outbreak.
    - Make a note of the laboratory (location and contact information) performing the test and the expected turn-around time for testing.
  - Collect case's demographic data and contacting information (birth date, county, sex, race/ethnicity, address, phone number(s))
    - For rubella cases, length of time in U.S.
    - For CRS cases, length of time mother has been in U.S.
  - Record hospitalizations: reason, location and duration of stay
  - Record complications (i.e., encephalitis, arthralgia/arthritis, or thrombocytopenia)
  - Record outcomes: survived or date of death with postmortem exam results and death certificate diagnoses
- 2) Through a credible immunization registry or medical record, obtain information on history of rubella vaccine: number of doses on/after 1<sup>st</sup> birthday or why not fully vaccinated, dates of vaccination, type, manufacturer, lot numbers.

- 3) Interview the case to determine source, risk factors and transmission settings:
  - Focus on incubation period 14-21 days prior to rash onset.
  - History of possible exposure(s):
    - Epi-linked to another case or source with rubella-like symptoms
      - Name and the date of birth of possible source,
      - Obtain dates of exposure and type of exposure
      - Transmission setting, if applicable (i.e., household, school, daycare)
    - Any visits to a doctor's office, clinic, or hospital (exact date and time)
    - Attendance at daycare / school / college
    - Military / Occupation
    - Any indoor group activities attended: church, theater, tourist locations or airports, air travel, parties, athletic events, family gatherings, etc.
    - Contact with any visitors born outside the U.S.
  - Travel history of case, with dates of exit from and reentry to Kansas.
    - Include case's dates of travel to other counties in the travel history.
    - Examine if any of household/close contacts or guests travelled internationally during the 6 weeks prior to case's onset.
  - Collect information from case for the [Contact Investigation](#). (See below).
  - Schedule a time for a follow-up interview. (See [Case Management](#) )
- 4) Investigate epi-links among cases (clusters, household, co-workers, etc).
  - If the case had contact with person(s) who have/had rubella, determine if the other "cases" have been reported to the state:
    - Search the state electronic surveillance for the possible case.
    - If found, record the previously reported record number in the record of the case you are investigating.
  - Highly suspected cases, that have not previously been reported should be investigated as a suspect case and [reported](#) to KDHE-BEPHI.
  - For suspected [outbreaks](#) refer to Managing Special Situations section.

### Contact Investigation

*Goal: To rapidly identify primary contacts, evaluate immunity status, and vaccinate susceptible persons within 24 hours of the initial report.*

- 1) Identify and record all of the case's occupations and activities while infectious.
  - Rubella Infectious Period: 7 days before to 7 days after rash onset (day of rash onset is day 0).
- 2) Potential contacts will be evaluated by the cases activities and risk of exposure.
  - Exposure is defined as:
    - Direct contact to a case's secretions. (e.g., an explosive sneeze or cough in the face, sharing food, sharing eating utensils during a meal, kissing, changing urine soaked diapers or bedding, mouth-to-mouth resuscitation, or performing a full medical exam with the examination of the nose and throat).
    - Sharing a confined space in close proximity to an infectious case for a prolonged period of time, such as >1 hour, may increase the risk for exposure to secretions.

- Consider the following contacts during a rubella investigation:
    - Household: Contacts who frequently slept or ate in same dwelling as case during infectious period.
    - Close: Social contacts who engaged in activities that potentially exposed them to the case's infectious secretions.
    - Daycare: All direct caregivers and classmates of a case.
    - School: All close personal contacts, educators, and classmates of case.
    - Pregnant women: All pregnant women, especially those in their 1st trimester. (See the [Managing Special Situations](#) section.)
  - Susceptible contacts: those without acceptable evidence of immunity
    - Acceptable presumptive evidence of immunity to rubella:
      - (1) documented administration of one dose of live rubella virus, vaccine administered on or after the first birthday, or
      - (2) laboratory evidence of immunity, or
      - (3) born before 1957 (except women of childbearing age who could become pregnant)
    - Because birth before 1957 does not guarantee rubella immunity:
      - (1) Strongly consider recommending a dose of MMR vaccine to unvaccinated individuals born before 1957 that do not have serologic or vaccination evidence or of immunity.
      - (2) All female contacts of child-bearing age should first be evaluated for pregnancy before receiving rubella-containing vaccine
- 3) Prepare a contact listing for each possible transmission setting (i.e., location).
    - Record potential contacts in each setting.
    - Identify each contact's age, primary residence, and contacting information.
    - Evaluate each contacts potential risk of exposure:
      - Type of exposure
      - Date of and duration of exposure
    - Evaluate each contact for symptoms of rubella
    - Obtain record of immunization status for all contacts
    - All female contacts of child-bearing age should be evaluated for pregnancy
  - 4) Define potential transmission setting(s):
    - Identify possible transmission settings through information on contacts' polio vaccination status, immune status, and recent significant illnesses.
    - Define each setting by age, vaccination and immune status.
  - 5) Follow-up symptomatic contacts as suspect cases.
  - 6) Attempt to follow-up with all susceptible contacts, especially the high risk contacts, as instructed under [Contact Management](#).
  - 7) Institute control measures for school or day-care contacts as indicated under [Isolation, Work and Daycare Restrictions](#).

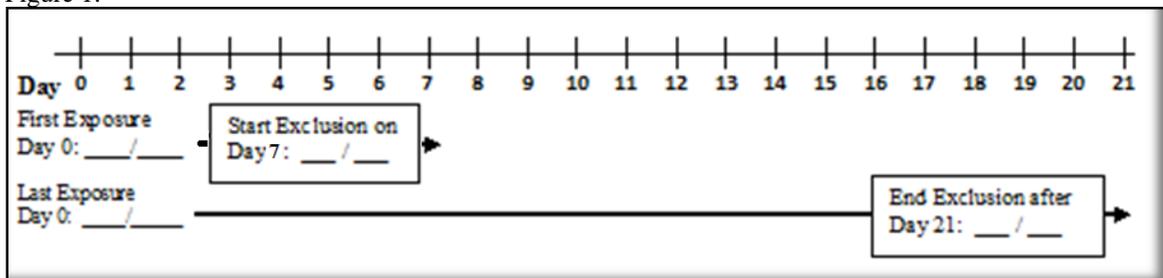
## Isolation, Work and Daycare Restrictions

### ***K.A.R 28-1-6 for Rubella:***

- Each infected person shall remain in respiratory isolation for seven days after the onset of rash.
- Each susceptible person in a school, child care facility, or family day care home shall be vaccinated within 24 hours of notification to the secretary or shall be excluded from the school, child care facility, or family day care home until 21 days after the onset of the last reported illness in the school, child care facility, or family day care home.

- 1) Healthcare facilities infection control precautions:
  - Place rubella cases on droplet precautions for 7 days following rash onset.
  - For CRS:
    - Initiate contact isolation until 1 year of age at first suspicion of or with confirmed CRS, unless 2 sets of nasopharyngeal and urine culture results after 3 months of age are consecutively negative for rubella virus.
    - Consider infection control precautions for children up to 3 years of age who are hospitalized for congenital cataract extraction.
  - Exposed health care workers who lack evidence of immunity: exclude from duty from the seventh day after exposure through the twenty-first day after their last exposure.
- 2) Rubella cases should be confined to home until 7 days after rash onset.
  - Restrictions should be in place to prevent participation in any activities at schools, daycare, healthcare facilities, or work settings; especially situations that could result in contact with susceptible pregnant females.
  - Any situation exposing a susceptible pregnant female is to be avoided.
- 3) For CRS:
  - All persons having contact with infants until 1 year of age should be immune to rubella (unless infant cultures are repeatedly negative).
  - Contact between these infants and pregnant women should be avoided.
- 4) Volunteer exclusion measures to recommend:
  - Exposed, susceptible contacts should avoid public settings and/or limit their exposure to susceptible individuals from day 7 of first exposure until after day 21 of the last exposure. The exposure day is counted as day 0.
- 5) If necessary, reference the [Kansas Community Containment Toolbox](#) for templates concerning isolation and quarantine measures.

Figure 1:



## Case Management

- 1) Assure proper [isolation measures](#) begin as soon as rubella is suspected.
- 2) During the contagious period (until 7 days after the rash), cases should:
  - Stay home and avoid childcare facilities, schools, crowded work settings, public places or social activities.
  - Take careful measures to avoid exposing susceptible individuals, especially infants, pregnant women, and immunosuppressed individuals. This includes family members and visitors.
  - Avoid exposing others at healthcare facilities by calling ahead to make special arrangements.
- 3) Conduct a follow-up as needed to assure compliance with control measures, including [work, school or daycare restrictions](#).
- 4) Conduct a follow-up interview to determine duration of rash (if previous interview was less than 3 days after onset) and if any complications arose.
- 5) Report any additional complications or patient status changes
- 6) Initiate outbreak control measures appropriate to setting.
  - If necessary, reference the [Kansas Community Containment Toolbox](#) for templates concerning isolation measures.

## Contact Management

- 1) Maintain listings of all contacts log information on symptoms screenings, immunization histories, testing, recommendations, and the disposition of the contact until 21 days after exposure.
- 2) The value of immune globulin (IG) has not been established. IG prophylaxis is not indicated; except, possibly, for susceptible pregnant women where the termination of the pregnancy is not an option.
  - Refer to [Managing Special Situations](#) for Pregnancy and Rubella.
- 3) Immunization may not prevent infection but is recommended to provide protection against subsequent exposures.
  - All people at risk of exposure who are consider susceptible should be vaccinated unless a contraindication exists to vaccination.
  - Exclude susceptible individuals who are not vaccinated from potential exposures.
- 4) Note any actions taken (i.e., vaccination or exclusion) on contact listing.
- 5) Report any adverse event that occurs after the administration of a vaccine to Vaccine Adverse Events Reporting System at <http://vaers.hhs.gov/index>
- 6) Maintain active surveillance for 2 incubation periods (i.e., 42 days) after the last case's infectious period.
- 7) Children with CRS are considered contagious until at least 1 year of age, unless nasopharyngeal and urine cultures are repeatedly negative for rubella virus.
  - Caregivers of these infants should be aware of the potential hazard the infants present to susceptible contacts, especially pregnant females.

## Education

- 1) Advise cases that, while infectious, they should avoid contact with susceptible children, pregnant women, and immunosuppressed individuals.
  - Especially, avoid contact with potentially susceptible women who are, or may be, pregnant.
- 2) Instruct contacts or parents to look for the symptoms and signs of rubella beginning 14 days after the first day of contact with a person during the period of communicability until 21 days after last contact.
- 3) It should be highly recommended that susceptible contacts who have not received any rubella-containing vaccine avoid all public settings from 7 days after the first date of exposure until 21 days after the last date of exposure.
- 4) If suggestive symptoms develop, they should call the local health department for instructions.

## MANAGING SPECIAL SITUATIONS

### A. Outbreak Investigation:

- An outbreak is one or more case(s) of confirmed rubella in a community. The situation should be treated as a public health emergency with appropriate resources allocated until additional cases have been ruled out.
- Notify KDHE immediately, 1-877-427-7317.
- Implement active surveillance:
  - Maintain for two incubation periods (42 days) following rash onset of the last case to identify any transmission from a subclinical case.
  - In settings where pregnant women may have been exposed, maintain CRS surveillance for one year following last reported case.
- Define at-risk population by who is being infected (age, gender and immunity); where are they being infected; and time period of outbreak.
- Implement control measures as soon as possible when at least one case of rubella is confirmed in a community.
  - Define target populations for rubella vaccination,
  - Ensure that susceptible persons within the target populations are vaccinated rapidly (or excluded from exposure if a contraindication to vaccination exists), and
  - In settings where pregnant women may be exposed, control measures should begin as soon as rubella is suspected, not just confirmed.
- Use active surveillance data to modify control measures as needed.
- Document measures that have been taken so far in the response and attempt to identify reasons for the outbreak.
  - All epidemiologic data will be reported and managed through the Kansas outbreak module of the electronic surveillance system.
- Refer to additional guidance at: [CDC. Measles, Mumps, and Rubella — Vaccine Use and Strategies for ...: Recommendations of the Advisory Committee on Immunization Practices \(ACIP\). MMWR 1998;47\(No. RR-8\):\[45-46\].](#)

## **B. Medical Settings:**

- Minimize exposure of susceptible patients by placing potential cases under droplet precautions and planning patient flow to minimize transmission.
- Vaccinate or exclude susceptible adults during rubella outbreaks.
  - Exclusion should continue until 3 weeks after the onset of rash of the last reported case-patient in the setting.

## **C. School or Child Care Settings:**

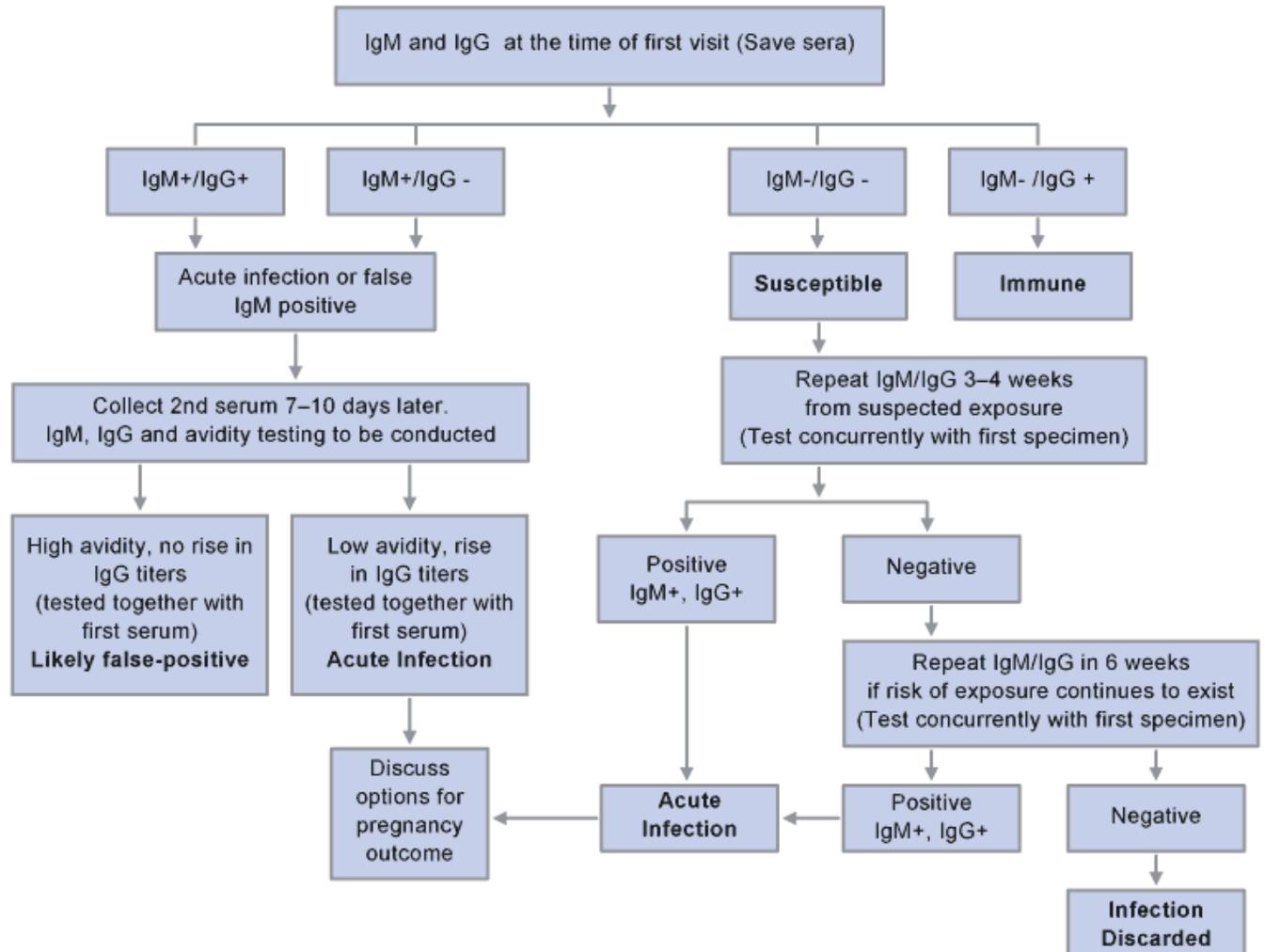
- Coordinate activities with school nurse and/or administration.
- If a case is reported at a school, the health department will exclude from school any children on medical or personal religious exemptions.
- These children will be excluded until 21 days after the onset of the last reported illness in the school or child care setting; unless the child is immunized or shows proof of immunization within 24 hours of notification to the secretary.

## **D. Pregnancy and Rubella Infection:**

- The effects of rubella infection on the fetus depends on gestational age:
  - Infection during the 1st trimester results in congenital rubella syndrome in 20-25% of infants born. The actual risk may be considerably higher.
  - By the 16th week of gestation, the risk of congenital rubella syndrome decreases to between 10-20% of infants born.
  - Defects rarely occur following infection beyond 20 weeks of gestation.
- Refer patient to her OB/GYN or primary care provider for specific questions and/or medical options. Such contacts should be tested serologically for susceptibility or early infection (IgM antibody) and advised accordingly.
- Testing required when a pregnant woman is exposed to rubella:
  - A blood specimen should be obtained as soon as possible to test for rubella antibody (IgG and IgM) with an aliquot frozen for later testing.
  - Later testing of the frozen aliquot and the collection of second and third specimens will depend upon the IgM and IgG results obtained.
  - Only results that are positive for IgG and negative for IgM indicate immunity and do not require further testing.
  - IgM positive results may indicate recent or acute infection **or** a false-positive IgM. Follow-up testing is needed.
  - Refer to the [“Algorithm for Serologic Evaluation of Pregnant Women Exposed to Rubella” under Additional Information and References on page 15](#).
- The use of IG as postexposure prophylaxis of rubella-susceptible women exposed to confirmed rubella early in pregnancy:
  - IG is considered only when termination of the pregnancy is not an option for rubella-susceptible women exposed early in pregnancy.
  - Infants with congenital rubella can be born to mothers who were given IG shortly after exposure and did not exhibit clinical signs of infection.
  - Administration of IG eliminates the value of IgG antibody testing to detect maternal infection. Immunoglobulin M antibody should be used to detect maternal infection after receipt of IG.

## Algorithm for Serologic Evaluation of Pregnant Women Exposed to Rubella

(Source: *Manual for the Surveillance of Vaccine-Preventable Diseases, Chapter 14 – Rubella*)



## DATA MANAGEMENT AND REPORTING TO THE KDHE

A. Organize, collect and report data.

B. Report data via EpiTrax.

- Especially data that collected during the investigation that helps to confirm or classify a case. (For epi-linked cases, please include the Record Number of the related case.)

**Note:** Laboratory reports supporting Rubella infection in an infant  $\leq 12$  months of age are initially reported as “Rubella, Congenital Syndrome.” It is crucial that the local investigator determine what, if any, clinical syndromes or symptoms are present to allow the case to be classified.

For cases reported as Rubella, Congenital Syndrome, it is possible that the local investigator may determine that symptoms are clinically consistent with postnatal rubella. The case would then be reclassified as “Rubella (German Measles).”

Laboratory reports supporting a Rubella infection in a case  $> 12$  months of age that has never been reported to the state or local entities is initially reported in the KS-EDSS as “Rubella (German Measles).” The local investigators will be called up on to identify if any symptoms compatible with rubella are present allowing the case to be classified.

## ADDITIONAL INFORMATION / REFERENCES

- A. **Treatment / Differential Diagnosis:** American Academy of Pediatrics. 2009 Red Book: Report of the Committee on Infectious Disease, 28th Edition. Illinois, Academy of Pediatrics, 2009.
- B. **Epidemiology, Investigation and Control:** Heymann. D., ed., Control of Communicable Diseases Manual, 19th Edition. Washington, DC, American Public Health Association, 2009.
- C. **Case Definitions:** CDC Division of Public Health Surveillance and Informatics, Available at: [wwwn.cdc.gov/nndss/](http://wwwn.cdc.gov/nndss/)
- D. **Quarantine and Isolation:** Kansas Community Containment Isolation/ Quarantine Toolbox Section III, Guidelines and Sample Legal Orders [www.kdheks.gov/cphp/download/CDCSOG\\_Attachment1.0.0.pdf](http://www.kdheks.gov/cphp/download/CDCSOG_Attachment1.0.0.pdf)
- E. **Kansas Regulations/Statutes Related to Infectious Disease:** [www.kdheks.gov/epi/regulations.htm](http://www.kdheks.gov/epi/regulations.htm)
- F. **Pink Book:** Epidemiology and Prevention of Vaccine-Preventable Diseases. Available at: [www.cdc.gov/vaccines/pubs/pinkbook/default.htm](http://www.cdc.gov/vaccines/pubs/pinkbook/default.htm)
- G. **Manual for the Surveillance of Vaccine-Preventable Diseases:** Available at: [www.cdc.gov/vaccines/pubs/surv-manual/index.html](http://www.cdc.gov/vaccines/pubs/surv-manual/index.html).
- H. **CDC. Notice to Readers: Measles, Mumps, and Rubella – Vaccine use and Strategies for Elimination of Measles, Rubella, And Congenital Rubella Syndrome and Control of Mumps: Recommendations of the Advisory Committee on Immunization Practices (ACIP).** MMWR 1998;47 (8):1-57. Available at: [www.cdc.gov/mmwr/PDF/rr/rr4708.pdf](http://www.cdc.gov/mmwr/PDF/rr/rr4708.pdf)
- I. **CDC. Immunization of Health-Care Personnel: Recommendations of the Advisory Committee on Immunization Practices (ACIP).** MMWR 2011;60 (7). Available at: [www.cdc.gov/mmwr/pdf/rr/rr6007.pdf](http://www.cdc.gov/mmwr/pdf/rr/rr6007.pdf)
- J. **Additional Information (CDC):** [www.cdc.gov/health/default.htm](http://www.cdc.gov/health/default.htm)
- K. **Algorithm for Serologic Evaluation of Pregnant Women.** *Source:* Manual for the Surveillance of Vaccine-Preventable Diseases. Refer to page 15.

## Rubella Rapid Assessment Form for the Local Investigator

(Please refer to the Disease Investigation Guideline for additional guidance.)

SYMPTOMS(S)	Unk.	No	Yes	Onset Date	Duration (days)	Comments	
<b>Fever</b>						Highest Temp:	
<b>Rash</b>						Appeared 1 <sup>st</sup> on: Spread to: Description:	
<b>Lymphadenopathy</b>						Any medicine prior to rash?	
<b>Conjunctivitis</b>							
<b>Photophobia</b>							
<b>Arthritis/Arthralgia</b>							
<b>Headache</b>							
<b>Malaise</b>							
<b>Anorexia</b>							
<b>Coryza</b>							
<b>Cough</b>							
<b>Itching</b>							
<b>Allergies</b>							
<b>COMPLICATIONS</b>	<b>Unk.</b>	<b>No</b>	<b>Yes</b>	<b>Date(s)</b>	<b>Location(s)</b>		
<b>Hospitalized</b>							
<b>Died</b>							
<b>Pregnant</b>				Trimester / gestational weeks:			
<b>Encephalitis</b>							
<b>Arthralgia/Arthritis</b>							
<b>Thrombocytopenia</b>							
<b>Additional Notes:</b>							
<b>TRAVEL / VISITOR HISTORY</b>	<b>Unk.</b>	<b>No</b>	<b>Yes</b>	<b>Date Arrive</b>	<b>Date Depart</b>	<b>Location (To / From)</b>	
<b>Out of USA</b>							
<b>Out of State</b>							
<b>Out of County</b>							
<b>INITIAL EPI INFORMATION</b>	<b>Unk.</b>	<b>No</b>	<b>Yes</b>	<b>Date(s)</b>	<b>Location(s) or Case Information</b>		
<b>School/Daycare/Camp association</b>							
<b>Contact w/ Rubella case</b>							
<b>Household contact of any of above</b>							
<i>Additional Notes (transmission setting / spread setting/occupation):</i>							
<b>Rubella Vaccination History</b>	<b>Unk.</b>	<b>No</b>	<b>Yes</b>	<b>Date(s)</b>	<b>Type</b>	<b>Manufacturer</b>	<b>Lot</b>
Dose 1							
Dose 2							
If NO to either dose, reason:							

## Rubella Rapid Assessment Form for the Local Investigator

(Please refer to the Disease Investigation Guideline for additional guidance.)

LABORATORY TESTING	Unk.	No	Yes	Collection Date	Results
Serum IgM					Positive / Negative / Indeterminate
Serum IgG (Acute)					Positive / Negative / Indeterminate
Serum IgG (Convalescent)					Positive / Negative / Indeterminate
Virus Isolation					Positive / Negative / Indeterminate
PCR					Positive / Negative / Indeterminate

Activity History For 21 Days Before Rash Onset and 7 Days After Rash Onset	
Day-21	
Day-20	
Day-19	
Day -18	
Day -17	
Day -16	
Day -15	
Day -14	
Day -13	
Day -12	
Day -11	
Day -10	
Day -9	
Day -8	
Day -7	
Day -6	
Day -5	
Day -4	
Day -3	
Day -2	
Day -1	
Day 0	
Day 1	
Day 2	
Day 3	
Day 4	
Day 5	
Day 6	
Day 7	

# Supporting Materials

Supporting Materials are available under attachments:

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