



# Rubella

## Investigation Guideline

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*Attachments can be accessed through the Adobe Reader's navigation panel for attachments. Throughout this document attachment links are indicated by this symbol ; when the link is activated in Adobe Reader it will open the attachments navigation panel. The link may not work when using PDF readers other than Adobe*

**Revision History:**

<b>Date</b>	<b>Replaced</b>	<b>Comments</b>
05/2018	03/2015	Updated Notification sections and Isolation, Work and Daycare Restrictions sections with updated regulations. Updated Laboratory Analysis section with additional information on false positives.
03/2015	01/2013	Updated laboratory section with KHEL testing information and specimen collection information. Updated Contact Investigation: clarification on air handling systems and airspaces, removed comments on passive maternal antibodies, and added Table 1. Contact management: edits to Box 1 and Box 2 to agree with ACIP 2013 recommendations for IG administration and incorporated information on HIV-infected persons and preschool aged children. Removed HIV infection from "Managing Special Situations." Updated data management section.
01/2013	07/2012	Updated case definition and rapid assessment form.
07/2012	07/2011	Updated factsheet and sample letters. Removed references to KS-EDSS. Removed physician-diagnosed measles from presumptive immunity. Added KDHE measles reporting form.
07/2011	09/2008	Updated case definition to 2010 CDC version; format changes; edits to Laboratory Analysis, Contact Investigation, Isolation and Restrictions, and Managing Special Situations. Added Notification section and Rapid Assessment Worksheet

# Rubella

## Disease Management and Investigative Guidelines

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### CASE DEFINITION, Rubella, 2013

#### 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.

#### Suspect (KDHE internal use only not reported to CDC):

- 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 (CRS), 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:

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

### Clinical Symptoms Group 2:

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

\* In probable cases, either or both 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

The State Public Health Laboratory (KHEL) will arrange for shipment of **approved** samples to CDC for PCR, culture, or confirmatory serological testing. Approved samples include those from highly suspect cases (recent travel or visitors).

Requests for rubella serologic testing that are strictly for rule-out purposes (low index of suspicion, does not meet clinical case definition, no travel or contact with cases), should be directed to commercial clinical laboratories.

CDC's confirmatory serological testing includes using [avidity](#) for previously positive IgG samples: A single serum can be tested for IgG avidity; both an acute and a convalescent phase serum are recommended for PRN testing.

When rubella is first suspected:

- Collect: blood **and** throat or nasopharyngeal swab(s).
- [Notify](#) public health. To test at CDC, KDHE must be notified at 877-427-7317.
- Specimens for rubella serology (1) and culture and/or PCR (2,3):
  - (1) Blood, 3-5 ml collected in clot separator tubes shipped to
    - IgM serology: Collect ASAP after onset and, **if negative**, repeat at >96 hours after onset if negative. [*IgM can be detected 4-30 days after illness onset, often longer.*]
    - IgG serology: Collect paired sera.
      - **Acute:** ASAP after rash onset;
      - **Convalescent:** 7–21 days after first specimen.
  - (2) Throat swabs or nasopharyngeal swabs are the preferred clinical samples for PCR and culture.
    - Collect at same time as serology samples (best within 3 days of rash onset and no longer than 10 days post 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 for overnight receipt as soon as possible on cold packs.
    - Culture is **necessary** if case was vaccinated 6-45 days before testing to distinguish wild-type virus from the vaccine virus by molecular testing.
  - (3) Urine samples (10 – 50 mL collected no longer than 10 days post onset):
    - Not the preferred specimen for PCR and/or culture but when collected along with the throat and/or NP swabs can increase the likelihood of detecting the virus.
- For congenital rubella syndrome, the following specimens are recommended:
  - (1) Serum for IgM: collect ASAP within one week of birth, if possible, but no later than 6 months.
    - IgM may not be detectable within 1 month of birth, and may persist for 6-12 months, but any detected IgM after 6 months of birth may also indicate postnatal infections.
  - (2) Serum for IgG **after** 9 months (but before MMR vaccine).
    - IgG detected prior to 9 months may be maternal IgG.
  - (3) Swabs for PCR, as soon as possible and repeat, as needed, to monitor shedding in positive cases after 3 months and every month until negative

Additional guidance: ([www.cdc.gov/vaccines/pubs/surv-manual/chpt22-lab-support.html](http://www.cdc.gov/vaccines/pubs/surv-manual/chpt22-lab-support.html))

### **Low Prevalence Settings and False-positive IgM**

In countries such as the United States where endemic circulation of rubella has been eliminated, most suspected cases are not rubella, and rash and fever illnesses are more likely due to many other rash-causing illnesses such as:

- Measles,
- Epstein-Barr virus (infectious mono),
- parvovirus B19, or
- cytomegalovirus

The presence of rheumatoid factor can also result in a false positive IgM.

However, with rubella activity in many other countries, sporadic cases of rubella in the United States could occur.

*Do not wait for results of confirmatory testing to begin the case investigation. Actions will be based on initial findings of potential travel or exposures to others who may have travelled and by identifying potentially susceptible populations.*

- Ruling out a false positive IgM by testing a second serum
  - Detection of wild-type rubella virus and IgG rise or seroconversion and avidity testing may help to resolve uncertain situations.
    - Collect a 2<sup>nd</sup> serum 5-10 days later after the first specimen for IgM and avidity testing (Source: Figure 1, CDC).
  - Additional testing for other agents: Rheumatoid factor, parvovirus IgM, and mononucleosis (Epstein-Barr virus) should also be considered.

### **Serological evaluation of pregnant women**

- Women with no known exposure to rubella may be tested for rubella IgM as part of prenatal care; while not recommended, it may occur. If IgM is detected further laboratory evaluation should be conducted to rule out a false-positive IgM.
- For those pregnant women potentially exposed to rubella refer to [Managing Special Situations Section – Pregnancy and Rubella](#) and the algorithm on pg. [17](#).

For additional information and/or questions concerning laboratory analysis:

- Call KHEL at (785) 296-1620, or
- Manual for the Surveillance of Vaccine-Preventable Diseases,
  - Chapter 14: Measles: <https://www.cdc.gov/vaccines/pubs/surv-manual/chpt14-rubella.html>
  - Chapter 22: Laboratory Support for Vaccine-Preventable Diseases: <https://www.cdc.gov/vaccines/pubs/surv-manual/chpt22-lab-support.html>

## **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. Reservoirs:**

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.

**I. Vaccination:**

Two combination vaccines using a live attenuated virus are licensed and available in the United States to prevent rubella: measles, mumps, and rubella (MMR) vaccine and tetravalent measles, mumps, rubella, and varicella (MMRV) vaccine. Monovalent rubella vaccine is no longer available in the United States.

**NOTIFICATION TO PUBLIC HEALTH AUTHORITIES**

All confirmed or **suspected** measles cases shall be reported within **4 hours by phone**:

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 contacts the local public health jurisdiction by phone within one hour of receiving a measles report

**Kansas Department of Health and Environment (KDHE)  
Bureau of Epidemiology and Public Health Informatics (BEPHI)  
24/7 Phone: 1-877-427-7317**

As a nationally notifiable condition, [confirmed](#) rubella cases require an IMMEDIATELY NOTIFIABLE, URGENT report to the Center of Disease Control and Prevention (CDC). Congenital rubella cases require a ROUTINELY NOTIFIABLE report to CDC.

1. For rubella, a KDHE epidemiologist calls the CDC EOC at 770-488-7100 within 24 hours of a case meeting the [confirmed](#) criteria, followed by submission of an electronic case notification in next regularly scheduled electronic transmission.
2. For congenital rubella cases (CRS), KDHE-BEPHI will file electronic reports weekly with CDC.
3. **Local public health jurisdiction** will report information requested as soon as possible, completing the electronic form within 3 days of receiving a notification of a measles report.

## INVESTIGATOR RESPONSIBILITIES

**Note: Begin investigation as soon as possible; do not delay with pending labs.**

- 1) [Report](#) all confirmed, probable and suspected cases to the KDHE-BEPHI at 1-877-427-7317 within 4 hours of the initial report
- 2) Contact medical provider to collect additional information and confirm diagnosis using the current case definition.
  - Collect all information requested in [Step 1](#)) of case investigation.
  - Ensure that the patient is aware of his/her diagnosis.
- 3) Continue the [case investigation](#) starting with 1 day of the report.
  - Identify any major public health concerns.
    - Daycare, schools, or medical facility involvement.
    - Under-immunized population within the community.
    - Pregnancy or exposure of pregnant women.
  - Initiate [control and prevention measures](#) to prevent spread of disease.
  - Complete the case investigation within 3 days of the initial report.
- 4) Conduct [contact investigation](#) to locate additional cases and/or contacts.
- 5) [Record](#) data, collected during the investigation, in the KS EpiTrax system under the data's associated [\[tab\]](#) in the case morbidity report (CMR). Identify whether the source of infection is major public health concern,
- 6) As appropriate, use the [notification letter\(s\)](#) and the disease [fact sheet](#) to notify the case, contacts and other individuals or groups.

## STANDARD CASE INVESTIGATION AND CONTROL METHODS

The [Rubella Rapid Assessment Worksheet](#) can help to collect initial data.

### Case Investigation

- 1) Contact the medical provider who reported or ordered testing of the case to obtain the following from the patient's medical records.
  - Collect case's demographics and contacting information ([address](#), [birth date](#), [gender](#), [race/ethnicity](#), [primary language](#), and [phone number\(s\)](#))  
[\[Demographic\]](#)
  - Collect information any other diagnoses being considered with related labs.
  - Examine the symptoms that the medical provider attributes to measles:
    - [Rash](#): [date of onset](#), duration and description (focal/ generalized; origin on body and direction to which it spread). [\[Investigation-Symptoms\]](#)
    - Any other symptoms with dates of onset:
      - Fever [\[highest measured\]](#), arthralgia, lymphadenopathy, conjunctivitis.
    - Record [onset date](#) of first symptom [\[Clinical\]](#) and other related symptom information [\[Investigation-Symptoms\]](#)
    - For CRS collect information on:
      - Case: cataracts, hearing impairment, development delay, type of congenital heart defect, purpura, radiolucent bone disease, hepatosplenomegaly, meningoencephalitis, and microcephaly
      - Mother: documentation of rubella during pregnancy

- Record date diagnosed - presumptive and final diagnosis date [Clinical]
  - Record hospitalizations: location and duration of stay [Clinical]
  - Record outcomes: survived or date of death [Clinical]
  - Record complications (i.e., encephalitis, arthralgia/arthritis, or thrombocytopenia, etc.) [Investigation-Complications]
  - Examine the laboratory testing that was done and make note of date(s) specimen(s) were collected (to compare to onset of rash) [Laboratory]:
    - Clinical diagnosis of rubella is unreliable, cases must be laboratory confirmed, especially if they are not epi-linked to a lab confirmed case.
      - A possibility exists of a false-positive IgM, recommend testing to rule out other agents and/or collection of throat specimen for PCR.
      - Virus isolation (to allow for viral typing at CDC) should be attempted on all sporadic cases and on some cases during an outbreak.
    - Coordinate further testing if needed.
    - For pending laboratory results: request name of performing laboratory and when results are expected
  - Record length of time a case has been living in the United States.
    - For CRS cases, record the length of time the mother has been in U.S.
  - Through a credible immunization registry or medical record obtain information on history of measles vaccine [Investigation-Vaccination History]:
    - Dates of vaccination;
    - Number of doses after 1<sup>st</sup> birthday or why not vaccinated.
- 2) Interview the case to determine source, risk factors and transmission settings:
- Focus on incubation period 14-21 days prior to rash onset.
  - Examine exposure to others with rubella-like illness [Investigation-Exposure].
    - Obtain dates of exposure,
    - Name and the date of birth of possible sources,
    - The possible source's relationship to case,
    - Transmission setting, if applicable (i.e., household, school, daycare)
  - History of possible exposure(s):
    - Case's occupation
    - Attendance at daycare / school / college
    - Any visits to a doctor's office, clinic, or hospital (exact date and time)
    - Any indoor group activities attended: church, theater, tourist locations or airports, air travel, parties, athletic events, family gatherings, etc.
    - Military associations
    - Contact with any visitors born outside the United States.
    - Examine if any household or close contacts or guests during the incubation period had any travel 3 weeks prior to the case's rash onset.
  - Travel history of case, with dates of exit from and reentry to Kansas.
    - Include dates of travel to other counties in the travel history.
  - Record occupations, group living, daycare associations, and any Place Exposure(s) (where illness could have been transmitted). [Epidemiological]
  - Collect information from case for the Contact Investigation. (See below).

- Schedule a time for a follow-up interview. (See [Case Management](#) )
- 3) Investigate epi-links among cases (clusters, household, co-workers, etc).
  - If the patient had contact with person(s) who have/had a measles-like illness, determine if the other “cases” were seen by a medical provider and if they were 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 [Notes].
  - Suspected measles in persons that have not previously been reported should be investigated as a potential case and [reported](#) to KDHE-BEPHI if evidence is collected that supports the [case definition](#).
    - Enter the patient’s contact who exhibited measles-like illness on the [Contact] tab of the CMR and save.
    - After the CMR has updated, click ‘Show’ beside the contact.
    - With the [View Contact](#) open in show mode, select ‘Promote to CMR’; update, as needed.
  - For suspected [outbreaks](#) refer to Managing Special Situations section.

### **Contact Investigation**

*Goal: Rapidly identify contacts and evaluate immunity status and pregnancy.*

- 1) Review the patient’s occupation and activities collected during the [Case Investigation](#) and recorded on [Epidemiological] and [Notes] tabs.
- 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 near an infectious case for a prolonged period of time, such as >1 hour, may increase the risk for exposure to secretions.
  - Rubella Infectious Period: 7 days before to 7 days after rash onset (day of rash onset is day 0).
- 3) Continue to interview patient / family to identify activities during the Rubella Infectious Period, consider the following:
  - Patient’s occupation and living and/or sleeping accommodations;
  - High-risk situations including living in institutional or residential facilities,
  - Involvement in health care or child care,
  - Locations where the patient may have sought medical care,
  - Use of public transit,
  - Social or athletic activities.

- 4) Prepare a contact listing for each possible transmission setting [\[Contact\]](#).
  - Record potential contacts in each setting.
  - Identify each contact's age, primary residence, and contacting information.
  - Type, duration, and date(s) of exposure.
  - Any symptoms of measles in contacts.
  - Information on immunization status.
  - All female contacts of child-bearing age should be evaluated for pregnancy.
  - Information on the contact's occupation.
  - Note any school or daycare attendance. (Include facility name and location.)
- 5) Assess each contacts potential risk of exposure by type of contact, date/time of contact (first and last exposures), and duration of exposure.
- 6) Rapidly assess if any contacts are potentially high-risk contacts (especially women of child-bearing age) and attempt to assess those individuals' susceptibility to measles first (see step 7).
- 7) Assess each primary contact's susceptibility to measles.
  - Susceptible contacts: those without acceptable evidence of immunity
    - Acceptable presumptive evidence of immunity to rubella:
      - documented administration of one dose of live rubella virus, vaccine administered on or after the first birthday, or
      - laboratory evidence of immunity, or
      - born before 1957 (except women of childbearing age who could become pregnant)
    - Because birth before 1957 does not guarantee rubella immunity:
      - 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.
      - All female contacts of child-bearing age should first be evaluated for pregnancy before receiving rubella-containing vaccine.
- 8) 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.
- 9) Follow-up symptomatic contacts as suspect cases.
- 10) Attempt to follow-up with all susceptible contacts, especially women of childbearing age, as instructed under [Contact Management](#).
- 11) 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:**

#### **Control of Cases**

- For each person hospitalized with a case, droplet precautions shall be followed for seven days following onset of rash.
- Each person with a case shall remain in home isolation for seven days following onset of rash.

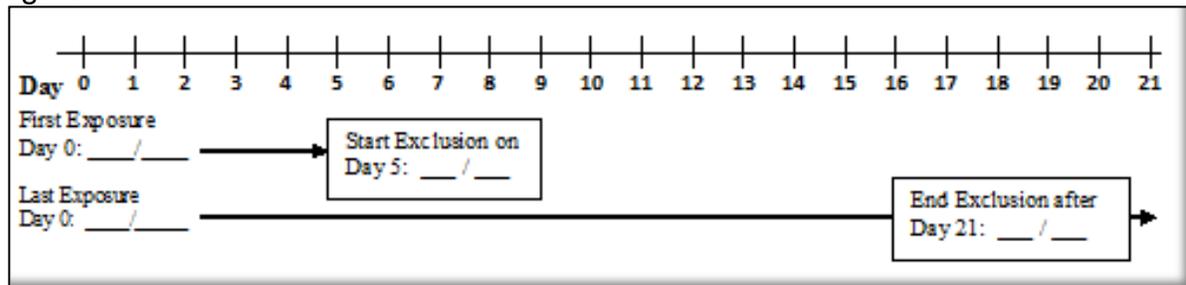
#### **Control of Contacts**

- Each susceptible contact shall be excluded from working in an adult care home, correctional facility, or health care facility and attending or working in a school, child care facility, or adult day care for 21 days following the last exposure to a case.

In addition to the regulation above, consider the following recommendations:

- 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 culture-positive infants and pregnant women should be avoided.
- 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.

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.
- 7) Report any additional complications or patient status changes

### **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 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 Elimination... Recommendations of the Advisory Committee on Immunization Practices.](#)

### **B. Medical Setting:**

- 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 and Child Care Settings:**

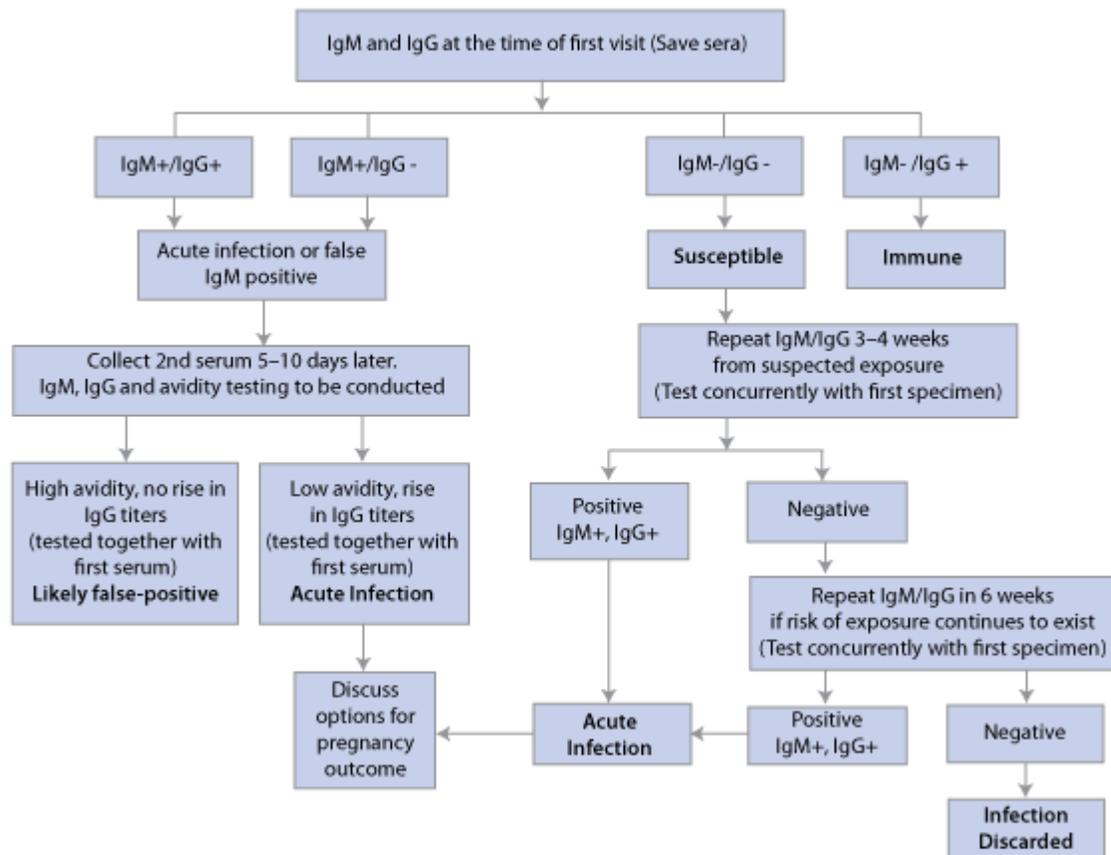
- Coordinate activities with school nurse and/or administration.
- If a case is reported at a school, the health department will exclude from school any children on medical or personal religious exemptions.
- These children will be excluded until 21 days after the onset of the last reported illness in 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 17](#) .
- The use of IG as post-exposure 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.** Accept the case assigned to the LHD and record the date the LHD investigation was started on the **[Administrative]** tab.
- B.** Organize and collect data.
- The [Rubella Investigation Form](#) is provided to assist the investigator but does not have to be submitted to CDC or KDHE.
  - Investigators can collect and enter all required information directly into EpiTrax **[Investigation]**, **[Clinical]**, **[Demographics]**, **[Epidemiological]** and **[Contact]** tabs without using the paper forms.
  - During outbreak investigations, refer to guidance from a KDHE epidemiologist for appropriate collection tools.
- C.** Report data collected during the investigation via EpiTrax.
- Verify that all data requested in [Step 1](#)) has been recorded on an appropriate EpiTrax **[tab]**, or that actions are completed for a case lost to follow-up as outlined below.
  - Some data that cannot be reported on an EpiTrax **[tab]** may need to be recorded in **[Notes]** or scanned and attached to the record.
  - Paper report forms do not need to be sent to KDHE after the information is recorded in EpiTrax. The forms should be handled as directed by local administrative practices.
- D.** If a case is lost to follow-up, after the appropriate attempts:
- Indicate 'lost to follow-up' on the **[Administration]** tab with the number of attempts to contact the case recorded.
  - Record at least the information that was collected from the medical records.
  - Record a reason for 'lost to follow-up' in **[Notes]**.
- E.** After the requirements listed under [Case Investigation](#) have been completed, record the "Date LHD investigation completed" field located on the **[Administrative]** tab.
- Record the date even if the local investigator's [Case](#) or [Contact Management](#) for the contact is not "Complete".
- F.** Once the entire investigation is completed, the LHD investigator will click the "Complete" button on the **[Administrative]** tab. This will trigger an alert to the LHD Administrator, so they can review the case before sending to the state.
- The LHD Administrator will then "Approve" or "Reject" the CMR.
  - Once a case is "Approved" by the LHD Administrator, BEPHI staff will review the case to ensure completion before closing the case.

## **ADDITIONAL INFORMATION / REFERENCES**

- A. Treatment / Differential Diagnosis:** American Academy of Pediatrics. Red Book: Report of the Committee on Infectious Disease, 29th Edition. Illinois, Academy of Pediatrics, 2014.
- B. Epidemiology, Investigation and Control:** Heymann. D., ed., Control of Communicable Diseases Manual, Washington, DC, American Public Health Association, 2010.
- C. Case Definitions:** [wwwn.cdc.gov/nndss/](http://wwwn.cdc.gov/nndss/)
- D. Kansas Regulations/Statutes Related to Infectious Disease:** [www.kdheks.gov/epi/regulations.htm](http://www.kdheks.gov/epi/regulations.htm)
- E. Pink Book:** Epidemiology and Prevention of Vaccine-Preventable Diseases. Available at: [www.cdc.gov/vaccines/pubs/pinkbook/index.html](http://www.cdc.gov/vaccines/pubs/pinkbook/index.html)
- F. 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) .
- G. 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 2013; 62\(RR04\);1-34.](http://www.cdc.gov/mmwr/rr/rr6007.pdf)
- H. 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)
- I. Additional Information (CDC):** [www.cdc.gov/measles/index.html](http://www.cdc.gov/measles/index.html)

## **ATTACHMENTS**

To view attachments in the electronic version:

1. Go to <View>; <Navigation Pane>; <Attachments> – OR – Click on the “Paper Clip”  icon at the left.
2. Double click on the document to open.

**Rubella Rapid Assessment Worksheet** – inserted here