

Rubella

PROTOCOL CHECKLIST

- Enter available information into Merlin upon receipt of initial report, ideally by the next business day
- Review background on disease, case definition, and laboratory testing
- Contact health care provider
- Contact reporting laboratory and request that specimens be sent to the Bureau of Public Health Laboratories (BPHL) for testing
- Interview patient or guardian
 - Review disease facts
 - Modes of transmission
 - Incubation period
 - Symptoms
 - Ask about exposure to relevant risk factors
 - Immunization history
 - Travel
 - Contact with a known infected or symptomatic person(s)
 - Recent visit to a healthcare setting
 - Identify settings where exposures may have occurred and all known contacts ([Sections 6 and 7](#))
 - Determine evidence of immunity to rubella for contacts
 - Recommend health care provider consultation for exposed women who are pregnant or trying to become pregnant.
 - Monitor contacts for the duration of the incubation period
 - Determine whether patient, symptomatic contacts, or susceptible contacts have exposures in sensitive situation (e.g., school, child care, college dormitory, military, other congregate living settings, health care workers, etc.)
 - Ensure isolation of symptomatic contacts
 - Identify those at-risk with unknown immune status (susceptible persons) for vaccination as indicated
 - Provide education on prevention through vaccination
 - Address patient's questions or concerns
- Follow-up on special situations, including persons in sensitive situations and pregnant women
- Enter additional data obtained from interview into Merlin

Rubella

1. DISEASE REPORTING

A. Purpose of reporting and surveillance

1. To prevent congenital rubella syndrome (CRS).
2. To assure that children with suspected CRS are tested to confirm or rule out the diagnosis in a timely manner, to assure prompt treatment, and prevent spread of the disease.
3. To assure that rubella infections are tested to confirm or rule out the diagnosis. (As part of the Healthy People 2020 objectives, a goal was established to eliminate U.S.-acquired rubella and CRS in the United States.)
4. To identify exposed pregnant women in a timely manner, determine their susceptibility and infection status, and support health care provider counseling about the risk of fetal infection.
5. To evaluate the effectiveness of disease prevention efforts such as immunization.

B. Legal reporting requirements

Laboratories and physicians are required to report immediately upon initial suspicion or laboratory test order, 24/7 by phone to the county health department (CHD). Reports should not be delayed for final laboratory confirmation.

C. County health department investigation responsibilities

1. Begin investigation into suspected rubella infections immediately.
2. Report all confirmed, probable, or suspect rubella infections to the Bureau of Epidemiology (BOE) by contacting your regional epidemiologist and laboratory liaison immediately or by calling the BOE at 850-245-4401. See contact list: www.floridahealth.gov/diseases-and-conditions/disease-reporting-and-management/disease-reporting-and-surveillance/_documents/investigation-unit-map.pdf
3. Facilitate transport of specimens as soon as possible to BPHL to confirm the diagnosis.
4. Isolate the patient until seven days after the rash onset (unless the diagnosis is ruled out).
5. Identify contacts of the patient and sites of potential transmission during the period of communicability.

6. Make appropriate recommendations to susceptible contacts, particularly pregnant women (see [Section 6](#)).
7. Establish enhanced surveillance for additional rubella infections.
8. Report all confirmed, probable, and suspected cases of rubella and congenital rubella syndrome in Merlin.
9. Complete the [rubella surveillance worksheet](#). Attach the worksheet and complete the required extended data in Merlin.
10. Complete the [congenital rubella syndrome case report](#) form. Attach the form to the Merlin case.

2. THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic agent

Rubella virus is an enveloped, positive-stranded RNA virus classified as a *Rubivirus* in the *Togaviridae* family.

B. Description of illness

1. Rubella in children and adults

Rubella symptoms are often mild and up to 50% of infections are asymptomatic. Those with symptoms usually experience a low-grade fever, rash, lymphadenopathy, and malaise. Young children usually have little or no prodrome, while adolescents and adults may report 1–5 days of low grade fever, headache, malaise, mild coryza, and conjunctivitis. Postauricular, occipital, and posterior cervical lymphadenopathy is characteristic and precedes the rash by 5-10 days. The maculopapular rash appears first on the face and spreads down the body within 24 hours. Arthralgia and arthritis rarely occur in children but are common among adolescents and adults. Encephalitis and thrombocytopenia are rare complications.

2. Congenital rubella syndrome (CRS)

CRS is an illness resulting from rubella virus infection during pregnancy. 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 after the 12th week of gestation with defects rare after the 20th week of gestation. Common congenital defects of CRS include cataracts, congenital heart disease, hearing impairment, and developmental delay. Infants with CRS usually present with more than one sign or symptom consistent with congenital rubella infection. However, infants may present with a single defect. Hearing impairment is the most common single defect.

C. Reservoir

Humans are the only reservoir.

D. Modes of transmission

Rubella is transmitted person-to-person by direct or droplet contact with infectious nasopharyngeal secretions. Rubella virus can be transmitted vertically from mother to fetus during pregnancy.

E. Incubation period

The incubation period for rubella ranges from 12–23 days (average 17 days).

F. Period of communicability

1. Virus is typically secreted in nasopharyngeal secretions of persons with rubella from about 7 days before until 7 days after rash onset. Patients are most contagious when the rash is erupting. Persons who are asymptomatic are communicable, but the period of communicability is difficult to define.
2. Infants with CRS can shed the virus in the nasopharyngeal secretions and urine for up to a year or longer.

G. Treatment

No specific treatment exists.

H. Prophylaxis

Immune globulin (IG) does not prevent rubella infection after exposure and is not recommended for that purpose. Although live-virus rubella vaccine administered after exposure has not been demonstrated to prevent illness, vaccine theoretically could prevent illness if administered within 3 days of exposure.

I. Rubella in Florida

From 2008-2017, Florida has reported 4 cases of rubella and no cases of congenital rubella syndrome. All rubella cases were confirmed. Three cases were reported in 2008, one in 2016. Two cases were internationally acquired: one in India and the other undetermined due to extensive travel history. During this same time frame, two additional cases among international residents were investigated in Florida, one in 2015 and 2016. Both resided, and were exposed, in the Philippines.

3. CASE DEFINITIONS

A. Rubella

Clinical criteria for case classification

An illness that has all the following characteristics without a more compelling diagnosis:

- Acute onset of generalized maculopapular rash
- Temperature greater than 99.0 F (greater than 37.2 C), if measured
- Arthralgia/arthritis, lymphadenopathy, or conjunctivitis.

Laboratory criteria for case classification

- Isolation of rubella virus,
OR
- Detection of rubella virus-specific nucleic acid by polymerase chain reaction (PCR),
OR
- IgG seroconversion¹ 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.^{1,2}

¹ Not explained by MMR vaccination during the previous 6-45 days.

² Not otherwise ruled out by more specific testing in a public health laboratory.

Case classification

Confirmed:

- A person with laboratory evidence, excluding asymptomatic pregnant women who have no risk factors for disease

OR

- A person that meets the clinical description and is epidemiologically linked to a case with laboratory evidence.

Probable:

In the absence of another known cause, a person that meets the clinical description, is not epidemiologically linked to a case with laboratory evidence, and has noncontributory or no serologic or virologic testing.

Suspect:

In the absence of another known cause, any generalized rash illness of acute onset that does not meet the criteria for probable or confirmed rubella.

Comment

Pregnant women that are rubella IgM positive without compatible symptoms or risk factors for rubella infection should **not** be reported as a rubella case. Confirmatory testing at BPHL for these situations is not recommended. If such a case is entered in Merlin, it should be submitted with a dx status of "not a case".

Epidemiologic classification of internationally-imported and U.S.-acquired cases:

- **Internationally-imported case:** An internationally-imported case is defined as 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.

U.S.-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.
- **Imported-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 U.S. 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 U.S.
- **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 U.S.-acquired chain of transmission or an endemic chain of transmission within the U.S.

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.

Specimens from all cases must be submitted to the Bureau of Public Health Laboratories for confirmation.

B. Rubella, Congenital Syndrome

Clinical description

An illness usually manifesting in infancy resulting from rubella infection in utero and characterized by signs or symptoms from the following categories:

- Cataracts/congenital glaucoma, congenital heart disease (most commonly patent ductus arteriosus, or peripheral pulmonary artery stenosis), loss of hearing, pigmentary retinopathy.
- Purpura, splenomegaly, jaundice, microcephaly, mental retardation, meningoencephalitis, radiolucent bone disease.

Clinical case definition

Presence of any defects or laboratory data consistent with congenital rubella infection.

Laboratory criteria for case classification

- Isolation of rubella virus,
OR
- Demonstration of rubella-specific 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
- Detection of rubella virus-specific nucleic acid by polymerase chain reaction (PCR).

Case classificationConfirmed:

A clinically compatible illness in a person with laboratory evidence.

Probable:

- A person that has no laboratory evidence,
AND
 - Has any two complications listed in the 1st bullet of the clinical description
OR
 - Has one complication from the 1st bullet and one from the 2nd bullet of the clinical description,
- AND
- Lacks evidence of any other etiology.

Suspect:

A person with some compatible clinical findings but does not meet the criteria for a probable case.

Epidemiologic classification of internationally-imported and U.S.-acquired cases:

Congenital Rubella Syndrome cases will be classified epidemiologically as internationally-imported or U.S.-acquired, according to the source of infection in the mother, using the definitions below, which parallel the classifications for rubella cases.

- **Internationally-imported case:** To be classified as an internationally-imported 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 U.S. 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 U.S.-acquired case is one in which the mother acquired rubella from an exposure in the U.S.

U.S.-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 U.S. 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 U.S.
- **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 U.S.-acquired chain of transmission or an endemic chain of transmission within the U.S.

Notes

Internationally imported, import-linked, and imported-virus cases are considered collectively to be import-associated cases.

1. A case that demonstrates laboratory evidence of infection, but without any clinical symptoms or signs is not reportable.
2. In probable cases, either or both of the eye-related findings (i.e., cataracts and congenital glaucoma) are interpreted 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.

Specimens from all cases must be sent to the Bureau of Public Health Laboratories for confirmation.

4. LABORATORY TESTING

A. Laboratory diagnosis

Clinical diagnosis of rubella is unreliable; therefore, cases must be laboratory confirmed. Virus detection and serologic testing can be used to confirm acute or recent rubella infection. Serologic tests can also be used to screen for rubella immunity.

Real-time reverse transcription polymerase chain reaction (RT-PCR) can be used to detect rubella virus and has been extensively evaluated for its usefulness in detecting rubella virus in clinical specimens. Rubella virus can be detected from nasal, throat, urine, blood, and cerebrospinal fluid specimens from persons with rubella. The best results come from throat (oropharyngeal), nasal, or nasopharyngeal (NP) swabs. Cerebrospinal fluid specimens should be reserved for persons with suspected rubella encephalitis. Efforts should be made to obtain clinical specimens for virus detection from all case patients at the time of the initial investigation. Virus may be detected from 1 week before to 2 weeks after rash onset. However, maximum viral shedding occurs up to day 4 after rash onset.

Rubella-specific immunoglobulin M (IgM) can usually be detected 4-30 days after onset of illness and often for longer. Sera should be collected as early as possible after onset of illness. However, IgM antibodies may not be detectable before day 5 after rash onset. In

case of a rubella IgM-negative result in specimens taken before day 5, serologic testing should be repeated on a specimen collected after day 5.

Because rubella incidence is low, a high proportion of IgM-positive tests will likely be false positive. False-positive serum rubella IgM tests may occur due to the presence of rheumatoid factors (indicating rheumatologic disease), cross-reacting IgM, or infection with other viruses.

Particular care should be taken when rubella IgM is detected in a pregnant woman with no history of illness or contact with a rubella-like illness. Although it is not recommended, many pregnant women with no known exposure to rubella are tested for rubella IgM as part of their prenatal care. If rubella test results are IgM-positive for persons who have no or low risk of exposure to rubella, additional laboratory evaluation should be conducted. Laboratory evaluation is similar to that described in the IgM-positive (+) section of the [Algorithm 1](#).

To detect a significant rise in rubella-specific immunoglobulin G (IgG) concentration, the first serum should be obtained as soon as possible after onset of illness, and the second serum sample should be collected about 7-21 days after the first specimen. In most rubella cases, rubella IgG is detectable by 8 days after rash onset. Tests for IgG antibody should be conducted on both acute- and convalescent-phase specimens at the same time with the same test.

More information about laboratory testing for rubella virus can be found at: www.cdc.gov/rubella/lab/index.html

B. Services available at the BPHL:

- BPHL performs an enzyme-linked immunosorbent assay (ELISA) for rubella-specific IgM and IgG antibodies. Specimens are forwarded to the Centers for Disease Control and Prevention (CDC) for avidity testing (to distinguish between recent and past rubella infection) when appropriate. Please consult with BOE prior to submitting samples for testing.
- RT-PCR and viral isolation for rubella virus are not performed at BPHL but are available commercially. In addition, BPHL can forward specimens to CDC for RT-PCR. Please consult with BOE prior to submitting these specimens for forwarding.

Specimen collection:

Blood for serologic testing is collected by venipuncture. Use tubes without additives, either a plain, red-top tube or a serum separator tube.

Throat, nasal, or NP swabs placed in viral transport media are the preferred specimens for virus isolates or RT-PCR. Rubella is reliably detected by RT-PCR with 3 days, possibly as late as 10 days, post rash onset. Urine specimens may also contain virus and collection in addition to a respiratory specimen can increase the likelihood of detecting the virus. Urine specimens should be transferred to a urine transport tube to ensure the specimen does not leak.

All submissions should be accompanied by a complete Clinical Lab Submission Form: www.floridahealth.gov/diseases-and-conditions/disease-reporting-and-management/disease-reporting-and-surveillance/surveillance-and-investigation-guidance/_documents/dh1847clinicallabsubmissionform.pdf

C. Packaging and shipping

1. Contact BPHL for packaging and shipping training dates. BPHL conducts approximately 20 face-to-face trainings per year all over Florida, free of charge. DOH employees must register for the classes in the DOH online training system, TRAIN. For shipping guidance, contact BPHL.
2. Contact the virology department at BPHL-Jacksonville with questions. www.floridahealth.gov/programs-and-services/public-health-laboratories/locations/index.html

5. CASE INVESTIGATION

The goal of a rubella case investigation is to prevent transmission of rubella virus and avoid exposure of susceptible pregnant women, thereby preventing cases of CRS.

A. Evaluate the diagnosis

1. Review the clinical presentation, physical exam findings, risks for exposure (e.g., travel) during the likely exposure period (12–23 days prior to the onset of rash), and immunization status of the patient to determine the likelihood of the diagnosis. Sources of immunization data might include medical records (including records of prenatal rubella immunity screening for women who have been pregnant), immunization cards kept by parents, school/childcare certificate of immunization (CIS) forms, and Florida SHOTS.
2. Collect specimens for laboratory confirmation. Testing should be performed at BPHL or CDC on all unvaccinated persons who meet the clinical case definition and have a known rubella exposure, international travel, have close contacts that are pregnant women, or were in a high-risk setting (e.g. doctor's office or settings with woman of child bearing age) during the likely exposure period (12-23 days prior to the onset of rash).

B. Identify potential sources of infection

Evaluate the activities of the case during the likely exposure period (12–23 days prior to the onset of rash). Identify situations where the case might have been at increased risk of exposure to rubella. Collect the following information:

1. Contact information for any household member, playmate, or other contact who had a rash illness during the likely exposure period.
2. Any travel outside of the U.S. or to an area of the U.S. where rubella has recently occurred.

3. Any contact with visitors from outside the U.S. or an area of the U.S. where rubella has recently occurred.
4. Any visit to a doctor's office, clinic, or hospital (find out exact time[s], date[s], name[s] of the clinic[s], duration of visit[s], and areas of the facility visited).
5. Any indoor group activities attended (e.g., church, theaters, tourist locations, public or commercial travel, parties, athletic events, family gatherings) and contact information of the person who organized the group or event.
6. Any work or volunteer activities in a health care setting or attendance or work at a school, child care, college, prison, refugee center, etc.

Note: Since many persons with rubella (20–50%) are asymptomatic, identifying the source patient is not always possible.

C. Identify exposed contacts and potential sites of transmission

1. Identify persons who have been in contact with the patient during the period from seven days before to seven days after onset of rash. These should include household members, school or child care classmates, playmates, and home visitors.
2. Determine public gatherings attended where identification of the individuals present may not be possible.
3. Identify (among close contacts of the case) women who are pregnant or who are sexually active and could possibly be pregnant. Determine their pregnancy status (if not known).
4. Determine the rubella immunity status of exposed contacts. Persons are considered immune* to rubella if they:
 - a. were born before January 1, 1957 (unless there is reason to believe the woman may be or could become pregnant). Health care workers born before January 1, 1957 should receive a dose of measles, mumps and rubella (MMR) vaccine if there is no laboratory evidence of immunity.
 - b. have laboratory evidence of immunity to rubella.
 - c. have written documentation of vaccination with at least one dose of rubella-containing vaccine (usually in the form of MMR vaccine administered on or after the first birthday).

* *MMWR* 2001;50[No. RR-12]:1–23
5. Alert all health care facilities visited by the patient during the contagious period and make recommendations regarding management of susceptible contacts ([see Section 6](#)).
6. On rare occasions, a press release may be indicated to inform persons who may have had close contact with the patient but who cannot be identified. The press release should include information about the symptoms of rubella and instructions for what possibly exposed susceptible persons are being asked to do.

D. Enhance surveillance for additional cases

Alert health care providers, hospital emergency rooms, and student health care clinics of the potential for additional patients; encourage health care providers to consider rubella in any person(s) presenting with a rash illness, take appropriate infection control precautions, and report suspected cases to BOE. Consult with your Regional Epidemiology and Laboratory Liaison for additional information.

Since up to 50% of rubella infections may be asymptomatic, all susceptible pregnant women exposed to rubella virus must be tested for rubella infection regardless of whether a rash develops (see Section 6). In addition, other susceptible persons directly exposed to respiratory secretions of a person with rubella infection can be tested for asymptomatic infection. Asymptomatic rubella infection can be diagnosed by a positive rubella-specific IgM antibody test or a significant rise in IgG antibody level between acute- and convalescent-phase tests.

E. Environmental evaluation

None

6. CONTROLLING FURTHER SPREAD

Control measures should be implemented as soon as a single case of rubella or congenital rubella is suspected, particularly if the setting is one where pregnant women might be exposed.

A. Infection control recommendations/case management

1. Hospitalized patients confirmed or suspected to have rubella should be placed on droplet and standard precautions until seven days after the onset of the rash. Infants confirmed or suspected to have CRS should be cared for using contact precautions until one year of age or until two consecutive nasopharyngeal and urine cultures collected after the age of three months are negative.
2. Persons suspected to have rubella should be advised to do the following while contagious (from one week before, if applicable, and until seven days after the onset of the rash):
 - Stay home and not attend child care, school, work, social activities, or other public places.
 - Avoid all women who are, or may be, pregnant (especially those known to be potentially susceptible).
3. Children suspected to have CRS should not attend child care centers while they could be contagious. Children with CRS may be contagious until they are one year of age or more, and rubella virus has been recovered from the lens of children with congenital cataracts for several years. This restriction may be removed by written certification by a medical doctor, public health nurse, or school nurse stating that the infection is no longer communicable only after appropriate testing has been completed (i.e., when two consecutive urine and nasopharyngeal cultures collected after three months of age have yielded negative results).

B. Management of non-pregnant contacts

1. Education

- All contacts, regardless of immune status, should be educated about the symptoms of rubella.
- All contacts, regardless of immune status, who develop a rash illness within 23 days of the date of last exposure should call their CHD and be evaluated for rubella infection. Symptomatic contacts should avoid pregnant women and public settings until testing for rubella has been done.
- All contacts regardless of immune status should be informed that rubella virus can be shed up to seven days prior to onset of symptoms and that up to 50% of persons with rubella infection may remain asymptomatic, but may nevertheless shed rubella virus. Therefore, contacts should be advised to minimize exposure of susceptible pregnant women until 23 days has passed since the date of last exposure to rubella, regardless of whether symptoms develop.

2. Vaccination and exclusion

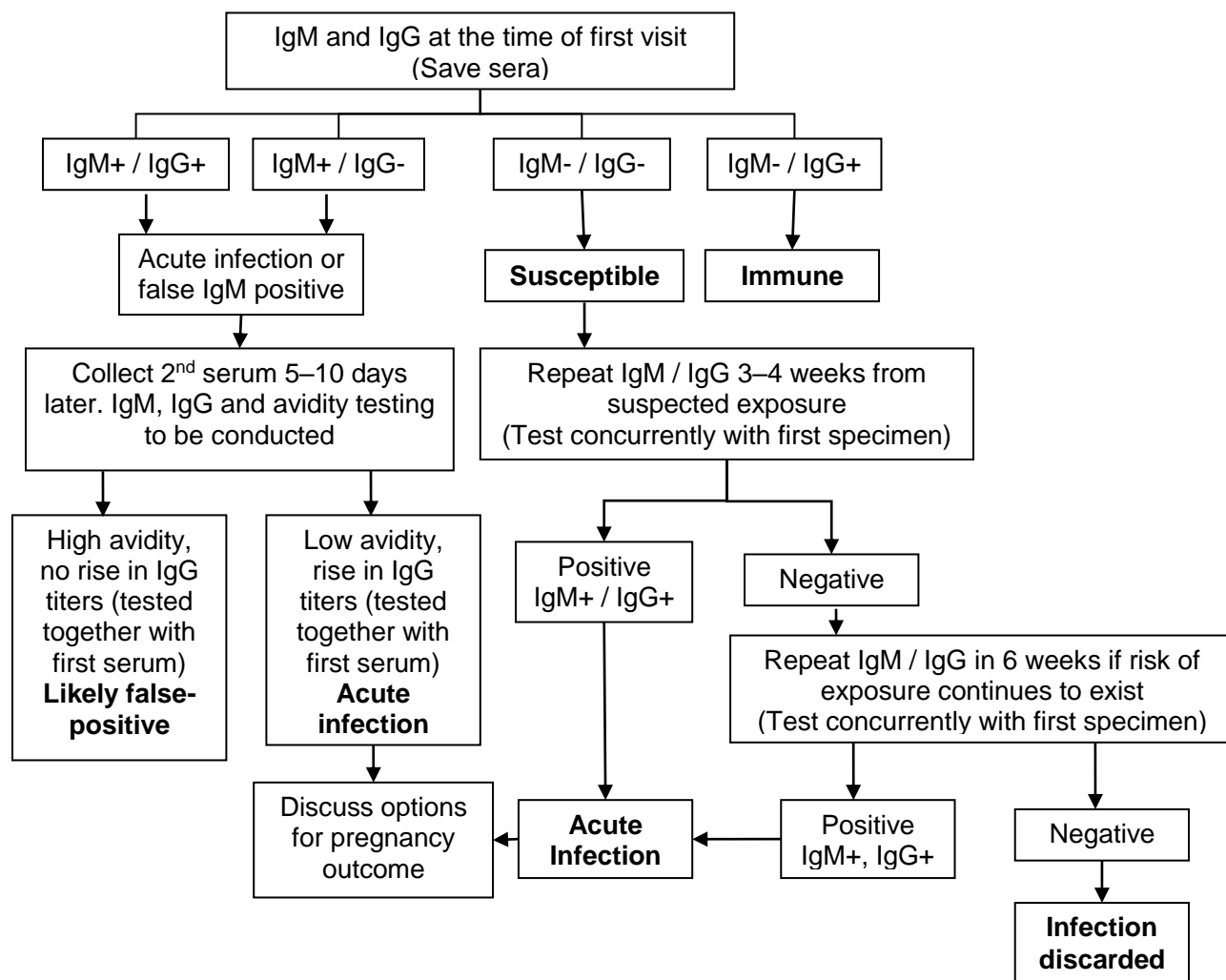
There is no evidence that giving rubella vaccine after exposure has occurred will prevent infection, but there is likewise no evidence that vaccinating an already infected person is harmful. Therefore, since a single exposure to rubella may not lead to infection and since immunization would provide protection in the event of future exposures, vaccination of susceptible persons is recommended, unless specifically contraindicated ([see Section 8](#)).

- Contacts with documented immunity to rubella do not need to be revaccinated or excluded from public settings.
- Contacts with unknown immune status (i.e., those born on or after January 1, 1957 who cannot provide laboratory evidence of immunity or a documented history of vaccination on or after their first birthday) should be vaccinated. If these persons work or spend time in a setting with pregnant women, serum should be drawn to determine rubella immune status before vaccination.
- Contacts known to be susceptible (i.e., children under one year old, persons with documented negative rubella-specific IgG antibody, person who have been exempted from vaccination for medical or religious reasons) should be vaccinated if no contraindications exist.
- Contacts who are vaccinated and then develop a rash illness within 23 days of the last exposure to rubella should be isolated and investigated as a suspect rubella case. Consult with BOE to discuss diagnostic testing. Additional testing may be necessary to determine whether the rash is due to vaccine or wild rubella virus.
- Susceptible contacts who choose to be vaccinated do not need to be excluded from public settings after vaccination, but must avoid all settings where close contact with pregnant women might be possible until 23 days after the date of last exposure to rubella has passed.
- Susceptible contacts who choose not to (or cannot) be vaccinated should be excluded from all public settings until 23 days after the date of last exposure to rubella has passed.
- Susceptible health care workers exposed to rubella should be excluded from work beginning seven days after the first exposure to rubella and continuing until 23 days after the date of last exposure, or seven days after rash appears regardless of whether they were vaccinated after the exposure.

C. Management of pregnant women exposed to rubella

1. Determine if the pregnant woman had a positive rubella-specific serologic test documented prior to her exposure (routinely done as part of prenatal screen). A pregnant woman with a positive serologic result prior to her exposure can discuss the need to rule out reinfection with her health care provider. (Reinfection with rubella occurs more frequently with vaccine-induced immunity than with natural disease; however, the risk of fetal infection is extremely rare.)
2. If the pregnant woman does not have a positive rubella-specific serologic test documented prior to her exposure, collect serum for IgM and IgG testing and follow [Algorithm 1](#) below for collection of follow-up specimens.
3. Consider administering IG to a susceptible, pregnant woman if she is exposed to a person with confirmed rubella early in pregnancy and she will not consider an abortion under any circumstance. Though IG may reduce the likelihood of rubella symptoms in the woman, the absence of symptoms consistent with rubella in a woman who has received IG does not necessarily mean that fetal infection has been prevented. Infants with CRS have been born to exposed women who received IG and remained asymptomatic. IgM antibody can be used to detect maternal infections, even after IG has been administered and testing for rubella infection should still be done.
4. Exclude pregnant women of unknown immune status from sites where the potential for transmission exists until testing is complete. Pregnant women found to be susceptible to rubella should be excluded from potential sites of transmission until 46 days (two incubation periods) after the onset of rubella symptoms in the last patient for whom rubella cannot be ruled out (*MMWR* 2001;50[No. RR-12]:19).
5. If the pregnant woman develops a rubella infection, [see Section 7](#).

Algorithm 1: Algorithm for serologic evaluation of pregnant women exposed to rubella



Source: Centers for Disease Control and Prevention. *Manual for the surveillance of vaccine-preventable diseases*. Centers for Disease Control and Prevention, Atlanta, GA, 2012. Available at: www.cdc.gov/vaccines/pubs/surv-manual/chpt14-rubella.html.

D. Management of other exposed persons

Persons potentially exposed to the same source as the case or present in the same high-risk setting during the likely exposure period should have their rubella immunity status assessed. They should be told to watch for symptoms of rubella during the 12 to 23 days following their exposure regardless of immunization status.

For additional information regarding case and contact management, see:

Centers for Disease Control and Prevention. *Manual for the surveillance of vaccine-preventable diseases*. Centers for Disease Control and Prevention, Atlanta, GA, 2012. Available at: www.cdc.gov/vaccines/pubs/surv-manual/index.html.

Centers for Disease Control and Prevention. Control and prevention of rubella: evaluation and management of suspected outbreaks, rubella in pregnant women, and surveillance for congenital rubella syndrome. *MMWR* 2001;50(No.RR-12):1–23.

7. MANAGING SPECIAL SITUATIONS

A. Infection of a pregnant woman

When rubella infection has been confirmed in a pregnant woman, she should be counseled by their health care provider regarding the risk of CRS. The effects of rubella infection on the fetus depend on gestational age.

- In symptomatic women infected with rubella during the first 12 weeks (first trimester) of pregnancy, CRS-associated congenital defects occur in up to 85% of infants.
- The likelihood of congenital defects decreases if the woman's rubella infection occurs later in the gestational period, dropping to 25% when the woman has a rubella infection late in the second trimester.

After initial assessment and counseling, and if the gestational age of the fetus is such that abortion remains an option, pregnant women with confirmed rubella infection should be offered the opportunity to receive additional counseling from a health care provider to decide whether to have an abortion.

B. Outbreak control—health care, school or child care facilities

Measures implemented for rubella outbreak control may interrupt disease transmission and will increase vaccination coverage among persons who might not otherwise be protected from the disease. Outbreak control strategies should include defining at-risk populations, ensuring prompt vaccination of susceptible persons or, if a contraindication to vaccination exists, excluding them from settings where exposure could occur, and maintaining active surveillance. Control measures may need to be modified if additional cases are identified.

During an outbreak, the following response measures should be considered:

- **Active surveillance:** Search for all potential cases of rubella. Daily health surveys of staff, students, parents, etc., may be indicated. Consult with the BOE to establish an active surveillance plan that may include daily review of data received via ESSENCE-FL or other community specific data.
- **Case management:** Minimize exposure of susceptible contacts in health care facilities by placing all persons with suspected or confirmed rubella under droplet precautions. Evaluate patient flow patterns to minimize transmission. Restrict confirmed cases to home until seven days have passed since the date of rash onset. Travel should be postponed until the person is no longer contagious or, if necessary, conducted in such a way as to prevent or minimize transmission. Consult BOE for guidance regarding potentially uncooperative travelers and use of appropriate legal authority.

- Vaccination and exclusion of susceptible contacts: In an outbreak setting, it is important to identify the at-risk population and immunize all non-pregnant susceptible individuals within that population as quickly as possible. Ideally, exposed susceptible contacts should be excluded from settings where exposure could occur until 23 days have elapsed since the last date of exposure. Unvaccinated persons who receive MMR vaccine as part of the outbreak control may be immediately readmitted to school provided all persons without documentation of immunity or who refuse vaccination have been excluded. Such individuals must be excluded from any setting where their readmission creates a potential for exposure of a pregnant woman to rubella.

Pregnant women found to be susceptible to rubella should be excluded from potential sites of transmission until 46 days (two incubation periods) after the onset of symptoms of rubella in the last patient for whom rubella cannot be ruled out (*MMWR* 2001;50[No. RR-12]:19).

8. ROUTINE PREVENTION

A. Immunization recommendations

Routine immunization with at least one dose of rubella-containing vaccine during childhood is recommended. At least 95% of susceptible persons develop rubella antibodies after a single dose of vaccine. However, rubella vaccination is given in the United States as part of MMR vaccine, and two doses of the measles, mumps, and rubella antigens are now recommended for disease prevention and are required for school attendance. The first dose of MMR should be given at 12–15 months of age, and the second dose should be administered when the child is 4–6 years of age. Persons born in 1957 or later should receive at least one dose of MMR if they do not have evidence of immunity to all three of these diseases.

Contraindications to MMR vaccine include:

- a history of a severe allergic reaction (i.e., hives, swelling of the mouth or throat, difficulty breathing, low blood pressure, shock) following a previous dose or vaccine components (e.g., neomycin, gelatin) (MMR can be given to egg-allergic persons);
- pregnancy (women should avoid getting pregnant for four weeks after vaccination with MMR);
- significant immunosuppression
- recent receipt of antibody-containing blood products.

An acute illness that is moderate to severe is a precaution, but not a contraindication, and vaccination can be considered during an outbreak.

For more information about MMR vaccine schedules, adverse reactions and contraindications, please see the most recent ACIP recommendations. These recommendations are available at: www.cdc.gov/vaccines/hcp/acip-recs/index.html.

B. Prevention recommendations

Routine childhood immunization and vaccination of adults without documented immunity is the best way to prevent rubella.

9. IMPORTANT LINKS

- A. Rubella, Florida Department of Health**
www.floridahealth.gov/diseases-and-conditions/vaccine-preventable-disease/rubella/index.html
- B. Rubella vaccination recommendations, CDC**
www.cdc.gov/vaccines/vpd/rubella/index.html
- C. Red Book, American Academy of Pediatrics**
<https://redbook.solutions.aap.org/redbook.aspx>
- D. Epidemiology and Prevention of Vaccine-Preventable Diseases**
www.cdc.gov/vaccines/pubs/pinkbook/index.html
- E. Rubella, CDC**
www.cdc.gov/rubella/index.html
- F. Manual for the Surveillance of Vaccine-Preventable Diseases, Chapter 14-Rubella, CDC**
www.cdc.gov/vaccines/pubs/surv-manual/chpt14-rubella.html