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**State of Wisconsin**

Department of Health and Family Services

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To: Wisconsin physicians, other clinicians, infection control professionals, local health department directors in Wisconsin

From: Jeffrey P. Davis M.D.  
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Subject: **Confirmed case of Rubella in a Wisconsin residents: important information**

A case of rubella has been serologically confirmed in an adult male from Waukesha County. The patient's rash onset was 4/9/08 and his communicable period was from 4/2/08-4/17/08. The source is believed to be in Monterey Mexico where the Wisconsin case patient worked during his source period.

During this period of concurrent measles transmission and rubella occurrence in Wisconsin both diseases should be considered in the diagnosis of febrile rash illness.

The clinical specimens (sera for serologic tests, NP, throat and urine for PCR) needed for laboratory confirmation of measles and rubella are the same. Collect specimens from symptomatic individuals and submit to the State Laboratory of Hygiene (SLH) for laboratory confirmation. The SLH will automatically test for both diseases. The emphasis in rubella control is to maintain high rubella immunization levels to prevent congenital rubella syndrome (CRS) and identification of susceptible individuals, especially pregnant females for follow-up and consultation.

Following is **important information** on:

- Rubella case definitions (Appendix I)
- Laboratory testing of suspect cases (Appendix II)
- Quarantine measures (Appendix III)
- Immunization recommendations (Appendix IV)
- Case reporting (Appendix IV)

Rubella virus is infectious and the illness it causes is often misdiagnosed. Report any suspect cases of rubella **immediately upon suspicion** to your local health department. Pictures of individuals with rubella can be found at the following website: <http://www.cdc.gov/vaccines/vpd-vac/rubella/photos.htm#people>. Please call your local health department or the Wisconsin Immunization Program at 608-267-9959 if there are questions.

## Appendix I

### Rubella Investigation and Control Guidelines Case definitions

The following is an adaptation by the Wisconsin Division of Public Health of the case definition for rubella that was approved by the Council of State and Territorial Epidemiologists (CSTE) and published in 1997.

#### Clinical case definition

Rubella is an illness that includes all of the following characteristics:

- Acute onset of generalized maculopapular rash,
- A temperature greater than 99°F (37.2°C) and
- One or more of the following: Arthralgia or arthritis, lymphadenopathy, or conjunctivitis.

#### Laboratory criteria for diagnosis

Laboratory criteria for diagnosis include the following:

- Positive serologic test for rubella specific immunoglobulin M (IgM) antibody
- Significant rise between acute and convalescent-phase titers in serum rubella specific immunoglobulin G antibody level by any standard serologic assay
- Isolation of rubella virus from a clinical specimen
- Detection of virus by reverse transcription polymerase chain reaction (RT-PCR) assay of a clinical specimen

#### Case classification

**Suspected:** Any generalized rash illness of acute onset.

**Probable:** A case that meets the clinical case definition, has no or noncontributory serologic or virologic testing, and is not epidemiologically linked to a laboratory-confirmed case.

**Confirmed:** A case that is laboratory confirmed or that meets the clinical case definition and is epidemiologically linked to a laboratory-confirmed case.

**Asymptomatic confirmed.** A case in an asymptomatic person that is laboratory-confirmed and epidemiologically linked to a laboratory -confirmed case that is clinically consistent with rubella.

#### Reporting

All suspect cases of rubella should be reported immediately to the local health department of jurisdiction. Do not wait for laboratory confirmation.

## Appendix II

### Rubella Investigation and Control Guidelines Laboratory Testing

#### Serologic testing

Diagnostic tests used to confirm acute or recent rubella infection or congenital rubella syndrome (CRS) include serologic testing, nucleic acid amplification testing (PCR) and virus cultures. Because many rash illnesses may mimic rubella infection and 20%–50% of rubella infections may be subclinical, laboratory testing is the only way to confirm the diagnosis. Acute rubella infection can be confirmed by detecting serologic evidence of rubella IgM, a significant rise in IgG antibody titers between acute and convalescent serum specimens, positive rubella virus culture, or detection of rubella virus nucleic acid by RT-PCR. Sera should be collected early (within 7-10 days) after onset of illness, and again at least 7–14 days (preferably 14-21 days) later. IgM antibodies may not be detectable before day 5 after rash onset. In events of a negative rubella IgM and IgG in specimens obtained before day 5 of rash onset, repeat serologic testing in a specimen obtained more than 5 days after rash onset.

#### Virus isolation

Rubella virus can be isolated from nasopharyngeal, blood, throat, urine, and cerebrospinal fluid specimens from patients with rubella or CRS. The most frequently positive specimens are results from patients with throat swabs. Efforts should be made to obtain clinical specimens for virus isolation from all case patients (or from at least some case patients in each outbreak) at the time of the initial investigation. Virus may be isolated from 1 week before to 2 weeks after rash onset. However, maximum viral shedding occurs up to day 7 after rash onset.

#### Rubella testing at the Wisconsin State Laboratory of Hygiene (SLH)

All specimens should be submitted to the SLH. All diagnostic testing will be conducted at no cost to the submitter; transport of specimens can also be arranged via Dunham Express at no cost to the submitter. Specimens should only be submitted from individuals who are symptomatic. Following are the guidelines for laboratory testing.

- All specimens submitted to the SLH for rubella testing will also be tested for measles.
- Specimens should be submitted from **all** of the following patients:
  - Individuals exposed to rubella, presenting with prodromal symptoms of rubella with or without rash, AND
  - Individuals with rash and fever indicative of rubella.
- **Specimens to be submitted:**
  - Nasopharyngeal and throat swabs in viral transport media for PCR testing. Both swabs should be combined in one vial of viral transport medium (e.g., M4, M5, etc.). Order test code # 3214.
  - Urine specimen for PCR (in sterile, screw-capped container without additives). Order test code # 3214.

- **If the patient has a rash, collect a serum specimen for rubella serology.** Note: A convalescent serum, collected two weeks after onset of rash, should also be submitted. Order test code # 2814.
- Transport of specimens to the State Laboratory of Hygiene:
  - Specimens should be packaged according to regulatory requirements. The cost of specimen transport can be billed to the State Laboratory of Hygiene if arrangements are made with Dunham Express, billing to Account # 7263.

## Appendix III

### **Rubella Investigation and Control Guidelines** **Guidelines for isolation and quarantine during a rubella outbreak**

**Rubella and rubella vaccine:** The incubation period for rubella is 14-23 days, usually 16-18 days. The communicable period is about 7 days before and at least 7 days after onset of rash. Transmission of rubella virus is by droplet spread. Approximately 25-50% of rubella infections are asymptomatic. Rubella vaccine (one dose) is 98% efficacious. About 2 weeks is needed to develop vaccine induced immunity.

**Use of Quarantine:** The use of quarantine, except in a school or health care setting, is not applicable.

**Control of outbreaks in medical settings:** During rubella outbreaks in health-care settings where pregnant women may be exposed, mandatory exclusion and vaccination of health-care workers who lack evidence of rubella immunity (Table 1) should be practiced. All persons who work in health-care facilities or who have contact with any patients should be immune to rubella. Any exposed health-care worker who does not have adequate evidence of immunity should be excluded from duty beginning 7 days after exposure to rubella and continuing through either a) 21 days after last exposure or b) 5--7 days after rash appears if rubella occurs. Susceptible, exposed health-care workers who are vaccinated post exposure should be excluded from direct patient care for 23 days (i.e., the longest incubation period) after the last exposure to rubella because no evidence exists that postexposure vaccination is effective in preventing rubella infection in persons already infected at the time of vaccination. Because birth before 1957 does not guarantee immunity, health-care facilities should strongly recommend a dose of MMR vaccine to workers born before 1957 who do not have serologic evidence of immunity.

Protection against rubella documentation either by rubella vaccine or serologic immunity to rubella is required of hospital employees who have direct contact with rubella case patients, pediatric patients, and female patients of childbearing age (Chapter HSS 124.07(4)).

#### **Isolation of suspect individuals coming to a clinic, hospital or ED:**

If at all possible, parents (or responsible individual) should call ahead to make sure arrangements can be made to handle a person suspected of having rubella and needing to be seen by a health care professional. Coordination of effort is needed to ensure that individuals who may have rubella do not expose susceptible patients in a clinic setting. For hospitalized persons with rubella, standard precautions plus droplet precautions are recommended for 7 days after onset of rash.

#### **Rubella outbreaks in schools or other educational institutions**

An effective means of terminating rubella outbreaks and increasing rates of vaccination quickly is to exclude (from possible contact) persons who cannot provide valid evidence of immunity. Experience with measles outbreak control indicates that almost all students who are excluded from school because they lack evidence of immunity quickly comply with vaccination requirements and are promptly readmitted to school. Persons exempted from rubella vaccination

for medical, religious, or personal conviction reasons should also be excluded from attendance. Exclusion should continue until 3 weeks after the onset of rash of the last reported case in the outbreak setting. After vaccination, these students no longer need to have restricted contact and can return to school immediately.

**Table 1**

Acceptable Evidence of Immunity for Health Care Workers					
Disease or Vaccine	Documented vaccination*	Number of doses	Laboratory evidence of immunity	Diagnosis or verification of disease by a health care provider	Birth before a specified date
MMR	Yes	2			
Rubella	Yes	1	Yes <sup>†</sup>	No <sup>§</sup>	No <sup>¶</sup>
Measles	Yes	2	Yes <sup>†</sup>	No <sup>‡</sup>	See footnote <sup>**</sup>
Mumps	Yes	2	Yes <sup>†</sup>	No <sup>‡</sup>	See footnote <sup>††</sup>
Varicella	Yes	2	Yes <sup>§§</sup>	Yes	No <sup>***</sup>

\* A documented vaccination is one that has been written in a conventional or electronic record and includes the name of the vaccine and the month, day, and year it was administered.

<sup>†</sup> Serologic screening for measles, rubella, or mumps immunity generally is neither necessary nor recommended if a persons has other acceptable evidence of immunity to the disease.<sup>1</sup>

<sup>§</sup> HFS 124.07(4) does not recognize history of disease as evidence of immunity to rubella.

<sup>¶</sup> HFS 124.07(4) does not recognize birth before any date as evidence of immunity to rubella.

<sup>‡</sup> Per Wisconsin Council on Immunization Practices (WCIP) recommendation.

<sup>\*\*</sup>Health care facilities should consider recommending a dose of MMR vaccine for unvaccinated workers born before 1957 who are at risk for occupational exposure to measles and who do not have a history of measles disease or laboratory evidence of measles immunity.<sup>1</sup>

<sup>††</sup>Because birth before 1957 is only presumptive evidence of immunity, health-care facilities should consider recommending 1 dose of live mumps virus vaccine for unvaccinated workers born before 1957 who do not have a history of physician-diagnosed mumps or laboratory evidence of mumps immunity.<sup>2</sup>

<sup>§§</sup>Commercial assays can be used to assess disease-induced immunity to varicella but they lack sensitivity to always detect vaccine-induced immunity (i.e., they might yield false-negative results).<sup>3</sup>

<sup>\*\*\*</sup>Birth in the United States before 1980 is not considered evidence of immunity to varicella for health care personnel. Certainty regarding immunity of health care personnel is desirable because of the possibility of nosocomial transmission to high risk patients.<sup>3</sup>

<sup>1</sup>Centers for Disease Control and Prevention. 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(No. RR8):11-12.

<sup>2</sup>Centers for Disease Control and Prevention. Updated Recommendations of the Advisory Committee on Immunization Practices (ACIP) for the Control and Elimination of Mumps. MMWR 2006; 55(22):629-630.

<sup>3</sup>Centers for Disease Control and Prevention. Prevention of Varicella: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2007;56(No. RR04):16-17.

## Appendix IV

### Rubella Investigation and Control Guidelines Immunization Recommendations

The goals of rubella vaccination are the elimination of congenital rubella syndrome (CRS) and ultimately the elimination of rubella. Vaccine immunity to rubella consists of one dose of a rubella containing vaccine. When administered as MMR it is recommended as follows:

**Preschool age children:** Administer the first dose of MMR vaccine to children at 12 to 15 months of age followed by a second dose around age 4 or 5 years. At this time we are not recommending MMR vaccine be administered to children less than 12 months of age. In Wisconsin preschool children enrolled in licensed day care centers are required to have a record of 1 dose of MMR vaccine by 16 months of age.

**School age children, adolescents and adults:** Two doses of MMR vaccine are recommended for children in kindergarten through 12<sup>th</sup> grade. Students in colleges and universities and international travelers who were born during or after 1957 need two doses of MMR vaccine and those born before 1957 are assumed to be immune. Health care workers who were born during or after 1957 need two doses of MMR vaccine and those born before 1957 need one dose. For the general public, persons born before 1957 can be presumed to be immune. For persons born in or after 1957 one dose a rubella containing vaccine is recommended.

Note: Per the American Academy of Pediatrics Red Book “Minor respiratory, gastrointestinal or other illness with or without fever do not contraindicate use of live virus vaccines, such as MMR”. Vaccine including MMR should not be deferred in the case of fever or mild-to-moderate illness.

#### Post exposure prophylaxis

- **MMR Vaccine** (for persons 12 months of age or older): Unlike measles vaccine that can offer protection against measles if administered within 72 hours after exposure, rubella vaccine requires about 2 weeks to develop full immunity and provide protection. Exposure to rubella is not a contraindication to vaccination. If exposure to rubella does not cause infection, post exposure vaccination with MMR should induce protection against subsequent infection. If the exposure results in infection, no evidence indicates that administration of MMR vaccine during the presymptomatic or prodromal stage of illness increases the risk for vaccine-associated adverse events.
- **IG:** Immune globulin does not prevent rubella infection after exposure and is not recommended for that purpose. Although administration of IG after exposure to rubella will not prevent infection or viremia, it may modify or suppress symptoms and create an unwarranted sense of security. Therefore, IG is not recommended for routine postexposure prophylaxis of rubella in early pregnancy or any other circumstance. Infants with congenital rubella have been born to women who received IG shortly

after exposure. Administration of IG should be considered only if a pregnant woman who has been exposed to rubella will not consider termination of pregnancy under any circumstances. In such cases, intramuscular administration of 20 mL of immune globulin within 72 hours of rubella exposure may reduce—but will not eliminate—the risk of rubella.

## Appendix V

### Rubella Investigation and Control Guidelines Case Reporting

Rubella is a Category I disease under the Wisconsin Statute Chapter 252.05 and Administrative Rule Chapter HFS 145 which requires the reporting of communicable diseases. Category I diseases are to be reported **immediately** by telephone or fax to the patient's local health officer upon identification of a case or suspected case. A listing of local health departments can be found at: <http://dhfs.wisconsin.gov/localhealth/>. In addition to the immediate report, within 24 hours complete and mail an Acute and Communicable Diseases Case Report (DPH 4151). Patients should be informed that the local health department will be in contact with the family to initiate case investigation and control measures.

The newly revised DPH 4151 "Acute & Communicable Disease Case Report Form" can now be downloaded from the Division of Public Health forms page in two formats:

Microsoft Word fillable form: <http://dhfs.wisconsin.gov/forms/DPH/dph04151.doc>

PDF fillable form: <http://dhfs.wisconsin.gov/forms/DPH/dph04151.pdf>