



Date: March 11, 2019

BCD-2019-05

To: Wisconsin Health Care Providers, Infection Preventionists, Local Health Departments, and Tribal Health Centers

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Measles Information for Health Care Providers

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Summary

Measles outbreaks, defined by the [Centers for Disease Control and Prevention \(CDC\)](http://www.cdc.gov) as 3 or more cases, are occurring in several states including Illinois, New York, Texas and Washington. Individual cases of measles have been confirmed in other states, emphasizing the need to remain vigilant in protecting individuals against this extremely contagious infectious disease. This memo provides information on measles, testing, and reporting information, as well as guidance preventing the spread of measles, including vaccination. Measles is a Category I reportable disease. Suspect cases of measles should be reported to the local health department immediately and test swabs should be sent to the Wisconsin State Lab of Hygiene or the City of Milwaukee Health Department Laboratory (if in Milwaukee) in order to expedite specimen processing.

Background

Measles outbreaks, defined by the Centers for Disease Control and Prevention (CDC) as 3 or more cases, are occurring in several states including Illinois, New York, Texas and Washington. Individual cases of measles have been confirmed in other states.

Clinicians should have a high index of suspicion in patients who recently traveled internationally or had contact with individuals in communities with ongoing measles outbreaks and have symptoms matching the clinical description.

Clinical Description

Measles is an acute disease characterized by fever, cough, runny nose, conjunctivitis, erythematous maculopapular rash, and characteristic mouth lesions (Koplik spots).

The prodrome, which lasts 2–4 days (range 1–7 days), is characterized by a fever that increases in stepwise fashion, often peaking as high as 103–105°F. This is followed by the onset of cough, runny nose, and/or conjunctivitis. The measles rash is a maculopapular eruption that usually lasts 4–7 days. Typically (though not always), it begins at the hairline, then involves the face and upper neck. Koplik spots, an enanthem present on mucous membranes, are considered to be definitive for measles in the

presence of other signs and symptoms. Koplik spots occur 1–2 days before to 1–2 days after the measles rash and appear as small blue-white spots on the bright red background of the buccal mucosa. However, because Koplik spots may not be visible in all cases of measles, their absence should not rule out a diagnosis of measles.

The measles rash gradually proceeds downward, reaching the hands and feet. The maculopapular lesions are generally discrete, but may become confluent, particularly on the upper body. The rash fades in the same order that it appears, from head to the extremities. Other symptoms of measles include loss of appetite, diarrhea (especially in infants) and generalized lymphadenopathy.

Measles in High Risk Populations

Measles in immunocompromised individuals may be severe with a prolonged course and is reported almost exclusively in individuals with T-cell deficiencies (certain leukemias, lymphomas and HIV infection). The rash may be atypical. Also, measles illness during pregnancy results in a higher risk of premature labor, spontaneous abortion and low-birth weight infants.

Communicability of Measles

Measles is highly communicable. Secondary attack rates exceed 90% among susceptible persons.

- Measles is infectious from 4 days prior to 4 days after rash onset.
- Immunocompromised individuals may shed virus for several weeks after the acute illness.
- There are no asymptomatic infectious carriers.
- The incubation period for measles averages 10-12 days from exposure to prodrome and 14 days (range 7-18 days) from exposure to rash onset.

The measles virus is found in respiratory secretions of the infected person. Measles transmission can be person-to-person via contact with secretions or by contact with large respiratory droplets that are aerosolized during coughing or sneezing. Airborne transmission via aerosolized droplet nuclei is the primary route of transmission and has been documented in closed areas (e.g., office examination room) for up to 2 hours after a person with measles occupied the area.

Diagnosing Measles

Measles should be considered for any patient who presents with a febrile rash illness, particularly individuals with a history of international travel or who report exposure to a person with measles. Clinicians should consider including both rubella and measles in the differential diagnosis for patients presenting with an acute generalized rash and fever illness.

Testing

The following specimens should be collected from symptomatic individuals suspected of having measles:

- Blood specimens for IgM and IgG antibody testing
- A Nasopharyngeal swab and a throat swab for PCR testing (place both swabs in a single tube of viral transport medium)

Contact the local health department to facilitate testing at the Wisconsin State Laboratory of Hygiene or if in Milwaukee, the City of Milwaukee Health Department Laboratory.

Reporting

Measles is a Category I reportable disease. Report suspect cases of measles to the local health department **immediately** upon suspicion of disease.

Treating Measles

Treatment is supportive and is focused on relieving symptoms or treating complications.

Preventing Transmission of Measles

General Public

Persons suspected of having measles illness should be excluded from school or work and public activities until 4 days after onset of the rash (counting day of rash onset as day zero), or until measles has been ruled out.

Health Care Setting

- Patients suspected of having measles should be masked and placed in a negative pressure room in Airborne Infection Isolation (AII), if available. If a negative pressure room is not available, use a private exam room with the door closed, and do not use the room for 2 hours after the patient suspected of having measles leaves.
- Contact the Infection Practitioner immediately upon suspicion of measles.
- Susceptible persons should not enter the isolation room.
- Susceptible staff who have been exposed to measles should be relieved from patient contact and excluded from the facility from the 7th to the 21st day after exposure, regardless of whether they received post-exposure vaccination or immunoglobulin.
- If an individual becomes symptomatic, he/she should be excluded from work and public activities from the onset of symptoms until 4 days after the onset of rash, or until measles has been ruled out.

Handling Exposure to Measles

- Live measles vaccine may prevent disease if given within 72 hours of exposure.
- Immune globulin (IG) may prevent or modify disease and provide temporary protection if given within 6 days of exposure. IG may be especially indicated for susceptible household contacts of measles patients, particularly contacts <1 year of age (for whom the risk of complications is highest), susceptible pregnant women and susceptible immunosuppressed persons who are exposed to measles. Some diseases that cause immunosuppression may suppress measles immunity in those with a history of measles immunity. Testing for immunity is recommended in immunosuppressed individuals.
- IG is not indicated for household contacts who have received one dose of vaccine at 12 months of age or older unless they are immunocompromised.

Vaccine Recommendations

Two doses of MMR (measles, mumps and rubella), typically given at ages 12-15 months and 4-6 years, are routinely recommended for all children. Providers are encouraged to vaccinate infants with their first dose of MMR at 1 year of age (rather than waiting until 15 months of age) if measles case(s) are identified in the area. All persons born during or after 1957 should have documentation of at least one dose of MMR or other evidence of measles immunity. More stringent measures may be recommended or required locally for individuals exposed to measles or in the case of a measles outbreak.

Certain groups of adults may be at increased risk for exposure to measles. Adults attending colleges or other post high school educational institutions, those working in medical facilities or working with persons coming from countries where measles is circulating, or those travelling internationally should be assessed to ensure they are properly immunized with two doses. Healthy susceptible close contacts of severely immunocompromised persons should be vaccinated.

Vaccine in Pregnancy and Breastfeeding

Women known to be pregnant should not receive measles vaccine. Pregnancy should be avoided for 4 weeks following MMR vaccine. Close contact with a pregnant woman is NOT a contraindication to MMR vaccination. Breastfeeding is NOT a contraindication to vaccination of either the woman or the breastfeeding child.

Contraindications to Vaccine

- Patients who are severely immunocompromised for any reason should not be given MMR vaccine.
- Persons receiving large daily doses of corticosteroids ($\geq 2\text{mg/kg}$ per day or $\geq 20\text{ mg}$ per day of prednisone) for 14 days or more should not receive MMR vaccine because of concern about vaccine safety. MMR and its component vaccines should be avoided for at least one month after cessation of the high dose corticosteroid therapy.
- Administration of blood products and immunoglobulin require varying intervals before administration of rubella or measles vaccine.

Vaccine Precautions

MMR may be administered to egg-allergic children without prior routine skin testing or the use of special protocols. MMR vaccine does not contain penicillin. A history of penicillin allergy is not a contraindication to vaccination with MMR or any other U.S. vaccine.

Persons receiving low dose or short course (<14 days) corticosteroid therapy, alternate-day treatment, maintenance physiologic doses, or topical, aerosol, intraarticular, bursal or tendon injections may be vaccinated.

Patients with leukemia in remission who have not received chemotherapy for at least 3 months may receive MMR or its component vaccines.

References

Local Public Health Contact List:

<https://www.dhs.wisconsin.gov/lh-depts/counties.htm>

Department of Health Services Measles website:

<https://www.dhs.wisconsin.gov/immunization/measles.htm>

CDC Measles website:

<https://www.cdc.gov/measles/about/index.html>