



ARIZONA DEPARTMENT OF HEALTH SERVICES

CLINICIAN FACT SHEET: MEASLES (Updated 6.2.2016)

Epidemiology

- A febrile viral illness with rash that is one of the most contagious diseases in existence.
- Transmission is by infectious airborne droplets or by contact with infected respiratory secretions.

Incubation Period

- Usually 8-12 days until the febrile prodrome starts. The average time between exposure and subsequent rash is 14 days, with a range of 7-18 days.

Clinical Presentation

- Prodrome (usually 2-4 days) of stepwise increasing fever (often reaching 103°-105°F), cough, coryza (runny nose), and conjunctivitis (the “3 C’s”) before the rash appears.
- Koplik’s spots (small bluish white spots on an erythematous base) on buccal mucosa are sometimes seen 1-2 days before rash and are pathognomonic for measles.
- After 2-4 days of prodrome, a maculopapular rash begins at hairline, then face and upper neck, then the rash proceeds downward and outward, reaching hands and feet over several days.
- Complications include otitis media, diarrhea, pneumonia (viral and bacterial), encephalitis, death.

Variations

- Modified measles: Measles in persons who received recent immunoglobulin (IG), in previously vaccinated persons, or in infants who still have some maternal measles antibody. With modified measles there can be a prolonged incubation period, mild prodrome, and a nonspecific rash of short duration.
- Atypical measles: Measles in persons who received inactivated (“killed”) measles vaccine, given in the U.S. from 1963-67 (symptoms: fever, pneumonia, pleural effusions, rash on extremities).
- Immunocompromised persons have a febrile respiratory disease, often with an atypical rash or no rash. They can have severe pneumonia, encephalitis, and prolonged viral shedding.

Differential Diagnosis

- Rubella, scarlet fever, drug rash, Kawasaki disease, adenovirus, roseola infantum (HHV6), dengue fever, EBV infection, enterovirus, or fifth disease (human parvovirus B19).

Laboratory

- For a suspect case, report it immediately to your *county health department* and they will help to arrange for the following testing:
 - Measles IgM serology (false negatives can occur during first 72 hrs of rash).
 - Nasopharyngeal swabs OR throat swabs AND urine for measles PCR.
 - Measles IgG is not helpful for rapid measles diagnosis, but acute and convalescent measles IgG serology may sometimes be of assistance in excluding or diagnosing measles.

Infection Control

- Healthcare facilities should immediately put suspect cases in **airborne** isolation. If airborne isolation is not available, mask the patient and place the patient in a private room with the door closed.
- Transmission has been documented in closed areas up to 2 hours after patients have left the room.
- Patients are contagious from four days before the rash through four days after the rash. Immune compromised patients may shed virus longer. In healthcare settings, staff should use a N95 mask or equivalent when caring for measles patients even if the staff members are fully vaccinated.
- Exposed, nonimmune persons should be considered potentially contagious from the 5th to 21st day after exposure, and can be contagious a day before symptoms begin
- Nonhospitalized patients with measles or suspected measles should remain at home away from nonimmune people through the 4th day after the rash began.



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- Persons with fever and rash should call ahead **before** going for medical evaluation so that the facility can minimize the risk of potential transmission to other patients if the person does have measles.

Treatment

- Supportive care. Hydration as needed. Treat bacterial complications. Consider vitamin A treatment in children to lessen eye complications.

Prevention through Vaccination

- Children, health care workers, international travelers, and post-secondary students should have two documented doses of measles-mumps-rubella vaccine (MMR) with the first dose at ≥ 12 months of age.
- There must be a minimum of at least 28 days between the 1st and 2nd doses of MMR.
- Adults born 1957 or after should have documentation of at least one measles vaccine.
- Infants 6-11 months who are having international travel should get one dose of MMR before travel, but they will still need two more doses of MMR once they reach 12 months of age.
- [Contraindications](#) to measles vaccine include severe allergic reaction to a previous MMR or vaccine components (e.g. gelatin, neomycin), pregnancy, and immunosuppression.
- [Precautions](#) to measles vaccine include moderate to severe acute illness with or without fever, recent receipt of immune globulin (IG) or antibody-containing blood products, history of thrombocytopenia or thrombocytopenic purpura, and the need for tuberculin skin testing
- MMR can be given safely to people who are allergic to eggs.
- MMR does not result in viral shedding so it can be given to contacts of immune compromised people or contacts of pregnant women.

Outbreak Control

- Think of measles in the differential diagnosis of any febrile illness with rash, especially if there has been recent international travel or contact with someone with recent international travel.
- **Call your local health department immediately to report any suspect case of measles.**
- Public health departments will help in the diagnosis of measles, trace contacts, and offer post-exposure prophylaxis.

Post-exposure Prophylaxis

- Determine immune status of all those exposed:
 - Presumed immunity for non-healthcare workers is considered to be documentation of receipt of age-appropriate measles vaccine, laboratory documented disease, positive serology, or birth before 1957.
 - Vaccination with two doses of live measles virus vaccine, at least 28 days apart, with the first dose given at 12 months of age or older is about 97% protective against measles.
- If a patient is exposed to measles, without presumptive immunity to measles and is ≥ 6 months old, vaccinate with MMR **within 72 hours** of exposure to prevent or modify measles severity. Pregnant women should not receive MMR.
- If unable to give MMR or if vaccine is contraindicated, give IG (intramuscular IG [IGIM] or intravenous IG [IVIG]) **within 6 days** of exposure, especially to persons at higher risk of complications from measles.
 - Infants < 12 months old should get IMIG (0.5mL/kg body weight), maximum 15 mL.
 - Immunocompromised persons and susceptible pregnant women should get 400 mg/kg IVIG.
- IG is not indicated for persons ≥ 12 months old who have received 1 MMR unless they are severely immunocompromised.
- When IMIG 0.5 mL/kg is given, wait ≥ 6 months (or if IVIG 400 mg/kg given, wait ≥ 8 months) before giving any needed MMR or varicella-containing vaccine.

For More Information on Measles and Measles Vaccine

- Arizona Department of Health Services: (602) 364-3676; www.azdhs.gov/measles.
- CDC: www.cdc.gov/vaccines/vpd-vac/measles.
- *Morbidity and Mortality Weekly Report (RR)*, "Prevention of Measles, Rubella, Congenital Rubella Syndrome, and Mumps, 2013, [June 14, 2013](#).