

## What are the signs and symptoms of measles?

Measles is a viral respiratory illness. Measles typically begins with prodromal symptoms of fever; malaise; and cough, coryza, or conjunctivitis (the “three C’s”) about 11-12 days after exposure (range: 7-21 days). Patients may develop tiny white spots (Koplik spots) inside the mouth about two to three days after symptoms first start. Three to five days after symptoms begin, people with measles develop a maculopapular rash that usually begins on the face near the hairline and spreads down across the entire body; the patient’s fever may spike to over 104 degrees Fahrenheit at the time the rash appears. The rash may become confluent as it progresses and typically persists for five to six days before fading in the order it appeared.

## How is measles spread?

The measles virus spreads easily through contact with respiratory droplets and via airborne spread. The virus can remain airborne for up to two hours after an infectious person leaves an area. Measles is highly contagious; up to 90% of susceptible people who have contact with someone with measles will develop measles.

## How long are people with measles contagious?

People with measles are contagious starting four days before through four days after rash onset (with rash onset date being day zero).

## Who should be tested for measles?

Measles testing should be performed for patients who:

- Meet the clinical case definition for measles (generalized maculopapular rash; **and** fever  $\geq 101^{\circ}\text{F}$ ; **and** cough, coryza, or conjunctivitis) **AND**
- Within the 21 days prior to symptom onset, had an elevated risk of exposure to measles including:
  - Had a known exposure to measles, or
  - Traveled internationally or to an area with known measles cases, or
  - Had contact with someone with a febrile rash illness, particularly if those individuals had traveled internationally or to an area with known measles cases.

Clinicians should consult public health authorities regarding testing if:

- Measles is strongly suspected based on clinical presentation in patients with no known increased risk of measles exposure, particularly if the patient has no [evidence of immunity](#) to measles.
- Patients have had a known measles exposure and present with atypical signs or symptoms.

To avoid false positive results, testing is discouraged for patients with clinical presentation inconsistent with measles and no known increased risk of exposure to measles.

## How can I test patients for measles?

Testing for patients in whom measles is strongly suspected should be performed at the Indiana Department of Health (IDOH) Laboratories to expedite results. Measles PCR and serology (IgG, IgM) is available through

the IDOH Laboratories **with prior authorization**. To request testing authorization, clinicians and laboratories should contact the IDOH Infectious Disease Epidemiology and Prevention Division at 317-233-7125 during business hours (Monday – Friday, 8:15 a.m. – 4:45 p.m.) or 317-233-1325 after hours.

Providers pursuing measles testing should collect specimens for both PCR testing (either a nasopharyngeal [NP] or throat swab) and serology. IDOH laboratory specimen collection and submission guidance is available at the links below:

- [Measles PCR](#)
- [Measles Serology](#)

### **How can I report a suspected measles case?**

Per the Indiana Communicable Disease Rule, measles is reportable **immediately upon suspicion**. Providers suspecting measles should immediately call the local health department of the patient’s county of residence by phone **or** the IDOH Infectious Disease Epidemiology and Prevention Division at 317-233-7125 during business hours (Monday – Friday, 8:15 a.m. – 4:45 p.m.) or 317-233-1325 after hours.

### **What infection control precautions should be taken for patients suspected of having measles?**

Patients suspected of having measles should immediately be masked, if tolerated, and placed in an airborne infection isolation room (AIIR). If an AIIR is not available, patients should be immediately placed in a single patient room with the door closed. The room should not be used for at least two hours after the patient has left and should be disinfected before use by another patient.

Facility infection prevention staff should be notified immediately of any suspected measles cases. If patients suspected of having measles must be transferred to another facility, contact the facility in advance so that appropriate infection control measures can be implemented.

Staff caring for patients suspected of having measles should follow airborne precautions, including wearing an N95 respirator. Only healthcare providers with evidence of immunity to measles should provide care to patients suspected of having measles. Presumptive evidence of immunity for healthcare providers includes:

- Written documentation of vaccination with 2 doses of live measles or MMR vaccine administered at least 28 days apart,
- Laboratory evidence of immunity,
- Laboratory confirmation of disease

### **What recommendations should I give patients suspected of having measles?**

Patients with known or suspected measles should isolate until the fifth day after rash onset (with rash onset day being day zero). If patients must seek medical attention during this time, they should call the healthcare facility in advance and report their diagnosis so that appropriate infection control precautions can be taken.



**My patient developed a fever and rash after receiving the measles/mumps/rubella (MMR) vaccine. Should the patient be tested for measles?**

A small percentage of individuals receiving MMR vaccine may develop fever and rash, typically about six to 12 days after vaccination. Testing for patients who develop fever and rash after receiving MMR vaccine may be considered if measles is strongly suspected clinically and the patient had a known increased risk of exposure to wild-type measles virus (e.g., travel or known exposure to measles in the 21 days before symptom onset). For patients suspected of having measles who received MMR vaccine six to 45 days before symptom onset, specimens for viral isolation and strain typing (NP or throat swab) must be collected to distinguish wild-type from vaccine strain measles virus. Specimens for serologic testing should also be collected, but serologic testing in patients who received MMR vaccine within the previous six to 45 days cannot distinguish between immune response due to vaccination versus natural infection.

**What are the current recommendations for measles vaccination?**

The Centers for Disease Control and Prevention (CDC) recommends two doses of MMR vaccine as part of routine childhood vaccination, with the first dose given at age 12 to 15 months and the second dose given at age four to six years. Adults without [evidence of immunity](#) should receive at least one dose of MMR vaccine and may be recommended to receive two doses if they have increased risk of exposure to measles, including students at post-high school educational institutions, healthcare personnel, and international travelers.

Additional recommendations for groups such as international travelers, infants younger than 12 months of age, healthcare personnel, and women of childbearing age are available at <https://www.cdc.gov/vaccines/vpd/mmr/public/index.html>.

**What are the recommendations for measles post-exposure prophylaxis (PEP) and quarantine?**

For people exposed to measles who do not have evidence of immunity, MMR vaccine given within 72 hours of exposure or immunoglobulin (IG) given within six days of exposure may prevent or reduce the severity of measles infection. Recommendations and dosage vary by age and underlying health conditions. Clinicians should refer to [CDC guidance](#) for up-to-date post-exposure prophylaxis recommendations.

Except in health care settings, unvaccinated persons who receive their first dose of MMR vaccine within 72 hours postexposure may return to childcare, school, or work. Exposed, susceptible individuals who do not receive MMR vaccine within 72 hours of exposure should quarantine for 21 days after exposure.

All individuals exposed to measles should monitor for signs and symptoms of measles for 21 days after last exposure. If symptoms develop, patients should seek medical attention and should call ahead before visiting a healthcare facility so that appropriate infection control precautions can be taken.

**Is there any treatment for measles?**

There is no specific antiviral therapy for measles. Medical care is supportive to relieve symptoms and address complications. Per CDC guidance, severe measles cases among children, such as those who are hospitalized, should be treated with vitamin A. Refer to CDC's [treatment guidelines](#) for proper dosage.



### **Additional Measles Resources**

- CDC [Measles Information for Healthcare Providers](#)
- CDC [Measles Fact Sheet](#)
- CDC [Measles Vaccination Information](#)
- CDC [Provider Resources for Vaccine Conversations with Parents](#)

