

What is Measles (Rubeola)?

Measles (Rubeola) is a highly contagious, acute viral respiratory illness caused by the Measles Virus that causes a rash and fever. Humans are the only known natural hosts of this virus. Worldwide, measles is a leading cause of mortality among children under 5 years of age. Cases occur predominantly in areas with low vaccination rates, particularly in low resource settings and in areas of resource-rich countries where vaccination uptake has declined. People at highest risk of complications include children under age 5, adults age >20 years, pregnant people, and people with immunocompromising conditions. The CDC has reported that a rise in Measles cases is due to an increase in the number of travelers who get measles abroad and bring it into the U.S., in addition to further spread of measles in U.S. communities with pockets of unvaccinated people, among other factors.

Clinical Presentation & Disease Summary

- Transmission:**
 - Direct contact with infectious droplets or by airborne spread when an infected person breathes, coughs, or sneezes.
 - Measles virus can remain infectious in the air for up to two hours after an infected person leaves an area.

- Incubation Period:**
 - Usually 7-14 days.
 - About 3-5 days after initial symptoms begin, a rash breaks out.
 - People are considered to be contagious **from 4 days before to 4 days after the rash appears.**

- Signs and Symptoms:**
 - High fever (can be greater than 104°F), cough, runny nose (coryza), and red, watery eyes (conjunctivitis) are usually the first symptoms to occur.
 - Koplik spots (tiny white spots inside the mouth) (usually 2-3 days after symptoms begin)
 - Skin rash presenting as flat red spots beginning on the face and moving down the body to the arms and legs. (usually 3-5 days after symptoms begin)

- Complications:**
 - Common complications include ear infections and diarrhea.
 - Severe complications include hospitalization, pneumonia, encephalitis, pregnancy complications, and death.
 - Additionally, measles infection increases the risk of other severe infections for the months or years after recovery due to prolonged impairment of the immune system

When to Suspect a Patient has Measles

Measles should be considered in anyone with a febrile rash illness and symptoms consistent with measles (e.g. cough, coryza and/or conjunctivitis), particularly if the patient was potentially exposed to a person with measles or has recently traveled to an area with ongoing measles outbreaks.

Key Steps for Frontline Clinical Staff

- Identify**
 - Assess the patient for signs and symptoms, travel history, and epidemiological criteria.
 - For assistance, contact facility Infection Prevention and Control or on-call hospital epidemiologist.
- Isolate**
 - Provide a mask to the patient and initiate prompt isolation.
- Inform**
 - Notify dept/facility leadership, Infection Prevention & Control, on-call hospital epidemiologist.
 - Call NYC DOHMH Provider Access Line to report/ascertain risk (866-692-3641)
 - If determined by NYC DOHMH to be a “suspected or confirmed case of measles,” call Central Office Special Pathogens Program / Emergency Management. (646-864-5442) to report case.

Infection Prevention and Control

Hand Hygiene

- Perform hand hygiene before and after all patient contact, contact with potentially infectious material, and before putting on and upon removal of PPE, including gloves.
- Use soap and water for at least 20 seconds or use alcohol-based hand rubs. If hands are visibly soiled, use soap and water.

Patient Placement

- Place patient in a single-patient, **negative pressure airborne infection isolation room (AIIR)**.
- If an AIIR is not immediately available, isolate the patient in a private examination room. Keep the door closed, minimize entry and exit, avoid entry without appropriate PPE. Ensure the patient wears a mask at all times, provided there are no medical contraindications.
- Patients must wear a well-fitting surgical mask during any patient transport outside of their isolation room.

Transmission-Based Precautions & Personal Protective Equipment

- Adhere to **Airborne + Contact Precautions in addition to Standard Precautions**.
- Patients with measles should remain in Airborne Precautions for 4 days after the onset of rash (with onset of rash considered to be Day 0). Immunocompromised patients with measles should remain in Airborne Precautions for the duration of illness due to prolonged virus shedding in these individuals.
- Regardless of presumptive immunity status, all healthcare staff entering the room should use respiratory protection consistent with airborne infection control precautions (N95 or higher-level respirator). All staff entering the room must also wear, gloves, gown, and face shield/goggles.

Environmental Infection Control

- To allow sufficient time for airborne contaminant removal:
 - If a negative pressure AIIR was NOT used, the room must remain vacant for at least 2 hours.
 - If a negative pressure room AIIR was used, the room should stay vacant for at least 35 minutes.
- Clean and disinfect the patient's care area using an EPA registered disinfectant for appropriate contact times. Management of laundry, food service utensils, and medical waste should also be performed in accordance with routine procedures.

Diagnostic Testing

- Detection of measles-specific IgM antibody in serum and measles virus RNA by RT-PCR in respiratory specimens are most common methods for confirming measles infection.
- Healthcare providers should obtain (1) a serum samples and (2) a nasopharyngeal or throat swabs from patients with suspected infection, in accordance to NYC DOHMH [testing instructions](#).

Treatment and Immunization

- There are no antivirals and treatment is supportive.
- Vitamin A may be administered to children who are hospitalized for measles (see dosing for measles at www.redbook.solutions.aap.org).
- Measles vaccine is highly effective in preventing measles. Ensure your patients are fully vaccinated according to age-appropriate [schedules](#).

[Click here to read the NYC H+H System-wide Measles Guidance.](#)

References:

- CDC Measles Signs and Symptoms: <https://www.cdc.gov/measles/symptoms/signs-symptoms.html>
- CDC Measles Complications: <https://www.cdc.gov/measles/symptoms/complications.html>
- CDC Measles – For Healthcare Providers: <https://www.cdc.gov/measles/hcp/index.html>
- CDC Measles Diagnosis: <https://www.cdc.gov/measles/hcp/index.html#lab>
- Recent Red Book current US epi summary: <https://publications.aap.org/redbook/resources/15187/Red-Book-Online-Outbreaks-Measles?autologincheck=redirected>
- CDC's monthly update of US cases: <https://www.cdc.gov/measles/cases-outbreaks.html>
- MMWR global epi summary: https://www.cdc.gov/mmwr/volumes/72/wr/mm7246a3.htm?s_cid=mm7246a3_w&ACSTrackingID=DM120864-USCDC_1052&ACSTrackingLabel=COCA%20Now%3A%20Stay%20Alert%20for%20Measles%20Cases%20&deliveryName=DM120864-USCDC_1052
- CDC COCA alert: <https://emergency.cdc.gov/newsletters/coca/2024/012524.html>