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PUBLIC HEALTH
Advancing Health for All

Measles Factsheet and Guidelines

Measles is a highly contagious infectious disease that can cause serious complications. An estimated 136,000 people, predominantly children under 5 years of age, died from measles worldwide in 2022. Additionally, about 1 out of every 5 unvaccinated persons with measles are hospitalized in the U.S.

Incubation Period

The incubation period is typically 11–12 days from exposure to measles virus until the first symptoms appear.

Measles Symptoms

Symptoms begin to show 7 to 14 days after contact with the virus. The first symptoms, called prodromal symptoms, include fever, cough, runny nose, and/or red, watery eyes.

Tiny white spots (Koplik spots) may appear inside the mouth 2 to 4 days after symptoms begin.

A rash follows the first symptoms 3 to 5 days later and usually lasts 5 to 6 days. It usually begins as flat red spots that appear on the face at the hairline. They then spread downward to the neck, trunk, arms, legs, and feet.

Small raised bumps may also appear on top of the flat red spots. The spots may become joined together as they spread from the head to the rest of the body. When the rash appears, a person's fever may spike to more than 104° Fahrenheit.

Measles Infection Timeline

Day 0

Exposure to measles by breathing air contaminated by an infected person or touching an infected surface.

Day 0-3

Unvaccinated persons exposed to measles should get the MMR vaccine to prevent the course of the disease. *No isolation is necessary if an unvaccinated person receives a dose of the MMR vaccine within 72 hours of initial measles exposure. If vaccination does not take place then isolation is required for 21 days after first exposure.*

Day 8

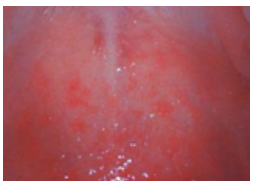
Start of very contagious period.

Day 10

Symptoms begin to present. Symptoms include high fever, cough, runny nose and/or red, watery eyes.

Day 12

Koplik Spots start to appear in the mouth.



Day 14

The rash will begin at the hairline and spread downward to the neck, trunk, arms, legs, and feet – in that order.

Day 18

Full-body rash has formed.

Day 22

Rash begins to subside; may return to school or work.

The most contagious period is from 4 days before the rash appears until 4 days after the rash appears.

This is to be used as a guide only and not an exact timeline of illness progression.

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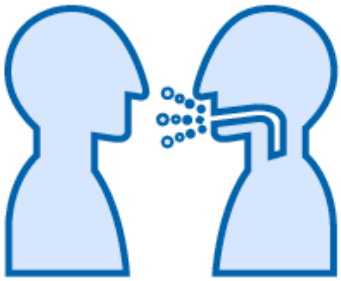
Photos of Measles Skin Rash

Transmission

Measles is a highly contagious virus that lives in the nose and throat mucus of an infected person. It can spread to others through coughing and sneezing. If other people breathe the contaminated air or touch the infected surface, then touch their eyes, noses, or mouths, they can become infected.



The virus can live for up to two hours on surfaces and in the air, meaning the illness may be transmitted in public spaces, even in the absence of person-to-person contact.

Only humans can spread measles. Measles is only spread from person to person. Animals do not get nor spread measles.

Infectious Period

If you have measles, up to 90% of the people close to you, who are not immune, will also become infected.

An infected person can spread measles to others even before knowing they have the disease. You can spread measles to others from 4 days before through 4 days after the rash appears.

Isolation Period

If you have been exposed to measles without presumptive evidence of measles immunity, you should be excluded 21 days after the last exposure.

Exposure to Measles

Susceptible persons who receive a dose of MMR vaccine as PEP (postexposure prophylaxis, or shots to prevent disease after having come in contact with them) within 72 hours of initial measles exposure may return to childcare, school, or work immediately. Children 6 months to 12 months of age may be given one dose of MMR if exposure occurred within 72 hours.

If you have been exposed to someone who has measles, or you suspect you have been in contact with someone who may have measles, immediately call your healthcare provider and let them know that you have been exposed to someone who has measles, and/or tell them about your symptoms so they can tell you what to do next.

Your healthcare provider can:

- Determine if you are immune to measles based on your vaccination record, age, or laboratory evidence.
- Make special arrangements to evaluate you, if needed, without putting other patients and medical office staff at risk.

If you have measles, you should stay home for four days after you develop the rash. Staying home is an important way to not spread measles to other people. Ask your healthcare provider when it is safe to be around other people again.

You should also:

- Cover your mouth and nose with a tissue when you cough or sneeze, and put your used tissue in the trash can. If you don't have a tissue, cough or sneeze into your upper sleeve or elbow, not your hands.
- Wash your hands often with soap and water.
- Avoid sharing drinks or eating utensils.
- Disinfect frequently touched surfaces, such as toys, doorknobs, tables, and counters. Standard household disinfectants will readily kill the measles virus.

Call your healthcare provider if you are concerned about your symptoms.

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Protection Against Measles

CDC considers you protected from measles if you have written documentation (records) showing at least one of the following:

- You received two doses of measles-containing vaccine, and you are:
  - A school-aged child (grades K-12)
  - An adult who will be in a setting that poses a high risk for measles transmission (including students at post-high school education institutions, healthcare personnel, and international travelers)
- You received one dose of measles-containing vaccine, and you are:
  - A preschool-aged child .
  - An adult who will not be in a high-risk setting for measles transmission.
  - A laboratory confirmed that you had measles at some point in your life.
  - A laboratory confirmed that you are immune to measles.
  - You were born before 1957.

For international travelers, CDC considers you protected from measles if you have written documentation (records) showing at least one of the following:

- You received one dose of measles-containing vaccine, and you are an infant aged 6–11 months.
- You received two doses of measles-containing vaccine, and you are a person 12 months or older.
- A laboratory confirmed that you had measles at some point in your life.
- A laboratory confirmed that you are immune to measles.
- You were born before 1957.

Measles Vaccine

The measles vaccine is very effective. Two doses of measles vaccine are about 97% effective at preventing measles if exposed to the virus. One dose is about 93% effective.

For the measles vaccine to work, the body needs time to produce protective antibodies in response to the vaccine. Detectable antibodies generally appear within just a few days after vaccination. People are usually fully protected after about 2 or 3 weeks. If you're traveling internationally, make sure to get up to date on all your measles shots. You should plan to be fully vaccinated at least 2 weeks before you depart. If your trip is less than 2 weeks away and you're not protected against measles, you should still get a dose of measles vaccine.

When you get measles vaccine, your immune system makes protective virus-fighting antibodies against the weakened vaccine virus. Measles vaccine protects you from wild-type measles because if you have been vaccinated and then are exposed to someone with measles, your body remembers how to fight off the wild-type virus. That's because the vaccine trained your immune system.

Very few people—about three out of 100—who get two doses of measles vaccine will still get measles if exposed to the virus. Experts aren't sure why. It could be that their immune systems didn't respond as well as they should have to the vaccine. But the good news is, fully vaccinated people who get measles seem more likely to have a milder illness. And fully vaccinated people seem also less likely to spread the disease to other people, including people who can't get vaccinated because they are too young or have weakened immune systems.

High Risk Populations

People at high risk for complications include:

- Infants and children under 5 years of age
- Adults over 20 years of age
- Pregnant people
- People with weakened immune systems, such as from leukemia and HIV infection