

Measles (Rubeola)

Information Sheet for General Public

What is measles?

Measles is a highly contagious virus that can spread through the air when an infected person coughs or sneezes. Measles can be prevented by vaccination with the MMR vaccine. The MMR vaccine is very safe and effective and protects against three diseases: measles, mumps, and rubella.

What are the symptoms of measles?

Measles typically begins with:

- High fever, and
- Cough, or
- Runny nose (also known as coryza), or
- Red, watery eyes (also known as conjunctivitis)

Two to 3 days after symptoms begin, tiny white spots (also known as Koplik spots) may appear inside the mouth. See Figure 1.

Two to 6 days after symptoms begin, a rash breaks out. It usually begins as flat red spots (see Figure 2.) that appear on the face/hairline and spreads 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 105°F. The rash can last 4-7 days and fades in the same order it appears, from the head to the rest of the body.

Other symptoms include diarrhea, lack of appetite, and generalized lymph node swelling.

How does the measles virus spread?

Measles is a highly contagious virus that lives in the nose and throat of an infected person. It can spread to others through coughing and sneezing. Measles virus can live for up to 2 hours on a surface or in an airspace after an infected person coughs or sneezes. If someone breathes the

Figure 1. Images retrieved from <http://phil.cdc.gov/phil/home.asp>



Figure 2. Images retrieved from <http://phil.cdc.gov/phil/home.asp>



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contaminated air or touches an infected surface, then touches their eyes, nose, or mouth, they can become infected.

Who is at risk of getting measles?

People of any age who are not immune to measles.

How long does it take to show signs of measles after being exposed?

Measles symptoms usually appear 8 to 12 days after contact with the virus and may include high fever, cough, runny nose, and watery eyes. Symptoms can appear as early as 7 days and as late as 21 days. A rash typically appears 2 to 6 days after the initial symptoms start.

How long can a person with measles be contagious to others?

Infected people can spread measles to others from 4 days before to 4 days after the rash appears. Persons with weakened immune systems may have prolonged excretion of the virus and can be contagious for as long as they have symptoms.

How serious is measles?

Measles can be serious for all age groups. However, children younger than 5 years and adults older than 20 years are more likely to suffer from measles complications such as ear infections, diarrhea, and other severe complications like pneumonia (infection of the lungs), encephalitis, (swelling of the brain) and even death. Measles may cause pregnant women to have a spontaneous abortion, give birth prematurely, or have a low-birth-weight baby.

How common is measles?

Measles was officially eliminated from the United States in 2000, meaning there is no measles spreading within the country and new cases are only found when someone contracts measles abroad and returns to the country and has contact with at-risk populations (unvaccinated or undervaccinated against measles).

As of April 2024, a total of 126 measles cases were reported by 19 jurisdictions: Arizona, California, Florida, Georgia, Illinois, Indiana, Louisiana, Maryland, Michigan, Minnesota, Missouri, New Jersey, New York City, New York State, Ohio, Pennsylvania, Virginia, Washington, and West Virginia. There have been 7 outbreaks (defined as 3 or more related cases) reported in 2024, and 69% of cases (86 of 125) are outbreak-associated. The last reported case of measles in West Virginia was in April 2024 following international travel.

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How is measles diagnosed?

A doctor evaluates a patient's symptoms and orders laboratory tests to diagnose measles.

Is there a treatment for measles?

There is no specific treatment for measles. Supportive care can be provided to relieve symptoms and address complications.

Can measles be prevented?

Yes. There are safe and effective vaccines to prevent measles: MMR (measles, mumps, and rubella) vaccine and MMRV (measles, mumps, rubella, and varicella) vaccine. See Measles Vaccination Information on page 4 for additional details.

Can someone get measles more than once?

No. Measles infection produces lifelong immunity to the virus.

Exposure & Isolation Information

What if you or your child is exposed to a person with measles?

Contact your healthcare provider or local health department immediately to determine if you or your child are immune to measles. Although there is no treatment for measles, steps can be taken to prevent you from becoming ill if you are exposed.

If you suspect that you or your child may have measles, IMMEDIATELY call your doctor, and let them know about your symptoms so that they can tell you what to do next. Your doctor can make special arrangements to evaluate you, if needed. To avoid potentially exposing others to measles, it is important to call your doctor before visiting the office.

What if you or your child is diagnosed with measles?

If you or your child is diagnosed with measles, you should stay home and avoid contact with people (isolate) until 4 days after the rash appeared. Staying home is an important way to prevent measles from spreading.

How long should someone with measles isolate?

People should isolate for 4 complete days after they develop a rash. People with measles should not leave their home or isolation during those days except for a medical emergency.

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Measles Vaccination Information

There are safe and effective vaccines to prevent measles: MMR (measles, mumps, and rubella) vaccine and MMRV (measles, mumps, rubella, and varicella) vaccine.

How effective is the measles vaccine?

One dose of the MMR vaccine is about 93% effective at preventing measles; two doses of MMR vaccine are about 97% effective.

Who should get vaccinated?

- Children should get 2 doses of the MMR vaccine – the first dose at 12-15 months of age and the second dose at 4-6 years of age.
- Adults born after 1957 with no evidence of immunity should receive at least one dose of MMR vaccine.
- Students at post-high school educational institutions and healthcare workers with no evidence of immunity should receive two doses separated by at least 28 days.
- International travelers – see Travel Recommendations on page 6.

What is considered evidence of immunity?

Only written documentation of age-appropriate vaccination, laboratory evidence of immunity, laboratory confirmation of disease, or birth before 1957 are considered evidence of being immune to measles.

Why are people born before 1957 considered immune to measles?

People who were born before 1957 lived through several years before the first measles vaccine became available. Before 1957, measles was widespread, and people were very likely to have had measles as children. Infection with the measles virus results in lifelong immunity.

Who should NOT get vaccinated?

Anyone who has ever had a life-threatening allergic reaction to the antibiotic neomycin, any other component of the MMR vaccine, or to a previous dose of the MMR or MMRV vaccine. Tell your doctor if you have any severe allergies.

Pregnant women should not get MMR vaccine. Women should avoid getting pregnant for 4 weeks after vaccination with MMR vaccine.

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Why hasn't the MMR vaccine formula changed over the years?

The Edmonston-Enders strain vaccine has been the only measles vaccine used in the United States since 1968. The MMR vaccine is very effective at protecting people against measles, mumps, and rubella, and preventing the complications caused by these diseases. People who receive MMR vaccination according to the U.S. vaccination schedule are usually considered protected for life against measles and rubella. The MMR vaccine is very safe. Most people who get MMR vaccine do not have any serious problems with the vaccine. Getting MMR vaccine is much safer than getting measles, mumps, or rubella. Some common side effects of the MMR vaccine include sore arm from the shot, mild fever, mild rash, temporary pain, and stiffness in the joints. These are seen mostly in teenage or adult women who did not already have immunity to the rubella component of the vaccine.

Can the measles virus mutate and make the vaccine ineffective?

Unlike other viruses, the measles virus does not mutate in the same way. Measles is not likely to evade vaccine-induced immunity because surface proteins needed for measles to infect cells do not tolerate mutations. Mutations render the proteins ineffective and make it unable to infect host cells. A person who is fully vaccinated against the measles virus will usually be protected for life.

Where can I get a measles vaccine?

You can get an MMR vaccine through your primary care physician, local health department, or other healthcare clinic. Pharmacists in West Virginia are not permitted to administer the MMR vaccine at this time. Visit vaccinefinder.org and select "MMR" to find additional locations where the vaccine is available.

I do not have insurance. Where can I get a measles vaccine?

The Vaccines for Children Program provides free vaccines for children with Medicaid or who lack insurance. Adults without insurance can receive vaccine from their physician, WV Health Right, or any federally qualified health center.

Do people who got the killed measles vaccine in the 1960s need to be revaccinated with the current, live measles vaccine?

Yes, talk to your doctor about getting revaccinated with the current MMR vaccine. If you're unsure whether you fall into this group, you could ask your doctor to test your blood to determine whether you are immune, or you can get a dose of the MMR vaccine. There is no harm in getting another dose of the MMR vaccine.

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I am an adult now but only got one dose of measles vaccine as a child. Do I need a second dose?

Adults born after 1957 need at least one dose of measles vaccine or documentation of immunity.

Adults in high-risk settings should make sure they have two doses separated by at least 28 days. This includes students at post-high school education institutions, healthcare personnel, international travelers, and people who public health authorities determine are at increased risk for getting measles during a measles outbreak.

I received an MMR vaccine. How soon am I protected?

People are usually fully protected 2 to 3 weeks after receiving the vaccine.

Do I ever need a booster?

No. People who received two doses of measles vaccine as children according to the U.S. vaccination schedule are protected for life.

Can the measles vaccine give me the measles?

No. The MMR vaccine does not cause measles infection. It is possible for some people to develop a measles-like rash after being vaccinated, but the rash is much milder than measles and cannot be spread to other people. If you develop measles after getting the vaccine, you were likely exposed to the measles virus before you received the vaccine.

What are the risks from getting an MMR vaccine?

Getting the MMR vaccine is much safer than getting any of the three diseases the vaccine prevents (measles, mumps, and rubella). Most people who get an MMR vaccine do not have any problems; however, like with any medicine, a vaccine can cause allergic reactions or mild side effects in some people. You should discuss the MMR vaccine with your provider to determine risks.

What should I do if I'm unsure of my immunity to measles?

If you do not have written documentation of measles immunity, you should seek the advice of your medical provider to check for immunity and discuss receiving the MMR vaccine.

Where can I obtain vaccination records?

You can obtain vaccination records at your physician's office, your county's Board of Education office, or by calling the West Virginia Immunization Registry at (877) 408-8930.

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Can I still get measles if I am fully vaccinated?

Very few people—about 3 out of 100—who get 2 doses of measles vaccine will still get measles if exposed to the virus. Fully vaccinated people are more likely to have a milder illness and less likely to spread the disease to others.

Travel Recommendations

What are the international travel recommendations?

Infants aged 6-11 months should receive 1 dose of the MMR vaccine before international travel. Infants who receive the MMR vaccine before their first birthday should receive 2 additional doses (1 dose at age 12–15 months and another dose at least 28 days after the first dose).

Children 12 months and older and adults should have two doses of MMR vaccine given at least 28 days apart before international travel.

What are the domestic travel recommendations?

When considering domestic travel, careful consideration should be given to the risk of exposure while visiting another area. If you plan to travel to an area that has measles cases and are unsure of your immunity to measles, you should talk to your provider about the risk of exposure.

Measles Prevention in West Virginia

What is West Virginia doing to protect its residents from getting measles?

West Virginia registered child daycares and primary and secondary public and private schools require selected age-appropriate immunization. West Virginia does not allow school children to be exempted from vaccination for religious or philosophical reasons. For medical exemptions, West Virginia requires a state-approved medical exemption.

West Virginia has a pediatric vaccine safety net which ensures patients under the age of 18 years can get vaccinated at local health departments.

Measles is immediately notifiable to the local and state health departments. Local health departments investigate measles as soon as it is reported.

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Helpful Links for Additional Measles Information

WV DHHR Office of Epidemiology & Prevention Services Measles Information:

<https://oeps.wv.gov/measles/pages/default.aspx>

CDC Measles Cases and Outbreaks: [https://www.cdc.gov/measles/cases-outbreaks.html#:~:text=There%20have%20been%207%20outbreaks,58\)%20were%20outbreak%20associated](https://www.cdc.gov/measles/cases-outbreaks.html#:~:text=There%20have%20been%207%20outbreaks,58)%20were%20outbreak%20associated)

CDC Measles in the U.S. FAQ:

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

CDC for Healthcare Providers:

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

CDC Measles Vaccination:

<https://www.cdc.gov/measles/vaccination.html>

CDC for Public Health Professionals:

<https://www.cdc.gov/measles/stats-surv.html>

CDC Outbreak Toolkit for Healthcare Providers: <https://www.cdc.gov/measles/toolkit/healthcare-providers.html>

CDC Vaccine Safety Measles, Mumps, Rubella (MMR) Vaccine

[https://www.cdc.gov/vaccinesafety/vaccines/mmr-vaccine.html#:~:text=The%20Measles%2C%20Mumps%2C%20Rubella%20\(,any%20serious%20problems%20with%20it.](https://www.cdc.gov/vaccinesafety/vaccines/mmr-vaccine.html#:~:text=The%20Measles%2C%20Mumps%2C%20Rubella%20(,any%20serious%20problems%20with%20it.)

American Society for Microbiology Why Do Some Vaccines Work Better Than Others?

<https://asm.org/articles/2024/march/why-some-vaccines-work-better-than-others#:~:text=Compared%20to%20some%20other%20viruses,other%20ssRNA%20viruses%2C%20it%20does.>

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