MEASLES FAQ: general information for the public

Q: Am I protected against measles?

A: 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(n)—
  - school-aged child (grades K-12)
  - 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(n)—
  - preschool-aged child
  - adult who will not be in a high-risk setting for measles transmission
- A laboratory confirmation that you had measles at some point in your life
- A laboratory confirmation that you are immune to measles
- You were born before 1957

Q: What should I do if I'm unsure whether I'm immune to measles?

A: If you're unsure whether you're immune to measles, you should first try to find your vaccination records or documentation of measles immunity. If you do not have written documentation of measles immunity, you should get vaccinated with measles-mumps-rubella (MMR) vaccine. Another option is to have a doctor test your blood to determine whether you're immune. But this option is likely to cost more and will take two doctor's visits. There is no harm in getting another dose of MMR vaccine if you may already be immune to measles (or mumps or rubella).

Q: I've been exposed to someone who has measles. What should I do?

A: Immediately call your doctor and let them know that you have been exposed to someone who has measles. Your doctor can:

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

Q: Could I still get measles if I am fully vaccinated?

A: 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 are much more likely to have a milder illness. And fully vaccinated people are 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.

Q: Do I ever need a booster vaccine for measles?

A: No. CDC considers people who received two doses of measles vaccine as children according to the U.S. vaccination schedule protected for life, and they do not ever need a booster dose.

Adults need at least one dose of measles vaccine, unless they have evidence of immunity. Adults who are going to be in a setting that poses a high risk for measles transmission should make sure they have had two doses separated by at least 28 days. These adults include students at post-high school education institutions, healthcare personnel, and international travelers.

If you're not sure whether you were vaccinated, talk with your doctor.

Q: How common was measles in the United States before the vaccine?

A: Before the measles vaccination program started in 1963, about 3 to 4 million people got measles each year in the United States. Of those people, 400 to 500 died, 48,000 were hospitalized, and 4,000 developed encephalitis (brain swelling) from measles.

Q: What are the vaccine coverage levels like in the United States?

A: Nationally, the rates of people vaccinated against measles have been very stable since the Vaccines for Children (VFC) program began in 1994. For 2022-2023 school year, nationwide vaccination coverage of kindergarten children with MMR is 93.1%. However, MMR vaccination coverage levels continue to vary by state, with MMR coverage levels of <90% observed in 12 states and local areas during the same time period. At the county or lower levels, vaccine coverage rates may vary considerably. Pockets of unvaccinated people can exist in states with high vaccination coverage, underscoring considerable measles susceptibility at some local levels.

If you are not immune to measles, MMR vaccine or a medicine called immune globulin may help reduce your risk developing measles. Your doctor can help to advise you and monitor for signs and symptoms of measles.

If you do not get MMR or immune globulin, you should stay away from settings where there are susceptible people (such as school, hospital, or childcare) until your doctor and health department says it's okay to return. This will help ensure that you do not spread it to others.

Q: I think I have measles. What should I do?

A: Immediately call your doctor and let them know about your symptoms you are having. Your doctor can:

- determine if you are immune to measles based on your vaccination record or if you had measles in the past, and
- make special arrangements to evaluate you, if needed, without putting other patients and medical office staff at risk.

Q: My doctor or someone from the health department told me that I have measles. What should I do?

A: 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. Talk to your doctor to discuss when it is safe to return.

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, counters.

Call your doctor if you are concerned about your symptoms.

Q: How effective is the measles vaccine?

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

What if the individual is not vaccinated at all?

Assess their age, if they are within the recommended age range they should receive one dose and depending on their age, return to the schedule or vaccinate with the second dose after 28 days, if needed.

How does being born before 1957 confer immunity to measles?

People born before 1957 lived through several years of epidemic measles before the first measles vaccine was licensed in 1963. As a result, these people are very likely to have had measles disease. Surveys suggest that 95% to 98% of those born before 1957 are immune to measles. Persons born before 1957 can be presumed to be immune. However, if serologic testing indicates that the person is not immune, at least 1 dose of MMR should be administered.

What are the contraindications and precautions for MMR vaccine?

Contraindications

- history of a severe (anaphylactic) reaction to neomycin (or other vaccine component) or following previous dose of MMR
- pregnancy
- severe immunosuppression from either disease or therapy

Precautions

- receipt of an antibody-containing blood product in the previous 3–11 months, depending on the type of blood product received. See www.cdc.gov/vaccines/hcp/acip-recs/general-recs/timing.html, Table 3 for more information on this issue
- moderate or severe acute illness with or without fever
- history of thrombocytopenia or thrombocytopenic purpura

Sources:

CDC Immunization Schedules: https://www.cdc.gov/vaccines/schedules/hcp/index.html

CDC Measles, mumps, and rubella vaccination: www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/mmr.html

The Pink Book: Measles (Chapter 13) https://www.cdc.gov/vaccines/pubs/pinkbook/meas.html

VPD Surveillance Manual: Measles (Chapter 7) https://www.cdc.gov/vaccines/pubs/surv-manual/chpt07-measles

Immunization Action Coalition http://www.immunize.org/askexperts/experts_mmr.asp

Measles Vaccination: information and FAQs

The MMR vaccine is very safe and effective. Two doses of MMR vaccine are about 97% effective at preventing measles; one dose is about 93% effective.

Children

Routine vaccination

- 2-dose series at 12–15 months and 4–6 years
- ***Minimum age: 12 months***
- The 2nd dose may be given as early as 4 weeks after the 1st dose

Catch-up vaccination

- Unvaccinated children and adolescents: 2 doses at least 4 weeks apart

International travel

- **Infants 6–11 months:** 1 dose before departure. Revaccinate with 2 doses at 12–15 months (12 months for children in high-risk areas) and 2nd dose as early as 4 weeks later
- **Unvaccinated children 12 months and older:** 2 doses at least 4 weeks apart before departure

Adults

General information

- Administer 1 dose of measles, mumps, and rubella vaccine (MMR) to adults with no evidence of immunity to measles, mumps, or rubella

Presumptive Evidence of Immunity

Acceptable presumptive evidence of measles immunity includes at least one of the following:

- written documentation of adequate vaccination
    - receipt of one or more doses of a measles-containing vaccine administered on or after the first birthday for preschool-age children and adults not at high risk, and
    - two doses of measles-containing vaccine for school-age children and adults at high risk for exposure transmission (i.e., health care personnel, international travelers, and students at post-high school educational institutions); or
- laboratory evidence of immunity; or
- birth before 1957; or
- laboratory confirmation of disease.

Persons who do not meet the above criteria are considered susceptible and should be vaccinated unless contraindicated.

NOTE: documentation of a health care provider-diagnosed disease without laboratory confirmation is not considered evidence of immunity

Special populations and settings

MMR is contraindicated for pregnant women and adults with severe immunodeficiency. Please consult a medical provider for additional information or clinical consultation as warranted.

- **Pregnant women: A**dminister MMR after pregnancy and before discharge from health care facility.
- **Breastfeeding women**: May receive the MMR vaccination without restriction. It is safe for breastfeeding women to receive MMR vaccination. Breastfeeding does not interfere with the response to MMR vaccine, and the baby will not be affected by the vaccine through breast milk.
- **Women of childbearing age** with no evidence of immunity: Administer 1 dose of MMR.
- **Persons ≥ 12 months with HIV infection who do not have evidence of current severe immunosuppression** and no evidence of immunity to measles, mumps, or rubella: Administer 2 doses of MMR at least 28 days apart.
- **Students in postsecondary educational institutions, international travelers**, and **household contacts of immunocompromised persons** with no evidence of immunity: Administer 2 doses of MMR at least 28 days apart (or 1 dose of MMR if previously administered 1 dose of MMR)
- **Health care personnel** with no evidence of immunity: Administer 2 doses of MMR at least 28 days apart
- **Health care settings:** Persons who work in health care settings (including volunteers, trainees, nurses, physicians, technicians, receptionists, and other clerical and support staff) are at increased risk of exposure to measles and at increased risk of transmission to persons at high risk of severe measles. All persons who work in such settings should have presumptive evidence of immunity to measles to prevent any potential outbreak (see previous page 'Presumptive Evidence of Immunity').
- **Adults who received killed (inactivated) measles vaccine**: A very small proportion of adults (less than 5%) may have received killed measles vaccine from 1963 through 1967 during childhood. The ACIP recommends re-vaccinating anyone who received measles vaccine of unknown type, inactivated measles vaccine, or further attenuated measles vaccine accompanied by IG or high-titer measles immune globulin (no longer available in the United States) during these years.

Postexposure vaccination and use of immunoglobulin to prevent measles in exposed susceptible persons

Presumptive evidence of measles immunity should be assessed for all identified contacts.

The MMR vaccine, if administered within 72 hours of initial measles exposure, and immunoglobulin (IG), if administered within six days of exposure, may provide some protection or modify the clinical course of disease among susceptible persons. However, vaccination should be offered at any interval following exposure in order to offer protection from future exposures. An individual should not receive both MMR vaccine and IG following an exposure.

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.

Individuals who are at risk for severe disease and complications from measles (e.g., infants <12 months of age, pregnant women without evidence of measles immunity, and severely immunocompromised persons regardless of vaccination status because they might not be protected by the vaccine) should receive IG within six days of exposure.

- All infants younger than 12 months who have been exposed to measles. The dose of IGIM is 0.5 mL/kg of body weight; the maximum dose is 15 mL. Alternatively, MMR vaccine can be given instead of IGIM to infants age 6 through 11 months, if it can be given within 72 hours of exposure.
- Pregnant women without evidence of measles immunity who are exposed to measles should receive an intravenous IG (IGIV) dose of 400 mg/kg of body weight.
- Severely immunocompromised people, irrespective of evidence of measles immunity or vaccination, who have been exposed to measles should receive an IGIV dose of 400 mg/kg of body weight.
- Other people who do not have evidence of measles immunity can receive an IGIM dose of 0.5 mL/kg of body weight. However, priority should be given to people who were exposed to measles in settings where they have intense, prolonged close contact (such as household, child care, classroom, etc.). The maximum dose of IGIM is 15 mL.

As with vaccine, after receipt of IG individuals cannot return to health care settings. In other settings such as childcare, school, or work, factors such as immune status, intense or prolonged contact, and presence of populations at risk, should be taken into consideration before allowing these individuals to return. These factors may decrease the effectiveness of IG or increase the risk of disease and complications depending on the setting to which they are returning.

Frequently Asked Questions

We have measles cases in our community. How can I best protect the young children in my practice?

First of all, make sure all your patients are fully vaccinated according to the ACIP immunization schedule.

In certain circumstances, MMR is recommended for infants age 6 through 11 months. Give infants this age a dose of MMR before international travel. In addition, consider measles vaccination for infants as young as age 6 months as a control measure during a U.S. measles outbreak. Consult your state health department to find out if this is recommended in your situation. Do not count any dose of MMR vaccine as part of the 2-dose series if it is administered before a child's first birthday. Instead, repeat the dose when the child is age 12 months.

In the case of a local outbreak, you also might consider vaccinating children age 12 months and older at the minimum age (12 months, instead of 12 through 15 months) and giving the second dose 4 weeks later (at the minimum interval) instead of waiting until age 4 through 6 years.

Finally, remember that infants too young for routine vaccination and people with medical conditions that contraindicate measles immunization depend on high MMR vaccination coverage among those around them. Be sure to encourage all your patients and their family members to get vaccinated if they are not immune.

Many people age 60 years and older do not have records indicating what type of measles vaccine they received as children in the early 1960s. What measles vaccine was most frequently given in that time period? That guidance would assist many older people who would prefer not to be revaccinated.

Both killed and live attenuated measles vaccines became available in 1963. Live attenuated vaccine was used more often than killed vaccine. The killed vaccine was found to be ineffective and people who received it should be revaccinated with live vaccine.

Without a written record, it is not possible to know what type of vaccine an individual may have received. So persons born during or after 1957 who received killed measles vaccine or measles vaccine of unknown type, or who cannot document having been vaccinated or having laboratory-confirmed measles disease should receive at least 1 dose of MMR. Some people at increased risk of exposure to measles (such as healthcare professionals and international travelers) should receive 2 doses of MMR separated by at least 4 weeks.

Do people who received MMR in the 1960s need to have their dose repeated?

Not necessarily. People who have documentation of receiving live measles vaccine in the 1960s do not need to be revaccinated. People who were vaccinated prior to 1968 with either inactivated (killed) measles vaccine or measles vaccine of unknown type should be revaccinated with at least one dose of live attenuated measles vaccine. This recommendation is intended to protect people who may have received killed measles vaccine which was available in the United States in 1963 through 1967 and was not effective. Persons vaccinated before 1979 with either killed mumps vaccine or mumps vaccine of unknown type who are at high risk for mumps infection (such as persons who work in a healthcare facility) should be considered for revaccination with 2 doses of MMR vaccine.

My child is 6-12 months old, can they get an MMR vaccine?

- If the child is younger than 6 months of age they cannot receive the MMR vaccine as it is not recommended.
- If the child is older than 6 months and younger than 12 months, they can get an MMR if they are going to an area that is considered endemic for measles transmission. Please consult public health for current list of geographic areas. This would be considered an invalid dose but would protect them during travel. Do not count any dose of MMR vaccine as part of the 2-dose series if it is administered before a child's first birthday. Instead, repeat the dose when the child is age 12 months.

My child is 3 years old and has received 1 dose of the MMR vaccine. Can they get their booster early?

Yes. The recommended spacing between first and second doses of MMR vaccine is at least 4 weeks (28 days). They would still be on schedule and would not need an additional dose between 4-6 years.

My child is 4-6 years old. If they get the booster early, does that change the vaccine schedule?

Children 4-6 years in age are eligible to get the second dose of MMR. The vaccine schedule would remain the same.

Why is a second dose of MMR necessary?

Between 2% and 5% of people do not develop measles immunity after the first dose of vaccine. This occurs for a variety of reasons. The second dose is to provide another chance to develop measles immunity for people who did not respond to the first dose.

Q: Where do cases of measles that are brought into the United States come from?

A: Unvaccinated travelers can bring measles into the United States from any country where the disease still occurs or where outbreaks are occurring including Europe, Africa, Asia, and the Pacific. In 2022, there were an estimated 9 million measles cases worldwide and 136,000 deaths, mostly children. In recent years, many measles cases came into the United States from common U.S. travel destinations, such as the United Kingdom, Austria, the Philippines, and Romania, that are experiencing outbreaks of measles. CDC has a travel alert related to the global measles situation that can be read here https://wwwnc.cdc.gov/travel/notices/level1/measles-globe.

Q: Why have there been more measles cases in the United States in recent years?

A: In 2011, 2014, 2018, and 2019, states reported higher numbers of measles cases compares to other years post-elimination. Since December 2023, the US has seen a large increase in cases, with more cases already reported in 2024 than all of 2023. CDC experts attribute this to:

- More measles cases than usual in countries to which Americans often travel (such as the United Kingdom, Austria, and the Philippines), and therefore more measles cases coming into the U.S., and/or
- More spread of measles in U.S. communities with pockets of unvaccinated people.

Q: Has measles been eliminated from the United States?

A: Yes. In 2000, the United States declared that measles was eliminated from this country. The United States eliminated measles because it has a highly effective measles vaccine, a strong vaccination program that achieves high vaccine coverage in children, and a strong public health system for detecting and responding to measles cases and outbreaks.

Q: What does "measles elimination" mean?

A: CDC defines measles elimination as the absence of continuous disease transmission for 12 months or more in a specific geographic area. Measles is no longer endemic (constantly present) in the United States.

Q: If measles is eliminated, why do people still get it in the United States?

A: Every year, unvaccinated travelers (Americans or foreign visitors) get measles while they are in other countries and bring measles into the United States. They can spread measles to other people who are not protected against measles, which sometimes leads to outbreaks. This can occur in communities with unvaccinated people.

Most people in the United States are protected against measles through vaccination, so measles cases in the U.S. are uncommon compared to the number of cases before a vaccine was available. Since 2000, when public health officials declared measles eliminated from the U.S., the annual number of people reported to have measles ranged from a low of 13 people in 2020 to a high of 1274 people in 2019.

Q: Is measles a concern for the United States?

A: Yes. Since measles is still common in many countries, travelers will continue to bring this disease into the United States. Measles is highly contagious, so anyone who is not protected against measles is at risk of getting the disease. People who are unvaccinated for any reason, including those who refuse vaccination, risk getting infected with measles and spreading it to others. And they may spread measles to people who cannot get vaccinated because they are too young or have specific health conditions.

Q: Could measles ever re-establish itself in the United States?

A: Yes, measles could become endemic (constant presence of a disease in an area) in the United States again, especially if vaccine coverage levels drop. This can happen when people

- forget to get vaccinated on time,
- don't know that they need a vaccine dose (this is most common among adults), or
- refuse vaccines for religious, philosophical or personal reasons.

Research shows that people who refuse vaccines tend to group together in communities. When measles gets into communities with pockets of unvaccinated people, outbreaks are more likely to occur. It can be difficult to control the spread of the disease in these communities, which could lead to the virus re-establishing itself in the United States.

High sustained measles vaccine coverage and rapid public health response are critical for preventing and controlling measles cases and outbreaks.

Q: Will the United States ever get rid of measles completely?

A: Yes, it's possible. The first step is to eliminate measles from each country and region of the world. Once this happens, there will be no place from which measles can spread.

All member states in the six World Health Organizations regions have committed to eliminating measles, however progress slowed during the COVID-19 pandemic. The current goal is complete elimination by 2030. Once every country eliminates a disease, health officials consider the disease "eradicated" from the world.

Measles and the Vaccine (Shot) to Prevent It

Last updated April 2017

The best way to protect against measles is to get the measles-mumps-rubella shot (called the MMR shot). Doctors recommend that all children get the MMR shot.

Why should my child get the MMR shot?

The MMR shot:

- Protects your child from measles, a potentially serious disease, as well as mumps and rubella.
- Prevents your child from getting an uncomfortable rash and high fever from measles.
- Keeps your child from missing school or childcare (and keeps you from missing work to care for your sick child).

Is the MMR shot safe?

Yes. The MMR shot is very safe, and it is effective at preventing measles (as well as mumps and rubella). Vaccines, like any medicine, can have side effects. But most children who get the MMR shot have no side effects.

What are the side effects?

Most children do not have any side effects from the shot. The side effects that do occur are usually very mild, such as a fever, rash, soreness or swelling where the shot was given, or temporary pain and stiffness in the joints (mostly in teens and adults). More serious side effects are rare. These may include high fever that could cause a seizure.

Is there a link between the MMR shot and autism?

No. Scientists in the United States and other countries have carefully studied the MMR shot. None has found a link between autism and the MMR shot.

What is measles?

Measles is a serious respiratory disease (in the lungs and breathing tubes) that causes a rash and fever. It is very contagious. In rare cases, it can be deadly.

What are the symptoms of measles?

Measles starts with a fever that can get very high. Some of the other symptoms that may occur are:

- Cough, runny nose, and red eyes
- Rash of tiny, red spots that start at the head and spread to the rest of the body
- Diarrhea
- Ear infection

Doctors recommend that your child get 2 doses of the MMR shot for best protection. Your child will need one dose at each of the following ages:

- 12 through 15 months
- 4 through 6 years

Infants 6 months to 11 months old should have 1 dose of MMR shot before traveling to another country.

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Is it serious?

Measles can be dangerous, especially for babies and young children. From 2001-2013, 28% of children younger than 5 years old who had measles had to be treated in the hospital.

For some children, measles can lead to:

- Pneumonia (a serious lung infection)
- Lifelong brain damage
- Deafness
- Death

How does measles spread?

Measles spreads when a person infected with the measles virus breathes, coughs, or sneezes. It is very contagious. You can catch measles just by being in a room where a person with measles has been, up to 2 hours after that person is gone. And you can catch measles from an infected person even before they have a measles rash. Almost everyone who has not had the MMR shot will get measles if they are exposed to the measles virus.

Where do measles cases in the United States come from?

Every year, unvaccinated U.S. residents get measles while they are abroad and bring the disease into the United States and spread it to others. Measles is common in other parts of the world, including countries in Europe, Asia, the Pacific Islands, and Africa. Worldwide, about 20 million people get measles each year. When people with measles travel into the United States, they can spread the disease to unvaccinated people including children too young to be vaccinated.

How many measles cases are there in the United States each year?

From year to year, measles cases can range from roughly less than 100 to a couple hundred. However, in some years like 2014, there were more measles cases than usual. In 2014, 667 people from 27 states were reported as having measles. Most of these people got measles in the United States after being exposed to someone who got measles while in another country.

Where can I learn more about the MMR shot and my child?

To learn more about the MMR shot, talk to your child's doctor, call 1-800-CDC-INFO, or visit www.cdc.gov/vaccines/parents.

The Centers for Disease Control and Prevention, American Academy of Family Physicians, and the American Academy of Pediatrics strongly recommend children receive all vaccines according to the recommended schedule.

MEASLES:
Important considerations

suspect | report | confirm | prevent

- As of March 2024, cases of measles are occurring in 17 states in the U.S.
- Europe is also experiencing multiple measles outbreaks, with 7 deaths reported in the first 5 weeks of 2024.
- The last case of measles reported in Montana was in 1990.

WHO'S AT RISK

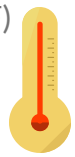
- Babies who are too young for vaccine (<12 months)
- Immunocompromised people
- Pregnant women
- Unvaccinated people

INCUBATION

Average: **14 days**
(range 7-21 days)

SYMPTOMS

- High fever (up to 104 F)
- Runny nose
- Cough
- Red, watery eyes
- Rash (spreads from head to toe)
- Koplik spots (sometimes)



Measles complications can include: pneumonia, encephalitis, and/or death

How infectious is measles? **One person can infect 12-18 susceptible people**

RISK FACTORS

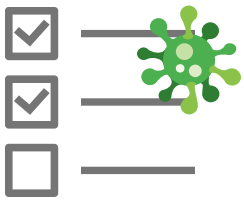
Travel to a place where measles is endemic or an outbreak is occurring

Contact with someone who has measles

Not receiving a measles vaccine (MMR)

Visitors from areas where measles is occurring

SUSPECT



Evaluate signs and symptoms and risk factors to determine **if measles is high on the suspicion list.**

REPORT

Measles is **immediately reportable** to local public health. Reporting should not wait until lab results are available. If you suspect measles, report it ASAP.

CONFIRM

A diagnosis of measles is confirmed by prompt laboratory testing. **The gold standard** is PCR and can be performed as soon as possible following rash onset. This should be paired with a blood test that detects IgM antibody production.

PREVENT

The measles vaccine (MMR) is extremely effective against preventing the disease in those who are >12 months of age. **Two doses of MMR are 97% effective.**

For more information, contact your local health department

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