Centers for Disease Control and Prevention

Vaccine Safety

Vaccine Safety Home

Measles, Mumps, Rubella (MMR) Vaccine

Safety Information

Measles, Mumps, and Rubella Diseases and How to Protect Against Them

Measles causes fever, rash, cough, runny nose, and red, watery eyes. Complications can include ear infection, diarrhea, pneumonia, brain damage, and death.

Mumps causes fever, headache, muscle aches, tiredness, loss of appetite, and swollen salivary glands. Complications can include swelling of the testicles or ovaries, deafness, inflammation of the brain and/or tissue covering the brain and spinal cord (encephalitis/meningitis) and, rarely, death.

Rubella, causes fever, sore throat, rash, headache, and red, itchy eyes. If a woman gets rubella while she is pregnant, she could have a miscarriage, or her baby could be born with serious birth defects.

You can protect against these diseases with safe, effective vaccination.

Child and Adult Immunization Schedules
Get CDC's official recommended immunization schedules for children, adolescents, and adults.

MMR Vaccine Side Effects

The Measles, Mumps, Rubella (MMR) vaccine is very safe, and it is effective at preventing measles, mumps, and rubella. Vaccines, like any medicine, can have side effects. Most people who get MMR vaccine do not have any serious problems with it. Getting MMR vaccine is much safer than getting measles, mumps, or rubella.

Common Side Effects of MMR Vaccine

- Sore arm from the shot
- Fever
- Mild rash
- Temporary pain and stiffness in the joints, mostly in teenage or adult women who did not already have immunity to the rubella component of the vaccine

MMR vaccine has been linked with a very small risk of febrile seizures (seizures or jerking caused by fever). Febrile seizures following MMR vaccination are rare and are not associated with any long-term effects. Because the risk of febrile seizures increases as infants get older, it is recommended that they get vaccinated as soon as recommended.

Some people may experience swelling in the cheeks or neck. MMR vaccine rarely causes a temporary low platelet count, which can cause a bleeding disorder that usually goes away without treatment and is not life threatening.

Extremely rarely, a person may have a serious allergic reaction to MMR vaccine. Anyone who has ever had a life-threatening allergic reaction to the antibiotic neomycin, or any other component of MMR vaccine, should not get the vaccine.

Read more in related scientific articles.

Available MMR Vaccine

There are two MMR vaccines approved for use in the United States.

- **M-M-R II** [PDF – 11 pages] The Food and Drug Administration (FDA) approved this vaccine in 1971 for use in people 12 months of age and older.
- **PRIORIX** [PDF – 21 pages] The Food and Drug Administration (FDA) approved this vaccine in 2022 for use in people 12 months of age and older.

The measles, mumps, rubella, and varicella (MMRV) vaccine also protects against these diseases.

How CDC Monitors Vaccine Safety

CDC and FDA monitor the safety of vaccines after they are approved or authorized. If a problem is found with a vaccine, CDC and FDA will inform health officials, health care providers, and the public.

CDC uses 3 systems to monitor vaccine safety:

- The Vaccine Adverse Event Reporting System (VAERS): an early warning system, co-managed by CDC and FDA, to monitor for potential vaccine safety problems. Anyone can report possible vaccine side effects to VAERS.
- The Vaccine Safety Datalink (VSD): a collaboration between CDC and 13 healthcare organizations that conducts vaccine safety monitoring and research.
- The Clinical Immunization Safety Assessment (CISA) Project: a partnership between CDC and several medical research centers that provides expert consultation and conducts clinical research on vaccine-associated health risks.

A Closer Look at the Safety Data

Read more in related scientific articles.

- Two studies (Rowhani-Rahbar et al, 2013 ; Klein et al, 2010) indicate that for every 10,000 children who get their first MMR and varicella vaccines as separate shots when they are ages 12-23 months, about four will have a febrile seizure during the 7-10 days following vaccination. Children of the same age who get the combined measles, mumps, rubella and varicella (MMRV) vaccine as their first vaccine against these diseases are twice as likely to have a febrile seizure during the same time period.
- Studies have shown that for children younger than 7 years old, there is a very small increased risk of febrile seizures approximately 6 to 14 days after MMR vaccination; this happens in about 1 in 3,000 to 4,000 children.
- Joint pain is associated with the rubella portion of MMR vaccine among people who do not have immunity to rubella. Joint pain and temporary arthritis happen more often after MMR vaccination in adults than in children. Women also experience this reaction more often than men. Joint pain or stiffness occurs in up to 1 in 4 of females past puberty who were not previously immune to rubella; their symptoms generally begin 1 to 3 weeks after vaccination, are usually mild and last about 2 days. These symptoms rarely come back.
- Immune thrombocytopenic purpura (ITP) is a disorder that decreases the body's ability to stop bleeding. It can happen after both natural measles infection as well as after getting the MMR vaccine. However, it is usually not life threating. Treatment may include blood transfusion and medications. The risk of ITP has been shown to be increased in the six weeks following an MMR vaccination, with one study estimating 1 case per 40,000 vaccinated children.
- Measles inclusion body encephalitis, or severe brain swelling caused by the measles virus, is a complication of getting infected with the wild-type measles virus. While rare, this disorder almost always happens in patients with weakened immune systems. The illness usually develops within 1 year after initial measles infection and has a high death rate.

There have been three published reports of this complication happening to people who are vaccinated. In these cases, encephalitis developed between 4 and 9 months after MMR vaccination. In one case, the measles vaccine strain was identified as the cause.

- Some parents might worry that the vaccine causes autism. Signs of autism typically appear around the same time that children are recommended to receive the MMR vaccine. Vaccine safety experts, including experts at CDC and the American Academy of Pediatrics (AAP), agree that MMR vaccine is not responsible for increases in the number of children with autism. Read more about vaccines and autism.

More Resources

- MMR Vaccine Information Statement
- MMR Vaccine: Who Should Not Get Vaccinated
- Measles, Mumps, and Rubella (MMR) Vaccination: What Everyone Should Know
- The MMR Decision Aid from the Australia National Centre for Immunisation Research & Surveillance
- For Healthcare Providers – MMR and Varicella Vaccines or MMRV Vaccine: Discussing Options with Parents
- Q&As About Vaccination Options for Preventing Measles, Mumps, Rubella, and Varicella: Questions and Answers for Healthcare Providers
- CDC Studies on Vaccines and Autism [PDF – 2 pages]

Related Scientific Articles

2011 – Present

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Related Links

Multiple Vaccinations at Once

Childhood Vaccines and Febrile Seizures

Immunization Action Coalition: MMR vaccine does not cause autism

Frequently Asked Questions about Multiple Vaccines

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