MMR Vaccine Q&A for Healthcare Providers

Healthcare professionals (HCP) are the most trusted source for providing science-based vaccination information. HCPs are seen as trustworthy, informative and a reliable source for responding to questions and concerns about vaccines. Below are questions and answers to assist HCPs with questions about the MMR vaccine.

How effective is the MMR vaccine?

The first dose of MMR vaccine is 93% effective against measles. Two doses of the MMR vaccine are 97% effective against measles.

The second dose of MMR vaccine is intended to produce immunity in those who did not respond to the first dose. A very small percentage of people may not be protected even after a second dose of vaccine.

What kind of vaccine is the MMR vaccine?

The MMR vaccine contains live, attenuated (or weakened) strains of the measles, mumps, and rubella viruses and is given as a shot.

When did vaccines for measles, mumps, and rubella become available?

The first measles vaccines (an inactivated and a live virus product) became available in 1963, both of which were largely replaced by a further attenuated live virus vaccine that was licensed in 1968. The mumps vaccine first became available in 1967, followed by the rubella vaccine in 1969.

These three vaccines were combined in 1971 to form the measles-mumps-rubella vaccine (MMRII by Merck). A vaccine that combines both MMR and varicella (chickenpox) vaccines, known as MMRV, became available in 2005. A second MMR vaccine (Priorix by GSK) was licensed and recommended in 2022.

How safe is the MMR vaccine?

Hundreds of millions of doses of measles, mumps and rubella vaccine prepared either as separate vaccines or as the combined MMR vaccine have been given in the United States. MMR vaccine's safety record is excellent.

Is it safe for infants to receive multiple vaccines at once?

Yes. Receiving multiple recommended vaccines at once is safe for infants. Additionally, combination vaccines have been shown to be safe and effective. HCPs are trusted resources and can help protect infants by recommending on time vaccination. Infants' immune systems are exposed to significantly more bacteria in the environment every day than the weakened diseases included in the MMR vaccine.

What side effects have been reported with MMR vaccine?

Fever following MMR vaccination is the most common side effect, occurring in 5%–15% of vaccine recipients. About 5% of people develop a mild rash. When this occurs, fever and rash usually appear 7–12 days after vaccination. However, recently vaccinated people who have a known measles exposure or compatible symptoms should contact public health or a healthcare provider for evaluation and possible testing. Genotyping may be needed to distinguish vaccine-associated rash from wild-type measles. Clinical Overview of Measles | CDC

If a rash occurs after receiving the MMR vaccine, does this indicate the person has measles?

Transient rashes have been reported in approximately 5% of vaccine recipients, usually between 7 and 12 days after receipt of MMR vaccine. Recipients who develop rash and/or fever are not considered contagious and do not have measles. *(continued)*

However, if the vaccine was administered as part of an outbreak response, it is important to ensure rapid differentiation of vaccine reaction from infections with wild-type virus. Local healthcare providers can assist with making this determination.

Can an individual contract measles from their child who develops a rash after receiving the MMR vaccine?

No. Recipients who develop rash and/or fever are not considered contagious and do not have measles.

However, if the vaccine was administered as part of an outbreak response, it is important to ensure rapid differentiation of vaccine reaction from infections with wild-type virus. Local healthcare providers can assist with making this determination.

Can an immunocompromised child who received the MMR vaccine spread measles?

Since the introduction of measles vaccine in the United States in 1963, with millions of MMR vaccine doses being administered, transmission of measles through the MMR vaccine has not occurred for anyone including those who are immunocompetent or immunocompromised.

May a child receive the MMR vaccine if their mom is pregnant?

Children and other household contacts of pregnant women should be vaccinated according to the recommended schedule.

While the MMR vaccine contains live measles, mumps and rubella viruses, they are weakened so much they are not transmitted from the vaccine recipient to others.

Household contacts of immunocompromised people and pregnant women should be vaccinated according to the recommended schedule.

Can persons with egg allergy receive MMR?

Yes. Either brand of MMR vaccine may be given to egg-allergic individuals without prior testing or use of special precautions.

What kind of “evidence of immunity” can substitute for MMR vaccination?

Evidence of immunity can be shown by having laboratory evidence of immunity to measles. However, if a person doesn’t have evidence of immunity, they are recommended to receive MMR vaccine.

Are good sanitation and hygiene practice enough to protect against the measles?

No. Clean water, modern sanitation and good hygiene practices, like handwashing, can slow the spread of and prevent infectious diseases. However, immunization provides protective antibodies which can fight off diseases. Good hygiene cannot do that.

After the measles vaccine was introduced in 1963, reported cases dropped by more than 97% between 1965 and 1968, even though hygiene practices and sanitation did not significantly change during that time.

Is MMR vaccine made with fetal cells?

Vaccines made using fetal cells include:

- Chickenpox (varicella)
- COVID-19 (viral vector versions, such as J&J/Janssen and AstraZeneca)
- Hepatitis A
- Rabies (Imovax®)
- Rubella (the “R” in the MMR vaccine)

No other vaccines are made using fetal cells.

Do vaccines using fetal cells require additional abortions?

No. Once cells are prepared from their original source, they can be maintained indefinitely in the laboratory. The process of maintaining these cells is commonly referred to as “cell culture” or “cell passage.”

Does the MMR vaccine cause autism?

No. There is no scientific evidence that any vaccines cause autism. The question about a possible link between MMR and autism has been extensively reviewed by independent groups of experts in the U.S. including the National Academy of Sciences' Institute of Medicine. These reviews have concluded that there is no association between MMR and autism. For more information, visit CDC's "Autism and Vaccines" web page at https://cdc.gov/vaccine-safety/about/autism.html

Can vitamin A be given in place of MMR vaccine to prevent measles?

Vitamin A does not prevent or cure measles. Vitamins and supplements do not prevent measles and are not a substitute to receive MMR vaccination. Alternative treatments, such as herbal medicines, homeopathy, supplements, and others, are not evidence-based and do not prevent someone from contracting measles.

Is infection-induced immunity from measles disease better than vaccination?

Childhood vaccines protect kids from serious diseases and complications. Vaccines also lower the chance of spreading a disease. Unlike infection-induced immunity, receiving the MMR vaccine does not pose risks such as:

- **Hospitalization** – About 1 in 5 unvaccinated people in the U.S. who get measles is hospitalized.
- **Pneumonia** – As many as 1 out of every 20 children with measles gets pneumonia, the most common cause of death from measles in young children.
- **Encephalitis** – About 1 child out of every 1,000 who get measles will develop encephalitis (swelling of the brain). This can lead to convulsions and leave the child deaf or with intellectual disability.
- **Death** – Nearly 1 to 3 of every 1,000 children who become infected with measles will die from respiratory and neurologic complications.
- **Pregnancy Complications** – Pregnant women who do not have immunity and contract measles may have babies prematurely and with low-birthweight.

Do the benefits of MMR vaccine outweigh the risks?

Measles was eliminated from the United States in 2000. However, measles cases still occur throughout developing countries and is one of the leading causes of death worldwide.

These diseases can cause harm or death and because the side effects of MMR vaccine are minor (pain at the injection site, fever, rash), the benefits of the MMR vaccine outweigh the risks.

Sources

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About Measles | Measles (Rubeola) | CDC – Centers for Disease Control and Prevention