



What Parents Should Know About Measles-Mumps-Rubella (MMR) Vaccine and Autism

Autism

Q. What is autism?

- Autism is a spectrum of chronic developmental disorders.
- The main characteristics of autism are difficulties in social interaction, communication, and restrictive and repetitive interests and activities.
- Autism may be noted initially in infancy as impaired attachment, but autism is most often first identified in toddlers, mostly boys, from 18 to 30 months of age.
- Although there is no cure, autism is treatable. Symptoms associated with autism often improve as children start to acquire language and learn how to communicate their needs.

Q. What causes autism?

The causes of autism are not known for certain. Most experts agree that autism is a condition that begins before birth. The current theory favored by many experts is that autism is a genetically based disorder. Studies of people with autism have identified abnormalities in brain structures that develop in the first few weeks of gestation (that is, while the fetus is in the womb).

Q. What is being done to make sure that vaccines stay safe?

The Centers for Disease Control and Prevention, the National Institutes of Health and the Food and Drug Administration continue to conduct studies to further ensure the safety of vaccines. For more information about immunizations, access the National Center for Immunization and Respiratory Diseases from the Centers for Disease Control and Prevention: <http://www.cdc.gov/vaccines>

Q. Why are we seeing a rise in the incidence of autism?

- Physicians use a book called the Diagnostic Statistical Manual to help them diagnose cases of autism. In 2000, the guidelines in that book

changed. They became more inclusive. So children who used to be considered "learning delayed" or to have "behavior

- problems" may now be more correctly diagnosed with mild autism.
- Parents and medical professionals are simply more aware of the condition and are more likely to pursue a diagnosis and treatment than in years past. As there are more state and federally funded programs available for children with autism, there is an increased incentive to make a diagnosis, so those children will have access to those programs.
- A recent study in the British Medical Journal found no rise in incidence of autism in children who received MMR as compared to those who did not. The authors also showed that in autistic children (both ASD and classical) the age at which a child received MMR did not affect the age at which the diagnosis of autism was made.

Q. Aren't measles, mumps and rubella relatively harmless illnesses?

Measles

- Highly contagious respiratory disease
- Causes rash, high fever, cough, runny nose and red, watery eyes, lasting about a week
- Causes ear infections and pneumonia in 1 out of every 12 children who get it
- Causes encephalitis that can lead to convulsions, deafness or mental retardation in 1 to 2 of every 2,000 people who get it
- In 1989-90, there was a measles epidemic, resulting in 55,000 cases of measles, 11,000 hospitalizations, and 123 deaths. The majority of these cases were in unimmunized preschool children
- Of every 1,000 people who get measles, 1 to 2 will die
- MMR vaccine can prevent this disease

Mumps

- Causes fever, headache and swelling of one or both cheeks or sides of the jaw
- Four to six persons out of 100 who get mumps will get meningitis
- Inflammation of the testicles occurs in about 4 of every 10 adult males who get mumps, which may lead to sterility
- May result in hearing loss, which is usually permanent

Rubella

- Also known as German measles

- Mild disease in children and young adults, causing rash and fever for 2 to 3 days
- Causes devastating birth defects if contracted by a pregnant woman; there is at least 80% chance of damage to the fetus if a woman is infected early in pregnancy

Q. Why should we still vaccinate against measles when cases are so uncommon?

- Measles virus is common throughout the world and is frequently imported into the U.S. In 1996, 47 cases were known to have been imported by people traveling to the US from other countries. In 1998 and 1999 all US measles cases reported were linked to imported cases.
- Before measles immunizations were available, nearly everyone in the US got measles. There were approximately 3 to 4 million measles cases each year. An average of 450 measles-associated deaths were reported each year between 1953 and 1963.
- If we stop vaccinating, we would see more people die from measles. During the 1998 - 1999 measles outbreak in the U.S., one out of every 500 people who contracted measles died.

Q. What are the complications of measles vaccination?

- Measles vaccine is safe; most people have no reactions.
- About 5 percent to 15 percent of vaccine recipients may develop a fever five to 12 days after MMR vaccination. The fever usually lasts one to two days and usually is not associated with other symptoms. About 5 percent of MMR recipients may develop a rash one to two weeks after immunization.
- Central nervous system disturbances, such as encephalitis, have been reported with a frequency of less than one per 1 million doses of MMR vaccination administered, a frequency many times lower than the incidence of serious central nervous system disorders that follow natural infection at a rate of one per 800.

MMR and Autism

Q. Is there a link between measles vaccination and autism?

- No, there is no scientifically proven link between measles vaccination and autism.
- Extensive reports from both the American Academy of Pediatrics, the Institute of Medicine and the Centers for Disease Control and

- Prevention conclude that there is no proven association between MMR vaccine and autism.
- Autism is a chronic developmental disorder, often first identified in toddlers from age 18 months to 30 months. MMR is administered just before the peak age of onset of autism symptoms. This timing leads some parents to mistakenly assume a causal relationship. There is no evidence that MMR causes autism.
 - Increasing evidence indicates that autism is determined while the baby is still in the womb, early in the pregnancy.

Q. What about Dr. Andrew Wakefield's research claiming a link between MMR and autism?

Dr Wakefield's 1998 paper is simply a description of 12 children who were referred to his clinic because of diarrhea or abdominal pain. The 12 children also had a history of normal development followed by loss of certain skills. When a history was taken, questions were asked about MMR immunizations that had been administered as many as 9 years earlier and the relationship of these vaccines to onset of loss of skills. From these data, involving a small sample of children, Wakefield proposed an association between immunization and autism. Any association with MMR was based on parental recall about events that occurred many years earlier, instead of objective data. Further, in four of the 12 cases, the behavioral disorders predated the bowel symptoms, which refutes Wakefield's own theory that bowel dysfunction (caused by MMR) causes autism. There was clearly selection bias as the children already had gastrointestinal symptoms. And there was no control group, a critical omission that casts further doubt on the findings. This was not a scientific paper but rather a description of parental recall from a skewed population of children referred to Wakefield's clinic. Replication of findings is a standard of good science. If research findings can be reproduced in a separate setting, it affirms those findings. Dr. Wakefield's original research showed measles virus in Crohn's patients. He shared these specimens with his colleagues at Royal Free Hospital in London, who were then unable to find the measles virus using even more sensitive methods. Many other scientists examined intestinal biopsies of Crohn's patients and could not find measles virus. Wakefield's findings could not be replicated. His study was later retracted from the Lancet, where it was initially published.

Dr. Wakefield's 2002 paper in the Journal of Molecular Pathology is also critically flawed. It claimed that 75 of 91 children with autism were found to have measles virus genome in intestinal biopsy tissue as compared with only

5 of 70 control patients. But we know that after the vaccine is given, the virus is likely to be taken up by specific immune cells and carried throughout the body (including the intestine). To determine if MMR is associated with autism, one must determine if the finding is specific for children with autism. Put differently, the control group must match the group of autistic children for immunization status and for the length of time between their MMR vaccine and their biopsy. This critical information was omitted from the paper.

A study by respected researchers, published this year in the British Medical Journal, found no rise in incidence of autism in children who received MMR as compared to those who did not. The authors also showed that in autistic children, the age at which a child received MMR did not affect the age at which the diagnosis of autism was made. They also demonstrated that in the years after the MMR vaccine was introduced in the United Kingdom, there was no increase in autism rates in comparison to the years before the vaccine was available.

Q. Why not separate the measles, mumps and rubella vaccines and immunize for each illness individually?

A panel of experts convened in June 2000, by the Academy, concluded in its report that "separate administration of measles, mumps and rubella vaccines to children provides no benefit over administration of the combination MMR vaccine and would result in delayed or missed immunizations."

The separate vaccines are not an option because they are not currently being manufactured in this country.

There is no scientific reason for or benefit to separating the vaccines. By separating them, we are putting children (and pregnant women who may be exposed to them) at increased risk by extending the amount of time they go unvaccinated.

Q. What does all this mean to pediatricians and parents?

This means that pediatricians can and should feel confident using MMR vaccine and recommending it for their patients, and parents can feel confident about it as well.

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