



Vaccine Safety

Vaccines Do Not Cause Autism

Autism spectrum disorder (ASD) is a developmental disability that is caused by differences in how the brain functions. People with ASD may communicate, interact, behave, and learn in different ways. Recent estimates from [CDC's Autism and Developmental Disabilities Monitoring Network](#) found that about 1 in 59 children have been identified with ASD in communities across the United States. CDC is committed to providing essential data on ASD, searching for causes of and factors that increase the risk for ASD, and developing resources that help identify children with ASD as early as possible.

There is no link between vaccines and autism.

Some people have had concerns that ASD might be linked to the vaccines children receive, but studies have shown that there is no link between receiving vaccines and developing ASD. In 2011, an Institute of Medicine (IOM) [report](#) on eight vaccines given to children and adults found that with rare exceptions, these vaccines are very safe.

A [2013 CDC study \[PDF - 204 KB\]](#) added to the research showing that vaccines do not cause ASD. The study looked at the number of antigens (substances in vaccines that cause the body's immune system to produce disease-fighting antibodies) from vaccines during the first two years of life. The results showed that the total amount of antigen from vaccines received was the same between children with ASD and those that did not have ASD.

Vaccine ingredients do not cause autism.

One vaccine ingredient that has been studied specifically is [thimerosal](#), a mercury-based preservative used to prevent contamination of multidose vials of vaccines. Research shows that thimerosal does not cause ASD. In fact, a 2004 [scientific review](#) by the IOM concluded that "the evidence favors rejection of a causal relationship between thimerosal-containing vaccines and autism." Since 2003, there have been [nine CDC-funded or conducted studies](#) [\[PDF - 357 KB\]](#) that have found no link between thimerosal-containing vaccines and ASD, as well as no link between the measles, mumps, and rubella (MMR) vaccine and ASD in children.

Between 1999 and 2001, thimerosal was removed or reduced to trace amounts in all childhood vaccines except for some flu vaccines. This was done as part of a broader national effort to reduce all types of mercury exposure in children before studies were conducted that determined that thimerosal was not harmful. It was done as a precaution. Currently, the only childhood vaccines that contain thimerosal are flu vaccines packaged in multidose vials. Thimerosal-free alternatives are also available for flu vaccine. For more information, see the [Timeline for Thimerosal in Vaccines](#).

Besides thimerosal, some people have had concerns about other [vaccine ingredients](#) in relation to ASD as well. However, no links have been found between any vaccine ingredients and ASD.

More Information


- [Facts About Autism Spectrum Disorders](#)
- [Fact Sheet: Understanding Thimerosal, Mercury, and Vaccine Safety](#) [\[PDF - 300 KB\]](#)
- [IOM Report: Adverse Effects of Vaccines: Evidence and Causality, 2011](#)
- [Timeline: Thimerosal in Vaccines \(1999-2010\)](#)
- [Frequently Asked Questions about Thimerosal](#)

Related Scientific Articles

Taylor LE, Swerdfeger AL, Eslick GD. [Vaccines are not associated with autism: An evidence-based meta-analysis of case-control and cohort studies](#) . *Vaccine*. 2014 June;32(29):3623–3629.

Schechter R, Grether JK. [Continuing increases in autism reported to California’s developmental services system: Mercury in retrograde](#) . *Arch Gen Psychiatry*. 2008;65:19-24.

Institute of Medicine. [Immunization Safety Review. Vaccines and Autism](#) . Board of Health Promotion and Disease Prevention, Institute of Medicine (National Academy Press, Washington, DC, 2004).

Hviid A, Stellfeld M, Wohlfahrt J, Melbye M. [Association between thimerosal-containing vaccine and autism](#)  [PDF – 145 KB]. [JAMA](#). 2003;290:1763–6.

Madsen KM, Hviid A, Vestergaard M, Schendel D, Wohlfahrt J, et al. [A population-based study of measles, mumps, and rubella vaccination and autism](#) . *N Engl J Med*. 2002;347 (19):1477–1482.

Ball L, Ball R, Pratt RD. [An assessment of thimerosal in childhood vaccines](#). [Pediatrics](#). 2001;107:1147–1154.

[Joint statement of the American Academy of Pediatrics \(AAP\) and the United States Public Health Service \(USPHS\)](#) . *Pediatrics*. 1999;104:568–9.

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