

Vaccines not linked with autism, study finds

Behind the Headlines

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Vaccines have saved millions of people's lives

"There is no evidence whatsoever linking the development of autism to childhood vaccines," The Guardian reports.

A new study involving more than a million children found no evidence of a link between childhood vaccines and autism or [autism spectrum disorder](#).

Researchers pooled the results of studies that have assessed the relationship between vaccine administration and the subsequent development of autism spectrum disorder. No significant associations were found between vaccinations and the development of the condition.

The results of this study therefore suggest that there is no reason that parents should avoid having their child vaccinated because of fears that their child will develop autism after they are immunised.

As a result of the success of the NHS childhood vaccination programme, many parents think that childhood diseases such as [mumps](#) and [measles](#) are a thing of the past and not a threat to health. But this couldn't be further from the truth.

Because of a decline in vaccine uptake, there was a [measles outbreak](#) in Wales in 2012 involving 800 confirmed cases of measles, including one death.

The potential complications of conditions such as mumps and measles are serious, and include [meningitis](#), [encephalitis](#) (brain infection), loss of vision, [infertility](#), and even death.

Is autism becoming more common?

Many anti-vaccination campaigners point to the increasing number of children being diagnosed with autism spectrum disorder as "proof" that vaccines cause autism.

But it is far more likely that doctors have simply got better at diagnosing the condition.

Where did the story come from?

The study was carried out by researchers from the University of Sydney.

The source of funding was not reported. The authors reported that they had no conflicts of interest.

It was published in the [peer-reviewed](#) medical journal, Vaccine.

The results of this study were covered well by the UK media.

What kind of research was this?

This was a [systematic review](#) and [meta-analysis](#) of [case-control](#) and [cohort studies](#) that assessed the relationship between vaccine administration and the subsequent development of autism or autism spectrum disorder.

A systematic review is an overview of primary studies. Systematic reviews use explicit and reproducible methods to search for and assess studies for inclusion in the review.

A meta-analysis is a mathematical synthesis of the results of the studies included.

This is an appropriate way of pooling and studying the body of available evidence on a specific topic.

What did the research involve?

The researchers searched databases of published literature to identify case-control and cohort studies that have assessed the relationship between vaccine administration and the subsequent development of autism or autism spectrum disorder.

Studies were included that looked at [measles, mumps and rubella \(MMR\) vaccination](#), cumulative mercury, or cumulative thimerosal dosage from vaccinations. Thimerosal is a mercury-containing chemical that acts as a preservative.

Once the studies were identified, the researchers assessed the quality of the study to see if there was any bias, and extracted data about the study characteristics (study design, the number of participants, the type, timing and dose of vaccine, and outcome) and its results.

The researchers then performed a meta-analysis to combine the results of the studies included in the review.

What were the basic results?

The researchers included five cohort studies involving 1,256,407 children, and five case-control studies involving 9,920 children.

None of the five cohort studies found an association between vaccination and autism or other autism spectrum disorder. When the results of the five cohort studies were combined, there was no increased risk of developing autism or autism spectrum disorder after MMR, mercury or thimerosal exposure ([odds ratio \[OR\]](#) 0.98, 95% [confidence interval \[CI\]](#) 0.92 to 1.04).

The researchers performed subgroup analyses looking at autism and autism spectrum disorder separately. There was no increased risk of developing autism (OR 0.99; 95% CI 0.92 to 1.06) or autism spectrum disorder (OR 0.91; 95% CI 0.68 to 1.20).

They then performed subgroup analyses looking at the different exposures separately. There was no increased risk of developing autism or autism spectrum disorder after MMR vaccination (OR 0.84; 95% CI 0.70 to 1.01), thimerosal exposure (OR 1.00; 95% CI 0.77 to 1.31), or mercury exposure (OR 1.00; 95% CI 0.93 to 1.07).

The researchers also looked at whether there was any evidence of [publication bias](#), a bias that can occur if the publication of research results depends on the nature and direction of the results. Typically, positive results tend to get published while negative results get shelved. If this occurs, it can distort the results of systematic reviews and meta-analyses.

The researchers analysed the results of the cohort studies using statistical tools and found no evidence of publication bias.

Similarly, none of the five case-control studies found an association between vaccination and autism or autism spectrum disorder individually or when combined, and none of the subgroup analyses found any associations.

How did the researchers interpret the results?

The researchers concluded that, "The findings of this meta-analysis suggest that vaccinations are not associated with the development of autism or autism spectrum disorder.

"Furthermore, the components of the vaccines (thimerosal or mercury) or multiple vaccines (MMR) are not associated with the development of autism or autism spectrum disorder."

Conclusion

This systematic review and meta-analysis has found no association between vaccination and the development of autism or autism spectrum disorder. The cohort studies included in the systematic review had information on more than a million children from four different countries.

This was a valuable and rigorous piece of research that will hopefully reassure parents who have any concerns about getting their children vaccinated against childhood diseases.

As with all studies, this research has limitations. It excluded data from the Vaccine Adverse Event Reporting System (VAERS) in the United States, a system similar to the Yellow Card scheme in the UK.

This was because researchers say that VAERS data has many limitations and a high risk of bias because of unverified reports, under-reporting, inconsistent data quality, absence of an unvaccinated control group, and many reports being filed in connection with litigation.

It is unclear what effect including these studies would have had on the results of the meta-analysis.

Overall, however, this study adds to the body of evidence that proves that the [benefits of vaccination far outweigh any risk](#).

Analysis by [Bazian](#). Edited by [NHS Choices](#). Follow [Behind the Headlines on Twitter](#). Join the [Healthy Evidence forum](#).

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[Autism link to vaccines dismissed by studies of more than a million children](#). The Guardian, May 20 2014

[There is NO link between autism and childhood vaccines, a major new study finds](#). Mail Online, May 19 2014

Links to the science

Taylor LE, Swerdfeger AL, Eslick GD. [Vaccines are not associated with autism: An evidence-based meta-analysis of case-control and cohort studies](#). Vaccines. Published online May 9 2014

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