

Study reveals vaccinations don't weaken natural immunity

A popular claim in the antivaccination movement that too many vaccines can set children up for poor immunity overall has been refuted in a new study.

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A new study refutes a popular claim by opponents of vaccination that vaccines weaken a child's natural immunity.

[The report, published in the *Journal of the American Medical Association \(JAMA\)*](#), outlines a case-control study performed on children aged 2 to 4 years with 193 cases with non-vaccine-targeted infections and 751 controls with non-vaccine-targeted infections. Researchers found no statistically significant difference in the level of immunity against non-vaccine-targeted infections between the 2 groups.

“Essentially, what this study confirms is that vaccines don't ‘weaken’ a child's immune system,” says Sean O’Leary, MD, MPH, associate professor of pediatrics at the University of Colorado Denver School of Medicine, Anschutz Medical Campus, investigator for the Adult and Child Consortium for Health Outcomes Research and Delivery Science (ACCORDS), director of the Pediatric Practice-Based Research Network (COCONet), and author of an [editorial that accompanied the study in *JAMA*](#). “Children who receive vaccines aren't any more likely to get sick from illnesses that are not targeted by the vaccines.”

According to the researchers, the mean cumulative antigen exposure for children enrolled in the study was 240.6 for cases and 242.9 for controls. The study was performed with the intent of determining whether parental concerns that multiple vaccines in early childhood could weaken their child's immune system were valid.

“Our study marks the first time the association between multiple vaccines and non-vaccine-targeted infections has been tested in the United States with the current recommended immunization schedule,” says Jason Glanz, PhD, epidemiologist and investigator in the Institute for Health Research at the Colorado School of Public Health, Aurora, and co-author of the study. “We did not observe an association between cumulative vaccine antigen exposure in the first 23 months of life and the risk of nontargeted infections between ages 24 and 47 months. We hope this study helps parents understand the safety of vaccinating their children on time.”

In his editorial published with the report, O’Leary recounts a 2013 request from the Institute of Medicine (IOM) to increase research into the safety of the childhood vaccine schedule. Previous work had been done to examine the safety of individual vaccines, but not the safety of the whole schedule in its entirety. The number of routine vaccinations for children increased from 8 in 1994 to 14 by 2010, and polls have shown that parents have been concerned since the 1990s that children receive too many vaccines and that the number of immunizations given in childhood may weaken the immune system. That concern has grown over the years as the number of vaccines increased and, in recent years, has manifested into a movement of parents rejecting recommended vaccines for their children.

“We understand the concerns parents have about vaccine safety. Nothing in medicine is 100% safe, but vaccines are one of the more well-studied areas of medical research,” Glanz says. “Patients are usually surprised to learn that the safety of vaccines has been much more thoroughly studied than the safety of giving ibuprofen for fever or amoxicillin for an ear infection. Because vaccines are recommended for all children in the United States, their safety is constantly being evaluated.”

Numerous studies, as well as internal reports by IOM, have largely refuted these concerns, but this new study is the first to look specifically at the relationship between multiple vaccines on the US immunization schedule and the development of non-targeted infections.

O’Leary writes in the editorial that this new research should serve as reassurance to parents that the US childhood immunization schedule is safe and does not increase a child’s risk of developing non-vaccine-targeted diseases. He also cautions, however, that this data might not be enough to convince some parents that it is safe to vaccinate.

“Simply providing scientific information and assuming parents will make the decision to vaccinate is not enough,” O’Leary says. “Delivering evidence-based information to parents and clinicians in ways that inspire confidence in the robust and safe childhood immunization schedule is critical for maintaining the health of children.”

O’Leary tells *Contemporary Pediatrics* that the proportion of parents who refuse vaccinations altogether is small—less than 1%—and that the vast majority of parents vaccinate their children according to the recommendations. Still, the medical community must remain vigilant in providing education and resources to parents.

“We are also hearing more from parents who are supportive of vaccination—parents who recognize the importance of vaccinations and are speaking out in support of them. Organizations such as [Voices for Vaccines](#) and [Colorado Parents for Vaccinated Communities](#) are giving a voice to the vast majority of parents who vaccinate their children,” O’Leary says. “On the other hand, the small group of antivaccine activists continue to spread misinformation about vaccines, often through social media. The difference I see now is that there is more pushback from provaccine parents.”