

U.S. Vaccines Deemed Extremely Safe, with Serious Side Effects Rare Among Children

The vaccines administered to U.S. children are very safe, and serious side effects are extremely rare, according to a new study published in the journal *Pediatrics*. The findings should help to debunk the myth that vaccines cause autism and other disorders—a claim that has led parents to avoid or delay vaccinations and has triggered a resurgence of diseases, such as measles and pertussis, that U.S. health officials had long considered to be under control.

As part of a project funded by the U.S. Agency for Healthcare Research and Quality, RAND researchers systematically reviewed scientific studies on routine vaccines recommended for children ages six and younger in the United States and the studies' findings on side effects among patients. The review concluded that, while some vaccines are associated with serious adverse events, vaccines are very safe overall, these side effects are extremely rare, and the tiny risk of side effects must be weighed against the great protection and benefits that these vaccines provide to both individuals and the public at large.

Specifically, the review found

- strong evidence confirming that the measles, mumps, and rubella (MMR) vaccine is not associated with autism in children.
- strong evidence that several common vaccines for children—MMR, diphtheria, tetanus, and acellular pertussis (DTaP), tetanus-diphtheria (Td), *Haemophilus influenzae* type b (Hib), and hepatitis B—are not associated with childhood leukemia.
- moderate evidence that vaccines against rotavirus, which causes diarrhea and dehydration in children, can increase the risk of a serious intestinal blockage called intussusception. However, intussusception is an extremely rare condition, occurring after only 1 to 5 vaccinations out of 100,000, depending on the brand.
- support for earlier studies associating the MMR vaccine, pneumococcal vaccine, and influenza vaccine (particularly when given along with pneumococcal vaccine) with febrile seizures—convulsions brought on by a high fever in infants and small children. The incidence of febrile seizures ranged from about 14 to 45 instances per 100,000 doses.

A commentary accompanying the study points out that the benefits of vaccines far outweigh the risks of these uncommon side effects: “[T]he adverse events identified by the authors were rare and in most cases would be expected to resolve completely after the acute event. This contrasts starkly with the natural infections that vaccines are designed to prevent, which may reduce the quality of life through permanent morbidities, such as blindness, deafness, developmental delay, epilepsy, or paralysis and may also result in death.”

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