

# Vaccines Are Safe

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Over the past decade, the public has been presented with a large amount of information about the safety of vaccines.

Among the reasons for this interest is the widespread success of routine, universal immunization of infants and children, beginning in the 1940s.

Unfortunately, along with reasonable information comes erroneous information, and the safety and effectiveness of vaccines has been questioned. Make no mistake: Many dangerous, life-threatening diseases have been wiped out because of vaccines.

Immunization was the greatest public health achievement in the U.S. in the 20th century.

The list of licensed and recommended vaccines has been growing, and not just for infants and children. There are now schedules from professional societies, such as the American Academy of Family Physicians (AAFP) and the American College of Obstetricians and Gynecologists (ACOG) and public agencies (e.g., the U.S. Centers for Disease Control and Prevention) that indicate what vaccines should be given for adolescents and adults, and when. There are specific vulnerable populations.

The considerable focus on vaccines, and their safety, in our information-overloaded society is not surprising, with a surplus of articles in magazines, books, parenting guides, and on the Internet, and stories on radio and television. While these occasionally highlight the benefits of immunization — “No One Got Sick or Died from a Vaccine-Preventable Disease Today” — is not a very exciting story.

More often, the emphasis is on speculation that a vaccine caused a health problem. Further, the widespread availability of litigation and liberal tort in the U.S. has encouraged lawsuits claiming harm from vaccines. Finally, it’s human nature to assume cause-and-effect when something bad happens, so a vaccination is an attractive target when administered before the onset of a medical condition.

Unfortunately, most of the public receives a lot of health information from these lay sources, rather than their physicians. Professional knowledge of immunization is grounded in science — microbiology, immunology, epidemiology, and statistics.

Vaccines are licensed by the U.S. Federal Drug Administration (FDA) only when proven to be safe and effective. Recommendations for use are promulgated by committees of scientific experts composed of academics, clinicians and other caregivers that are

passionately devoted to our citizens' health and safety.

The committees' conclusions, and the rationale for them, are shared with practicing physicians, who are the most reliable source of information for patients. This process is the foundation that leads to the conclusions that licensed vaccines are safe, and fears that vaccines are harmful are unfounded.

Nevertheless, to address these unfounded fears, groups of scientific experts have undertaken investigations to determine possible relationships between vaccines and autism, asthma, diabetes, multiple sclerosis, SIDS, and other diseases, and to answer questions that are posed to them:

- Does hepatitis B vaccine cause SIDS? Looking at the numbers of doses administered of the former and cases of the latter, one would conclude the opposite, that hepatitis B vaccine prevents SIDS, since 90 percent of U.S. children have received hepatitis B vaccine, and SIDS cases have dropped dramatically in the past decade (probably due to the AAP recommendation that infants sleep on their backs).
- Does the MMR vaccine cause autism? This question received extraordinary attention after it was raised in an article in *The Lancet*, in 1998, by Drs. Wakefield and colleagues. The co-authors and *The Lancet* have since retracted the article and its conclusions, and Dr. Wakefield is currently on trial in the U.K. for conflict of interest at the time of its publication. (He was on retainer from lawyers suing for vaccine damages.)

More importantly, an Institute of Medicine (IOM) expert panel evaluated the issue, and concluded that the evidence favored rejection of a connection between autism and MMR vaccine. Fourteen epidemiologic studies have been performed, all demonstrating the absence of a relationship between increased rates of autism and frequency of use of MMR vaccine.

It is unfortunate that the speculation of a relationship between MMR vaccine and autism has resulted in the occurrence of vaccine-preventable diseases (especially measles) in children whose parents refused to allow them to receive the vaccine, and has diverted attention from research into the causes of autism, which has been shown to have prenatal origins.

- Is thimerosal a cause of neurologic abnormalities, including autism? The preservative thimerosal, consisting of ethyl mercury, was used in multi-dose vaccine vials.

At present, most infancy and childhood vaccines are supplied in single-dose vials, and all such routine vaccines are thimerosal-free. Studies to answer this question, including five epidemiologic surveys, came to the same conclusion as the MMR vaccine autism analyses, that there is absence of a relationship.

A pivotal study at the University of Rochester quantifying thimerosal in childhood vaccines stated administration of vaccines containing thimerosal does not seem to raise

blood concentrations of mercury above safe values in infants.

In short, no studies have established a causal link between vaccines and these diseases.

Many of us recall that only two generations ago we had schoolmates who limped or had withered arms, due to the paralytic polio that infected them. That disease has been eradicated in the U.S. because of the universal use of polio vaccine.

During my training, I cared for children made deaf from measles, infants blind and retarded from rubella, and those who died from bacteria like pneumococcus and meningococcus. With vaccination, those conditions no longer occur.

As a physician in my early years of practice, the threat of infection with bacteria called Haemophilus influenza type B (Hib) loomed large for my patients and their families; the outcomes of brain damage or death being distinct possibilities. A vaccine was invented, adopted as policy, and given to U.S. infants and children.

I'm pleased to say I no longer worry about Hib infection.

Despite scientific proof and a long track record of vaccine safety, we see public policy based on junk beliefs, misinformation, fear, and mass hysteria. In 2006, a number of legislative bodies passed, and executives signed, bills prohibiting use of vaccines containing thimerosal.

From a practical perspective, these restrictions mean little, since all but a few influenza vaccines do not contain thimerosal. But such policies send a bad message: The vaccines that have virtually eradicated many diseases, constituting one of the greatest public health accomplishments of the past century, are dangerous.

Further, these policies denigrate our informed medical and scientific communities. This is a disservice to our citizens, and endangers us all.

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