

Autism: Was it the vaccines?

In recent years, there has been an enormous increase in the number of reported cases of autism. Some parents of autistic children are blaming an ingredient in childhood vaccines called thimerosal. Are they right?

What is thimerosal?

It's a preservative made primarily of ethyl mercury. For seven decades, beginning in the 1930s, the pharmaceutical industry used thimerosal to extend the shelf life of its vaccines. Thimerosal was most widely found in such multidose vaccines as MMR (measles-mumps-rubella) and DPT (diphtheria-pertussis-tetanus), which are both cheaper and more susceptible to spoilage than the single-dose type. In the 1990s alone, some 40 million children received thimerosal-based injections.

When did people start worrying about it?

About 15 years ago, when there was an apparent spurt in the number of children who developed autism, one of the most severe and baffling developmental disorders. Many parents reported a sudden, heartbreaking change in their kids' behavior at age 3 or 4, right after they received immunizations: They stopped communicating, became self-absorbed, and stared vacantly into space. Autistic children have major problems relating to other people or the outside world, and frequently flap their arms, bang their heads, or engage in similar repetitive, rhythmic behavior. Often they'll shriek with rage and throw tantrums for no obvious reason or in response to the mildest frustration. In the 1980s, autism affected only one in every 10,000 American children. Today, according to some estimates, that rate has skyrocketed to one in 166.

What caused this?

Critics blame a 1988 government recommendation to step up the rate and number of vaccinations. Under the new guidelines, children would be immunized against a dozen or so diseases by the time they turned 2. The process involves as many as 20 shots, with a mercury dosage of up to 237.5 micrograms. Thimerosal's opponents contend that exposure to this much mercury has damaged some infants' brains and brought about their autism.

What do scientists say?

Many researchers argue that the ethyl mercury in thimerosal is much less toxic than the methyl variety that is known to cause brain damage. They also contend that the apparent explosion of autism cases is largely an illusion, brought about by greater awareness of the disease and more aggressive diagnosis of it. In California, for example, autism levels shot up only after the psychiatric definition of autism was broadened in 1980. In 1990, Congress made autism one of a number of disabilities that qualified for federal funding, and states were obliged to report all cases. Thus alerted, doctors and school counselors suddenly began seeing more childhood autism than ever before.

Is thimerosal still in vaccines?

For the most part, no. In response to demands for an investigation, Congress in 1997 ordered the FDA to review federal mercury standards. Two years later, the U.S. Public Health Service and the American Academy of Pediatrics announced that there was no evidence that thimerosal was harming children. Still, for safety's sake, they jointly recommended that thimerosal-infused pediatric vaccines



Despite assurances, parents are still worried.

"be removed as soon as possible." Drug companies quickly complied, and by early 2002 most thimerosal-based vaccines were off the market.

Have studies been done?

Yes, and they've tended to exonerate thimerosal. In September 2003, a study of 467,000 Danish children by Copenhagen's State Serum Institute found no connection between thimerosal and autism. In May 2004, the Institute of Medicine of the National Academy of Sciences reported that based on more than 200 studies and papers, "the evidence favors rejection of a causal relationship between thimerosal-containing vaccines and autism."

Do parents accept this conclusion?

No. They're accusing the government of a cover-up. After his own grandson developed autism, Rep. Dan Burton (R-Ind.) concluded after three years of hearings that thimerosal "is directly related to the autism epidemic." This spring, environmental attorney Robert F. Kennedy Jr. joined the attack, arguing that key thimerosal data were badly flawed. The U.S. government, he charged, had relied on European studies that involved children who were exposed to much less thimerosal than were their American counterparts. Further, he wrote in *The Wall Street Journal*, the studies "were largely financed by vaccine makers and written principally by vaccine industry consultants and employees." Kennedy and other critics believe that some children are born with an inability to excrete mercury and other heavy metals from their bodies, and that the toxin accumulates in and damages their brains. To date, outraged parents have filed some 9,000 thimerosal-related lawsuits against the pharmaceutical industry.

Is there evidence to support this theory?

Researchers at the University of Arkansas recently found below-normal levels of glutathione, an enzyme that detoxifies and excretes mercury and other heavy metals, in the blood of certain autistic children. In another study, at Columbia University, researchers injected four strains of mice with thimerosal-based vaccines. Three strains showed no ill effects. But one, which is especially vulnerable to autoimmune diseases, exhibited delayed growth, abnormal responses to unusual environments, decreased exploration of its environment, and deformities in brain structure. Some scientists,

though, have another theory—that autism has a genetic basis. The syndrome is four times likelier to occur in boys than in girls, and a study shows that parents with schizophrenia or depression are more likely to have autistic offspring.

When will we know more?

Fairly soon. Because thimerosal was largely removed from vaccines in 2001, the autism rate should drop significantly if there is a link between the two. Following the removal of thimerosal during the 1990s in Denmark, Sweden, and Canada, however, there was no such decline. "Every parent has a theory," said Dr. Tom Insel, director of the National Institute for Mental Health. "Is it cell phones? Ultrasound? Diet sodas? At this point, we just don't know."

The lesser of two evils

The drug industry has almost entirely eliminated thimerosal from vaccines. But some parents are still fearful—so fearful, in fact, that they are skipping the shots. A study published earlier this year in the *Journal of the American Medical Association* found that about one-third of U.S. children were not receiving the recommended vaccines on schedule. The trend has disturbed many pediatricians. "I see kids come into the hospital and die of preventable diseases like influenza, pertussis or chicken pox," said Dr. Paul Offit, author of *Vaccines: What Every Parent Should Know*. "It's hard to live with that. We have a way to prevent them safely." Dr. Peter Hotez, a George Washington University vaccine researcher and the father of a 12-year-old autistic daughter, agrees. "We need a war on autism," he said, "not a war on childhood vaccines."