

Thimerosal and Vaccine Safety: What Providers Should Know

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Recent media reports about a supposed link between vaccines, thimerosal and autism have led some parents to question the safety of vaccines and even refuse to have their children immunized. A law recently passed in Illinois may inadvertently support parents' fears that vaccines are unsafe. It is therefore important that pediatricians become familiar with this issue and provide parents with accurate, reliable information about the safety of vaccines.

The Facts about Thimerosal

Since the 1930s, thimerosal has been widely used as a preservative in biological and drug products, including vaccines, to help prevent bacterial contamination. It contains ethylmercury, an organic form of mercury that is distributed, metabolized and excreted differently than methylmercury. Methylmercury is the most common form of organic mercury found in the environment. It is a neurotoxin that accumulates in fish and marine mammals. Several federal agencies have established guidelines to define safe levels of methylmercury; these levels have significant safety margins.¹ No guidelines exist for ethylmercury.

Thimerosal has been the subject of several studies. There has been no scientific evidence of harm caused by the small amounts of thimerosal in vaccines, except for minor effects like swelling and redness at the injection site.² In 2004, the Immunization Safety Review Committee of the Institutes of Medicine (IOM) reviewed published and unpublished epidemiological and clinical studies regarding autism, MMR and thimerosal-containing vaccines. The committee concluded that the body of epidemiological evidence favors rejection of a causal relationship between the MMR vaccine (which is thimerosal-free) and autism. The committee also concluded that there is no scientific evidence of a causal relationship between thimerosal-containing vaccines and autism and that potential biological mechanisms for vaccine-induced autism that have been generated to date are only theoretical.³

Mercury-free Vaccine Act

Even though there is no scientific evidence linking autism to thimerosal in vaccines, many parents, child advocates, lawmakers, and even some health professionals continue to believe that thimerosal is harmful. These concerns led to the passing of the Mercury-free Vaccine Act of Illinois in August of 2005. As of January 1, 2006, the Act prohibits any person from receiving a vaccine containing more than 1.25 micrograms of mercury per dose; after January 1, 2008, no one will be able to receive vaccines that contain even trace amounts of any mercury-based product, such as thimerosal. ICAAP fought for language in the law that authorizes the Illinois Department of Public Health (IDPH) to exempt a vaccine from the Act in case of an actual or potential bio-terrorist incident or public health emergency such as an epidemic or vaccine shortage.⁴

Thimerosal Content of Routinely-Recommended Pediatric Vaccines

In 1999 the AAP and the United States Public Health Service (PHS) recommended the elimination of thimerosal from vaccines administered to children under six months of age.⁵ The elimination of thimerosal

from vaccines was felt to be a feasible means of reducing an infant's total exposure to mercury in a world where other environmental sources of exposure are more difficult or impossible to eliminate.

Vaccine manufacturers began the removal of thimerosal from the majority of routinely-recommended childhood vaccines in 1999. Currently, most vaccines routinely given to young children are either completely free of thimerosal or have only trace amounts (less than one microgram per dose). The MMR, polio, varicella and pneumococcal conjugate vaccines have never contained thimerosal. However, some preparations of the inactivated influenza vaccine, now routinely recommended for healthy infants aged six to 23 months and other high-risk children, contain thimerosal as a preservative. Thimerosal-free preparations of the inactivated influenza vaccine are available in limited supplies, and the intranasal flu vaccine is also thimerosal-free, though it is only approved for healthy children ages five years and older.¹

Vaccine opponents have inappropriately referenced the 1999 AAP statement when arguing that thimerosal-containing vaccines are unsafe and should be banned. In actuality, the statement notes that all children should continue to be immunized against the diseases indicated in the recommended immunization schedule; the risk of not immunizing children far outweighs any theoretical risk of exposure to thimerosal-containing vaccines, even if the choice of individual vaccine products is limited.⁵ Providing children with influenza and other vaccines is safe and consistent with the 1999 joint AAP/PHS recommendation.

It is possible that the Mercury-free Vaccine Act could limit Illinois residents' access to flu vaccine and other routinely-recommended vaccines, and may

also reduce public confidence in the safety of vaccines. Both could lead to children missing recommended immunizations and increase their risk of being infected with serious, vaccine-preventable diseases. Though the Act does have the potential to jeopardize vaccination rates, the law gives IDPH authority to exempt vaccines from the law's effect so as to prevent disruptions in vaccine supply. ICAAP will continue to work with the Illinois legislature, IDPH and vaccine manufacturers to ensure that Illinois residents continue to receive accurate immunization information and have access to the vaccines that protect them from life-threatening illnesses.

REFERENCES

1. Thimerosal in vaccines. Food and Drug Administration Web site. Available at <http://www.fda.gov/cber/vaccine/thimerosal.htm>.
2. Thimerosal preservative and routinely recommended childhood vaccines. Centers for Disease Control and Prevention; April 6, 2004.
3. Immunization Safety Review Committee. *Immunization Safety Review: Vaccines and Autism*. Washington, DC: The National Academies Press; 2004.
4. Public Act 094-0614. Illinois General Assembly Web site. Available at <http://www.ilga.gov/legislation/publicacts/94/PDF/094-0614.pdf>.
5. Joint Statement of the American Academy of Pediatrics and the United States Public Health Service. *Pediatrics*. 1999;104:568.

For More Information

The ICAAP Web site contains many resources to help calm parents' fears about immunization safety. Visit www.illinoisAAP.org/Vaccines&Autism.htm to access links, fact sheets, and articles about vaccines and autism. In addition, the Chapter's Reaching Our Goals: Immunization Provider Education program discusses how to effectively communicate with parents about vaccines. Contact Jennifer Hurtarte at jhurtarte@illinoisAAP.com or 312/733-1026 to request the program in your practice.

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