Vaccine Safety

- Vaccine Safety
- Vaccines Safety Basics
- Addressing Common Concerns
  - Adjuvants
  - Autism
  - CDC Statement on Pandemrix
  - Fainting (Syncope)
  - Febrile Seizures
  - GBS
  - IOM Assessment of Studies on Childhood Immunization Schedule
  - IOM Report on Adverse Effects of Vaccines
  - Pregnancy and Influenza Vaccine Safety
  - Sudden Infant Death Syndrome (SIDS)
  - Thimerosal
    - Vaccines & Immunoglobins & Risk of Autism
    - Infant & Environmental Exposures to Thimerosal
    - **FAQs about Thimerosal**
    - Timeline: Thimerosal in Vaccines (1999-2010)
    - Publications
  - FAQs about Multiple Vaccines and the Immune System
  - FAQs about Vaccine Recalls
  - FAQs about Vaccine Safety
- Vaccine Monitoring
- Activities
- Special Populations
- Resource Library

Recommend 88 Tweet 16 Share

Frequently Asked Questions About Thimerosal (Ethylmercury)

There are two, very different, types of mercury which people should know about: **methylmercury** and **ethylmercury**.

Mercury is a naturally occurring element found in the earth's crust, air, soil, and water. Since the earth's formation, volcanic eruptions, weathering of rocks and burning coal have caused mercury to be released into the environment. Once released, certain types of bacteria in the environment can change mercury into **methylmercury**. Methylmercury makes its way through the food chain in fish, animals, and humans. At high levels, it can be toxic to people. For more information about methylmercury: please read "What You Need to Know about Mercury in Fish and Shellfish" from the Environmental Protection Agency (EPA).

Thimerosal contains a different form of mercury called **ethylmercury**. Studies comparing ethylmercury and methylmercury suggest that they are processed differently in the human body. Ethylmercury is broken down and excreted much more rapidly than methylmercury. Therefore, ethylmercury (the type of mercury found in the influenza vaccine) is much less likely than methylmercury (the type of mercury in the environment) to accumulate in the body and cause harm.

On this Page

- What is thimerosal?
- Why is thimerosal used as a preservative in vaccines?
- How does thimerosal work in the body?
- Is thimerosal safe?
- What are the possible side-effects of thimerosal?
- Does thimerosal cause autism?
- Do MMR vaccines contain thimerosal?
- Do all flu vaccines contain thimerosal?
- How can I find out if thimerosal is in a vaccine?

What is thimerosal?

Thimerosal is a mercury-based preservative that has been used for decades in the United States in multi-dose vials (vials containing more than one dose) of medicines and vaccines.

Top of page

Why is thimerosal used as a preservative in vaccines?

Thimerosal is added to vials of vaccine that contain more than one dose to prevent the growth of could cause severe local reactions, serious illness or death. In some vaccines, preservatives are added during the manufacturing process to prevent microbial growth.

Top of page

How does thimerosal work in the body?

Thimerosal does not stay in the body a long time so it does not build up and reach harmful levels. When thimerosal enters the body, it breaks down, to ethylmercury and thiosalicylate, which are easily eliminated.

Top of page

Is thimerosal safe?

Thimerosal has a proven track record of being very safe. Data from many studies show no convincing evidence of harm caused by the low doses of thimerosal in vaccines.

Top of page

What are the possible side-effects of thimerosal?

The most common side-effects are minor reactions like redness and swelling at the injection site. Although rare, some people may be allergic to thimerosal. Research shows that most people who are allergic to thimerosal will not have a reaction when thimerosal is injected under the skin (Wattanakrai, 2007; Heidary, 2005).

Top of page

Does thimerosal cause autism?

Research *does not* show any link between thimerosal in vaccines and autism, a neurodevelopmental disorder. Although thimerosal was taken out of childhood vaccines in 2001, autism rates have gone up, which is the opposite of what would be expected if thimerosal caused autism.

Top of page

Do MMR vaccines contain thimerosal?

No, measles, mumps, and rubella (MMR) vaccines do not and never did contain thimerosal. Varicella (chickenpox), inactivated polio (IPV), and pneumococcal conjugate vaccines have also never contained thimerosal.

Top of page

Do all flu vaccines contain thimerosal?

No. Influenza (flu) vaccines are currently available in both thimerosal-containing and thimerosal-free versions. The total amount of flu vaccine without thimerosal as a preservative at times has been limited, but availability will increase as vaccine manufacturing capabilities are expanded. In the meantime, it is important to keep in mind that the benefits of influenza vaccination outweigh the theoretical risk, if any, of exposure to thimerosal.

Top of page

How can I find out if thimerosal is in a vaccine?

For a complete list of vaccines and their thimerosal content level, you may visit the U.S. Food and Drug Administration. Additionally, you may ask your health care provider or pharmacist for a copy of the vaccine package insert. It lists ingredients in the vaccine and discusses any known adverse reactions.

Top of page

References

Please see References for a list of published articles on thimerosal.

Email Print Updates

Page last reviewed: March 1, 2010
Page last updated: October 14, 2011
Content source: Centers for Disease Control and Prevention
National Center for Emerging and Zoonotic Infectious Diseases (NCEZID)
Division of Healthcare Quality Promotion (DHQP)

Centers for Disease Control and Prevention 1600 Clifton Rd. Atlanta, GA 30333, USA
800-CDC-INFO (800-232-4636) TTY: (888) 232-6348 - Contact CDC–INFO