

Thiomersal and Childhood Vaccines in NZ.

Ethyl mercury is an organic mercury derivative and is present in thiomersal, a preservative used since the 1930s in a number of pharmaceuticals including some vaccines. Thiomersal contains 49.6% mercury by weight and is metabolized to ethyl mercury. Mercury occurs in three forms: the metallic element, inorganic salts, and organic compounds such as ethyl and methyl mercury. The toxicity is complex and depends on mode of entry, dose and age at exposure. Mercury is present in the environment in both organic and inorganic forms and everyone is exposed to small amounts. Both ethyl and methyl mercury are associated with nerve toxicity in high doses. Massive overdoses from inappropriate use of thiomersal-containing products have resulted in toxicity.

The American Federal Drug Agency (FDA) has determined that infants who receive thiomersal-containing vaccines at several visits may be exposed to more mercury than recommended by federal guidelines for total mercury exposure. This could theoretically be a concern for very low birth weight infants. In 1999 a study revealed that Thiomersal in vaccines caused several infants to have levels of mercury in their blood that exceeded guidelines recommended by the Environmental Protection Agency (but not those set by the FDA). The results from this study were derived from several populations of adults who had chronically ingested fish containing high levels of mercury and used to extrapolate levels of safety to young children injected with trace levels in vaccines. Many scientists and toxicologists felt that this was an unreasonable extrapolation. Mercury in the body is primarily acquired from the food chain and other environmental sources. Public concern over mercury in vaccines has driven the action to remove all possible sources of mercury exposure.

Cumulative **high** doses of mercury are to be avoided as it can become toxic. There is no evidence that the amount of mercury in vaccines has resulted in toxic effects nor ever reached anywhere near toxic levels.

It should be noted that mercury is common in the environment and is harmless in small doses. An example is that of canned tuna: a 6oz can of tuna contains an average of 17µg (range 1.7-127 µg) of mercury.

The only vaccine in the current NZ childhood schedule containing thiomersal is:

The diphtheria tetanus vaccine given at age 11 years

All other vaccines on the childhood schedule do not contain any thimerosal.

For more evidence-based information on childhood immunisation issues visit the Immunisation Advisory Center at www.imac.auckland.ac.nz or call us on 0800 IMMUNE (466 863).

Further reading

Thiomersal Fact Sheet

<http://www.ncirs.usyd.edu.au/facts/f-thiomersal.html>



Statement on thiomersal by David Satcher, MD, PhD, US Surgeon General, Assistant Secretary for Health, Department of Health and Human Services, USA.

<http://www.cdc.gov/nip/vacsafe/concerns/thimerosal/default.htm>

Thiomersal in vaccines: a joint statement of the American Academy of Pediatrics and the Public Health Service. Morbidity and Mortality Weekly Report 1999;48(26):563-5.

<http://www.cdc.gov/nip/vacsafe/concerns/thimerosal/thimerosal-AAP&PHS.htm>

Centers for Disease Control Questions and Answers about Thiomersal.

<http://www.cdc.gov/nip/vacsafe/concerns/thimerosal/thimerosal.htm>

Halsey NA. Limiting infant exposure to thiomersal in vaccines and other sources of mercury [editorial]. Journal of the American Medical Association 1999;282:1763-6.

From the Centers for Disease Control and Prevention. Availability of hepatitis B vaccine that does not contain thiomersal as a preservative. Journal of the American Medical Association 1999;282:1219-20.

Clements CJ, Ball LK, Ball R, Pratt D. Thiomersal in vaccines. Lancet 2000; 355: 1279-1280.

Stajich GV, Lopez GP, Harry SW, Sexson WR. Iatrogenic exposure to mercury after hepatitis B vaccination in preterm infants. J Pediatrics 2000;136: 679-681.