

## Thimerosal Information for Nurses

### What is thimerosal?

Thimerosal is a mercury based substance that has been used as a preservative in vaccines. It breaks down to ethylmercury which is rapidly excreted in the stool. This is different from methylmercury which enters the body primarily through the consumption of contaminated fish (e.g. sword fish, tuna, king mackerel, and shark) and phenylmercury which is used as a fungicide in agriculture. These forms of mercury build up in the body and are not cleared as effectively as ethylmercury. Methylmercury and phenylmercury have been shown to cause neurotoxicity as they cross the blood brain barrier and the placenta. Ethylmercury has been shown to do neither of these.

### Why is thimerosal used in vaccines?

Thimerosal has been used as a preservative in multidose vaccine vials since the 1930's. As a preservative, it prevents bacterial and fungal contamination in multidose vials. If such contamination occurred, it could cause serious infections in recipients of the vaccine. Thimerosal is also used as an inactivating agent in the very early stages of production of some killed vaccines. Only minute amounts of thimerosal used for this purpose remain after vaccine production is completed.

### Is there thimerosal in vaccines used in Alberta?

In Alberta, there are very few vaccines that contain thimerosal. Multi-dose vials of influenza vaccine contain small amounts of thimerosal. Other routine childhood vaccines have not contained thimerosal as a preservative since 1994. Live vaccines such as MMR and varicella have never contained thimerosal as it inactivates the attenuated virus contained in live vaccines.

### Why is the public concerned about mercury in vaccines?

Concerns have been raised about the amount of mercury infants and young children are exposed to through their environment and diet. Mercury, in two of its organic forms (methylmercury and phenylmercury) in large concentrations or with sustained exposure is a known neurotoxin. The public is concerned that thimerosal (ethylmercury) can cause autism or developmental delays in children.

### Thimerosal in vaccines: What does the scientific literature say?

"When a person is immunized with a vaccine that contains thimerosal, the resultant concentration of metabolized ethylmercury is reduced even further as it is diluted in the body."<sup>1</sup>

The majority of ethylmercury metabolized from thimerosal is rapidly excreted in the stool. "The amount of thimerosal in vaccines is small and no studies have documented any associated adverse effects beyond hypersensitivity reactions. Most reports of adverse immunologic reactions to thimerosal in vaccines involve small numbers of patients. Both delayed hypersensitivity (allergic contact) and immediate hypersensitivity (IgE-mediated) reactions have been reported."<sup>1</sup>

In 2004, members of the Institute of Medicine (IOM) Immunization Safety Review Committee concluded that the evidence favors rejection of a causal relationship between thimerosal containing vaccines and autism. Furthermore, the National Advisory Committee on Immunization (NACI) concludes that there is **no reason for vaccine providers to alert the client to any risks about exposure to thimerosal**. Furthermore, the National Advisory Committee on Immunization (NACI) states that there is **no legitimate safety reason to avoid the use of thimerosal-containing products for children or older individuals, including pregnant women**.

Research based articles have identified no causal link between thimerosal and autism or other developmental disorders. However, some members of the public continue to question this link. So, whether the risk is real or perceived to be real, it has the same impact. Vaccine manufacturers were encouraged to develop vaccines without thimerosal and thus instill confidence in the consumer. The manufacturers have responded; the majority of childhood vaccines come in single dose preparations thus there is no need for a preservative. In the production of the vaccine other substances are now being used in place of thimerosal.

Health Canada evaluates vaccines for their safety and effectiveness on an ongoing basis. Health Canada also monitors and analyzes the latest information available in order to protect the health of Canadians.