Medical Xpress

Babies excrete vaccine-mercury quicker than originally thought

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February's issue of *Pediatrics* offers another reason to rethink blaming the spike in autism diagnoses on thimerosal, a mercury-containing preservative routinely used in several childhood vaccines until the late '90s.

New research from the University of Rochester suggests that infants' bodies expel the thimerosal mercury much faster than originally thought – thereby leaving little chance for a progressive building up of the toxic metal. This debunks the great myth, believed by both parents and some pediatricians, that the gauntlet of thimerosal-containing shots many infants received in the 1990s – when the average number of vaccines kids received increased sharply – had put them at risk for developmental disorders.

"Thimerosal has been used for decades, but the surge in vaccinations caused fear that possible accumulations of ethyl mercury, the kind in thimerosal, might exceed safe levels – at least, when based on the stringent risk guidelines applied to its better-understood chemical cousin, methyl mercury, which is associated with eating fish," said Michael Pichichero, M.D., professor of Microbiology/Immunology, Pediatrics and Medicine at the University of Rochester and the study's main author.

But scientists are learning that the two mercury species actually behave quite differently.

Previous research conducted in Seattle just a few years ago

demonstrated that the ethyl mercury has a more difficult time crossing the blood-brain barrier, posing even less toxic risk than methyl mercury. This is especially telling, since even methyl mercury itself has also proven rather benign at low levels. In fact, just a few years ago, a Rochester study showed that children born to mothers-to-be who ate an average of 12 meals of fish a week – about 10 times the amount that the average U.S. citizen eats – showed no harmful symptoms.

And now, the most recent research from Rochester unveils further differences between the two types of mercury: the body rids the kind found in thimerosal more that 10 times faster than it removes the kind one might encounter in a Friday night fish fry.

In the Rochester study, 216 infants from R. Gutierrez Children's Hospital (in Buenos Aires, Argentina, where thimerosal is still routinely used in vaccines) were divided into three age groups to have their blood-mercury levels tested both before and after shots were administered at either their newborn, 2- or 6-month checkup. Researchers learned that, in all three age groups, the half-life of ethyl mercury in the blood – or, the time it takes for the body to dispose of half the mercury, and then another half, and so on – was measured to be 3.7 days. That's a far cry from the blood half-life of methyl mercury, which is 44 days.

"Until recently, that longer half-life was assumed to be the rule for both types of mercury. Now it's obvious that ethyl mercury's short half-life prevents toxic build-up from occurring. It's just gone too fast," Pichichero said.

To illustrate, researchers cite that infants in the 6-month-old group – who, in their lifetimes, had encountered more total ethyl mercury that any other group studied – still had the same pre-vaccination blood-mercury levels before their checkups as most 2-month-olds had before theirs. This suggests that, before each round of shots, the mercury has

plenty of time to be cleared.

The study also showed that ethyl mercury was nearly undetectable in urine samples; instead, it seemed that most of it was eliminated via stools. That's good, because mercury in large amounts is toxic to kidneys – yet in the study sample, there was no evidence of any harm to renal tissues.

These findings come in the wake of recent news from the California Department of Health, which reported last month that autism rates continue to mushroom in spite of the widespread removal of thimerosal from most U.S. childhood vaccines in 2001, though it continues to be used in vaccines used elsewhere in the world.

Thimerosal, hailed for its bacteria-killing properties, has been a vaccine staple ingredient since the 1930s. But when the Environmental Protection Agency announced in 1999 that the cumulative exposure children typically received in vaccines might exceed a safe level for intake based on methyl mercury statistics (even this "safe level" was placed ten times lower than the amount held to pose real risk), public health officials, together with the American Academy of Pediatrics, recommended its removal – though still without concrete evidence of harm. The decision demanded a new formulation be created and administered — at a higher cost.

"Though it's reassuring to affirm that these immunizations have always been safe, our findings really have greater implications for world health," Pichichero said. "Replacing the thimerosal in vaccines globally would put these vaccines beyond what the world community could afford for its children. It's a relief we haven't cause to do that."

Source: University of Rochester