

Enough vitamin D when young associated with lower risk of diabetes-related autoimmunity

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Getting enough vitamin D during infancy and childhood is associated with a reduced risk of islet autoimmunity among children at increased genetic risk for type 1 diabetes, according to a study published this week in the journal *Diabetes*.

The study's lead author, Jill Norris, MPH, PhD, of the Colorado School of Public Health at CU Anschutz, and her co-authors examined the association between vitamin D levels in the blood and islet autoimmunity.

Islet autoimmunity, detected by antibodies that appear when the immune system attacks the [islet cells](#) in the pancreas that produce insulin, is a precursor to type 1 diabetes.

"For several years there has been controversy among scientists about whether vitamin D lowers the risk of developing of islet autoimmunity and type 1 diabetes," said Dr. Norris.

Type 1 diabetes is a chronic autoimmune disease that is increasing by 3-5 percent annually worldwide. The disease is now the most common metabolic disorder in [children](#) under age 10. In younger children, the number of new cases is particularly high. And the risks seem to be greater at higher latitudes, further north from the equator.

Vitamin D represents a candidate protective factor for type 1 diabetes as it regulates the immune system and autoimmunity. Moreover, vitamin D status varies by latitude. But associations between vitamin D levels and islet autoimmunity have been inconsistent. This may be due to different study designs, population variation in vitamin D levels, or a failure to account for the combined effect of exposure and underlying genetic variation in the vitamin D pathway.

The findings are part of The Environmental Determinants of Diabetes in the Young (TEDDY) study, a large, multi-national study funded by the National Institutes of Health's National Institute of Diabetes and Digestive and Kidney Diseases.

TEDDY's effort began in 2004 with children from six clinical centers: three in the U.S. (Barbara Davis Center for Childhood Diabetes at CU Anschutz, the Pacific Northwest Research Institute in Seattle, and Augusta University in Georgia) and three in Europe (Universities of Turku, Oulu, and Tampere in Finland, Helmholtz Zentrum München in Germany, and Lund University in Sweden). The aim of the study is to search for triggers and protective factors for type 1 diabetes in 8,676 children with elevated type 1 diabetes risk.

The TEDDY children were followed with blood samples drawn every three to six months from infancy, to determine the presence of islet autoimmunity, as well as levels of vitamin D.

The authors compared 376 children who developed islet autoimmunity with 1,041 children who did not. The authors found that in children with a genetic variant in the vitamin D receptor gene, vitamin D levels in infancy and childhood were lower in those that went on to develop islet autoimmunity compared with those that did not develop [autoimmunity](#).

This study is the first to show that higher childhood vitamin D levels are significantly associated with a decreased risk of IA.

"Since this association does not prove cause-and-effect, we look to future prospective studies to confirm whether a [vitamin D](#) intervention can help prevent type 1 [diabetes](#)," Dr. Norris said.

Provided by CU Anschutz Medical Campus

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