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Vitamin D Supplementation Does Not Significantly Reduce Risk of Type 2 Diabetes in the General Prediabetes Population

June 7, 2019 (BOSTON) –A national clinical trial has found that vitamin D supplementation does not significantly reduce the likelihood of developing type 2 diabetes in people who are at high risk for the disease and already have sufficient vitamin D levels. The announcement was made today at the American Diabetes Association's 79th Scientific Sessions in San Francisco; the *New England Journal of Medicine* published study results online concurrently. The Vitamin D and Type 2 diabetes (D2d) study, coordinated out of the Division of Endocrinology at Tufts Medical Center in Boston, was the largest-ever clinical trial to specifically examine whether vitamin D can help prevent progression from prediabetes to diabetes.

“More than 30 million Americans are currently living with type 2 diabetes and 84 million more—about one-third of the adult U.S. population—are at high risk for developing the disease,” said Anastassios G. Pittas, MD, MS, Endocrinologist and Co-Director of the Diabetes and Lipid Center at Tufts Medical Center, and Principal Investigator of the D2d study. “While observational studies indicated a connection between higher vitamin D levels and reduction of type 2 diabetes risk, our large clinical trial did not find statistically significant evidence that vitamin D supplementation lowers the risk of diabetes in the general prediabetes population.”

The D2d study included 2,423 people at high risk for diabetes from 22 centers across the country. Participants were given either 4,000 units of vitamin D per day or placebo, and received blood tests twice per year for an average of two-and-a-half years, to monitor for the development of diabetes. While the vitamin D group did not experience any negative effects of supplementation—risk of kidney stones, high blood calcium level or reduced kidney function did not increase—vitamin D also did not reduce the risk of diabetes by the target level of 25 percent or more in the total study population.

“The way the body responds to taking a vitamin, like vitamin D, likely depends on how much of the vitamin is already found in the body,” said Dr. Pittas. “To maximize the study’s impact, we specifically designed D2d to include people at high risk for type 2 diabetes, regardless of their

vitamin D level; about 80 percent of participants had vitamin D levels considered sufficient by U.S. nutritional standards at the start of the study. This high percentage may have reduced D2d's ability to detect an overall benefit of vitamin D in the total study population.”

However, when the researchers looked at only participants with prediabetes who also had very low vitamin D levels when they joined the study, vitamin D supplementation appeared to reduce risk of diabetes in these people.

“But since only about four percent of the study participants had low levels of vitamin D initially, no firm conclusions can be drawn and further research is needed to confirm this preliminary observation,” said Dr. Pittas.

According to the Centers for Disease Control and Prevention, diabetes is the 7th-leading cause of death in the United States, responsible for nearly 80,000 deaths in 2015. A chronic disease with no known cure, diabetes often leads to significant health complications, including stroke, blindness, and diseases of the heart, kidney and nervous system.

“The D2d study’s findings do not alter the need for all people to meet the National Academy of Medicine’s daily vitamin D requirement,” said Dr. Pittas. “Nor do our results change the recommendation that people at high risk for type 2 diabetes should commit to lifestyle changes—including improved diet, weight loss and increased physical activity—to lower their chances of developing diabetes.”

D2d (ClinicalTrials.gov number [NCT01942694](https://clinicaltrials.gov/ct2/show/study/NCT01942694)) was supported under NIH grant U01DK098245. The National Institute of Diabetes and Digestive and Kidney Diseases, part of NIH, was the primary sponsor of the trial, with additional support from the NIH Office of Dietary Supplements and the American Diabetes Association. Support in the form of educational materials was provided by the National Diabetes Education Program.

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About Tufts Medical Center and Floating Hospital for Children

Tufts Medical Center is an exceptional, not-for-profit, 415-bed academic medical center that is home to both a full-service hospital for adults and Floating Hospital for Children. Conveniently located in downtown Boston, the Medical Center is the principal teaching hospital for Tufts University School of Medicine. The Medical Center features a level one trauma center with rooftop helipad, the largest heart transplant center in New England and a renowned research program, ranking among the top 10 percent of independent hospitals to receive federal research funding. A physician network of 1,800 New England Quality Care Alliance doctors represents our strong commitment to health in the community. Tufts Medical Center is a founding member of Wellforce. For more information, visit www.tuftsmedicalcenter.org.

About Anastassios G. Pittas, MD, MS

Anastassios G. Pittas, MD, MS, is an endocrinologist and the Co-Director of the Diabetes and Lipid Center at Tufts Medical Center in Boston, where he specializes in the prevention and treatment of diabetes mellitus. The principal investigator and Chair of the vitamin D and type 2 diabetes ([D2d](#)) study, Dr. Pittas has been continuously funded by the National Institutes of Health since 2002. From 2000- 2002, Dr. Pittas was supported by a generous grant from the Gerald J and Dorothy Friedman NY Foundation for Medical Research, which funds education and research in many diverse fields, most notably nutrition and diabetes. Dr. Pittas is the recipient of multiple awards for excellence in scientific research, including the national [Biomedical Research Exemplar Award](#) in 2017 and the Friedman Foundation's Donna Seto-Young Award in 2017. Dr. Pittas has co-authored more than 80 publications in peer-reviewed journals, books, book chapters and evidence-based reports and has been recognized as a "[Top Doctor](#)" by Boston Magazine every year since 2017. Dr. Pittas received his BS degree from Massachusetts Institute of Technology and earned his MD degree from Weill Cornell University Medical College. He completed his Internal Medicine Residency at the New-York Presbyterian Hospital and his Fellowship in Endocrinology at Tufts Medical Center.