Intensive medical treatment can reverse type 2 diabetes

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Type 2 diabetes can be reversed with intensive medical treatment using oral medications, insulin and lifestyle therapies, according to a study published in the Endocrine Society's *Journal of Clinical Endocrinology & Metabolism*.

Type 2 diabetes is typically thought of as a chronic condition. As it progresses, individuals with type 2 diabetes often need to use a healthy diet, exercise and an increasingly complex combination of medications to manage the condition.

"By using a combination of oral medications, insulin and lifestyle therapies to treat patients intensively for two to four months, we found that up to 40 percent of participants were able to stay in remission three months after stopping diabetes medications," said the study's first author, Natalia McInnes, MD, MSc, FRCPC, of McMaster University and Hamilton Health Sciences, in Hamilton, Ontario, Canada. "The findings support the notion that type 2 diabetes can be reversed, at least in the short term—not only with bariatric surgery, but with medical approaches."

One in 10 American adults has type 2 diabetes, according to the Society's Endocrine Facts and Figures report. The condition occurs when an individual doesn't produce enough insulin—the hormone that allows cells to absorb glucose in the blood—or the pancreas isn't making insulin as efficiently as it could. As a result, blood sugars build up in the body and the cells do not receive the energy they need.

To study ways to put type 2 diabetes into remission, the researchers randomly divided 83 individuals with the condition into three study groups. Two of the groups received an intensive metabolic intervention where they were provided with a personalized exercise plan and a suggested meal plan that reduced their daily calorie intake by 500 to 750 calories a day. These study participants met regularly with a nurse and dietitian to track their progress and received oral medications and insulin at bedtime to tightly manage their blood glucose levels. One group underwent the intervention for eight weeks, while the other was treated intensively for 16 weeks. After the intervention, individuals in both groups stopped taking diabetes medications and were encouraged to continue with lifestyle changes.

The two intervention groups were compared to a control group of individuals with type 2 diabetes. Participants in this group received standard blood sugar management advice from their usual healthcare provider for the duration of the trial, and they received standard lifestyle advice. Participants in all three groups received usual diabetes care if they experienced a diabetes relapse.

Study participants had their average blood glucose levels from the past two to three months measured using a HbA1C blood test at eight, 20, 28 and 52 weeks to gauge how well their blood sugar was controlled. They also undertook oral glucose tolerance tests.

Three months after the intervention was completed, 11 out of 27 individuals in the 16-week intervention group met HbA1C criteria for complete or partial diabetes remission, compared to four out of 28 individuals in the control group. Three months after finishing the eight-week intervention, six out of 28 individuals in that group met the same criteria for complete or partial diabetes remission.

"The research might shift the paradigm of treating diabetes from simply

controlling glucose to an approach where we induce remission and then monitor patients for any signs of relapse," McInnes said. "The idea of reversing the disease is very appealing to individuals with diabetes. It motivates them to make significant lifestyle changes and to achieve normal glucose levels with the help of medications. This likely gives pancreas a rest and decreases fat stores in the body, which in turn improves insulin production and effectiveness."

The senior investigator on the trial, Hertzel C. Gerstein, MD, MSc, FRCPC, of McMaster University and Hamilton Health Sciences added, "We chose to use metformin, acarbose and basal insulin glargine in this trial as these medications have all been shown to slow or prevent the development of type 2 diabetes. However, other drug combinations could lead to higher remission rates and need to be systematically studied with regard to this outcome."

More information: "Piloting a Remission Strategy in Type 2 Diabetes: Results of a Randomized Controlled Trial," academic.oup.com/jcem/article- … 10.1210/jc.2016-3373

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