

Study investigates type 2 diabetes remission diet impacts on metabolic health

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People with type 2 diabetes who took part in a diet-assisted weight loss trial showed differences across a wide range of potential biomarkers of metabolic health one year later, according to the results of a new study.

The research used data from the Diabetes Remission Clinical Trial (DiRECT) and represents a collaboration between University of Bristol, University of Glasgow and Newcastle University. Titled "The metabolomic signature of [weight loss](#) and remission in the Diabetes Remission Clinical Trial (DiRECT)," the [study](#) has been published in *Diabetologia*.

According to Diabetes UK, more than 5 million people in the U.K. live with [diabetes](#), with 90% living with type 2. Weight loss is now a key intervention for patients with type 2 diabetes thanks to DiRECT, which found a primary-care deployed dietary [weight](#) loss program—Counterweight-Plus—could put the condition into remission. The program has been adopted by the NHS as a clinically proven intervention for type 2 [diabetes patients](#). However, until now, its impact on patients' wider [metabolic health](#) was largely unknown.

To find out whether the weight loss benefits extend to wider metabolic health, Bristol Medical School researchers analyzed levels of more than 1,000 molecules or "metabolites" in [blood samples](#) from 261 participants of the DiRECT trial before and one year after beginning the intervention. Collectively known as "the metabolome," this approach gives researchers a detailed snapshot of cellular health at the time of sampling.

Around 14% of all metabolites measured were found to be altered by the intervention. Many of the changes the researchers saw in response to the diet had previously been reported as moving in the opposite direction prior to type 2 diabetes onset. These changes were evident many weeks after the conclusion of the weight loss phase of the intervention suggesting sustained benefits to patient health.

These findings support the growing consensus of the importance of excess weight as a contributor in the pathogenesis of type 2 diabetes and,

as a treatment target. This consensus is reflected in recent recommendations by the American Diabetes Association and European Association for the Study of Diabetes.

While most metabolic changes appeared to be linked to weight loss, some were unrelated to weight loss and likely due to sustained changes to diet and medication. For example, researchers saw an increase in levels of omega-3 [fatty acids](#) (linked to fish intake) at one year in patients assigned to the Counterweight-Plus arm of the trial as compared to those in the control arm.

Dr. Laura Corbin, the study's lead author who is based at Bristol's MRC Integrative Epidemiology Unit (MRC IEU), said, "Our findings show that in patients who have recently been diagnosed with type 2 diabetes, weight loss through [calorie restriction](#) appears to reverse at least some of the metabolic changes that occur prior to diagnosis. However, not all patients who lost weight saw this reversal.

"In future, we hope to use this approach to better understand the variation that exists across patients both in susceptibility to poor metabolic health and in treatment response."

The team is currently comparing the metabolomic signature of this dietary-based intervention with [bariatric surgery](#) as an alternative approach to weight loss. In the future, they hope to incorporate data from the newly emerging weight loss drugs such as semaglutide.

More information: Laura J. Corbin et al, The metabolomic signature of weight loss and remission in the Diabetes Remission Clinical Trial (DiRECT), *Diabetologia* (2023). [DOI: 10.1007/s00125-023-06019-x](https://doi.org/10.1007/s00125-023-06019-x)

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