

# Low-calorie diet offers hope of cure for type 2 diabetes

British study finds two-month extreme diet can cure type 2 diabetes and overturns assumptions about 'lifelong' condition

**Sarah Boseley**

The Guardian, Friday 24 June 2011

People who have had obesity-related type 2 diabetes for years have been cured, at least temporarily, by keeping to an extreme, low-calorie, diet for two months, scientists report today. The discovery, reported by scientists at Newcastle University, overturns previous assumptions about type 2 diabetes, which was thought to be a lifelong illness.

In the UK about two and a half million people have been diagnosed with diabetes, the large majority with type 2, and numbers are rising across much of the world. The condition has to be controlled with drugs and eventually insulin injections. It can cause blindness and end in foot amputation, as well as shortening life.

The results of the Newcastle investigation, though the study was small, demonstrated that full recovery was possible, not through drugs but through diet.

Eleven people with diabetes took part in the study, which was funded by Diabetes UK. They had to slash their food intake to just 600 calories a day for two months. But three months later seven of the 11 were free of diabetes.

"To have people free of diabetes after years with the condition is remarkable – and all because of an eight-week diet," said Roy Taylor, professor at Newcastle University, who led the study. "This is a radical change in understanding type 2 diabetes. It will change how we can explain it to people newly diagnosed with the condition. While it has long been believed that someone with type 2 diabetes will always have the disease, and that it will steadily get worse, we have shown that we can reverse the condition."

Type 2 diabetes, which used to be known as adult onset, is caused by too much glucose in the blood. It is strongly linked to obesity, unlike type 1, which usually develops in children whose bodies are unable to make the hormone insulin to convert glucose from food into energy. They need daily insulin injections.

The research, presented today at the American Diabetes Association conference, shows that an extremely low-calorie diet, consisting of diet drinks and non-starchy vegetables, prompts the body to remove the fat clogging the pancreas and preventing it from making insulin.

The volunteers were closely supervised by a medical team and matched with the same number of volunteers with diabetes who did not get the special diet. After just one week into the study, the pre-breakfast blood sugar levels of the study group had returned to normal. And MRI scans

showed that the fat levels in the pancreas had returned to normal. The pancreas regained its ability to make insulin.

After the eight-week diet the volunteers returned to normal eating but had advice on healthy foods and portion size. Ten of the group were retested and seven had stayed free of diabetes. Taylor, the director of the Newcastle Magnetic Resonance Centre, had the idea for the study after it was shown that diabetes was reversed in people who had undergone stomach stapling or other forms of bariatric surgery because of obesity. "What was remarkable was that the diabetes went away over the course of one week. It was widely believed the operation itself had done something, [that] the hormones in the gut were thought to be the cause. That is almost universally believed."

Taylor thought the massive drop in calorie intake after surgery could be responsible and to test this hypothesis set up the study, which included MRI scans of the pancreas to look at any changes in the fatty deposits.

"We believe this shows that type 2 diabetes is all about energy balance in the body," said Taylor. "If you are eating more than you burn, then the excess is stored in the liver and pancreas as fat, which can lead to type 2 diabetes in some people. What we need to examine further is why some people are more susceptible to developing diabetes than others." He warned that only a minority of people, perhaps 5% or 10%, would be able to stick to the harsh diet necessary to get rid of diabetes. But even that, he said, would dramatically improve the health of many people and save the NHS millions.

Iain Frame, director of research at Diabetes UK, said people should not embark on such a diet without a doctor's approval and help. "We welcome the results of this research because it shows that type 2 diabetes can be reversed, on a par with successful surgery without the side effects.

"However, this diet is not an easy fix and Diabetes UK strongly recommends that such a drastic diet should only be undertaken under medical supervision. Despite [it] being a very small trial, we look forward to future results, particularly to see whether the reversal remains long term."

Gordon Parnley, 67, of Stocksfield, Newcastle upon Tyne, a trial participant, said he first noticed something was wrong when his vision went "fuzzy" and he had trouble focusing while playing golf. He had been on medication since being diagnosed with type 2 diabetes six years ago.

He said: "When my doctor mentioned the trial I thought I'd give it a go, as it might help me and other diabetics. I came off my tablets and had three diet shakes a day and some salad or vegetables, but it was very, very, difficult and I'm not sure I'd have done it without the support of my wife, who went on a diet alongside me.

" At first the hunger was quite severe and I had to distract myself with something else – walking the dog, playing golf, or doing anything to occupy myself and take my mind off food. But I lost an astounding amount of weight in a short space of time.

"At the end of the trial I was told my insulin levels were normal, and after six years I no longer needed my diabetes tablets. Still today, 18 months on, I don't take them.

"It's astonishing really that a diet – hard as it was – could change my health so drastically. After six years of having diabetes I can tell the difference. I feel better, even walking round the golf course is easier."