

Insulin pumps no more effective in improving quality of diabetics' lives than daily injection shots

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Insulin pumps do not take away the need for vital education on diabetes self-management and were no more effective than injections in helping adults with type 1 diabetes control their blood sugar levels, reports new NIHR-funded research.

The REPOSE trial, funded by the NIHR and led by Professor Simon

Heller of Sheffield Teaching Hospitals NHS Foundation Trust and the University of Sheffield, found that barriers to successful [diabetes control](#) cannot be overcome by providing additional technology in the form of insulin pumps.

Type 1 [diabetes](#) is a lifelong condition affecting around 250,000 people in the UK. It occurs when the immune system destroys the cells that make insulin – the hormone needed to control [blood sugar levels](#).

Many people with type 1 diabetes struggle to achieve blood sugar level targets and a significant proportion go on to develop serious complications, reducing the length and quality of their lives.

To minimise potentially life-threatening complications caused by high blood sugars, patients take multiple daily shots of insulin and as the body is no longer to produce the insulin itself, the dose must be adjusted to fit with regular food intake and exercise. Alongside this, patients attend the Dose Adjustment For Normal Eating (DAFNE) educational programme. This has been shown to improve diabetes control, reduce risks of low blood sugars and improve quality of life.

However, newer forms of technology, including insulin pumps which continuously supply insulin using a device that sits under the skin, are becoming more widely available, with 6% of adults with type 1 diabetes estimated to use insulin pumps, a figure that rises to 40% in the US. The use of pumps is expensive, but can provide patients with a more flexible way of delivering their insulin. Until now, little research has been done to see how effective the pump is compared with injections.

During the research Professor Heller and his team at Sheffield Teaching Hospitals NHS Foundation Trust allocated 267 participants (at eight centres across England and Scotland) onto a week-long educational course to learn about flexible insulin therapy, and split them into two

groups. One group also received training on how to use a pump to deliver their insulin while the second group used multiple insulin injections for two years.

Although, participants using the pumps were more satisfied with the treatment, the findings reveal that there were no significant benefits in quality of life between those using [insulin pumps](#) and those taking daily shots of insulin.

Professor Simon Heller, Research and Development Director of Sheffield Teaching Hospitals and Professor of Clinical Diabetes at the University of Sheffield, said: "Offering pumps to adults whose blood glucose levels are high and who have not yet received training in insulin self-management doesn't appear to offer additional benefit.

"What the results do suggest is that ensuring people receive training to enable them to better manage their diabetes is likely to be more beneficial. Pumps may be useful in patients who are highly engaged in their own management, but find that the limitations of [insulin treatment](#) prevent them achieving their glucose targets."

Andy Broomhead, 35, of Chapeltown, Sheffield, took part in the Repose trial. He believes education is the key when learning how to control type 1 diabetes:

"Taking part in a DAFNE course as part of the REPOSE trial changed my life. DAFNE gave me the freedom, flexibility and confidence to manage my own Type 1 diabetes confidently for the first time in a decade. I now feel empowered to look after myself and it's made me feel more confident living with Type 1 diabetes every day.

"Whilst it can be hard to put up with checking my own blood glucose seven or eight times a day, calculating carbohydrate values and then

deciding how much [insulin](#) I need to give myself for every meal, I know how important it is to get those things right. DAFNE has given me the skills I need to look after my own health and I'd encourage anyone who hasn't yet been on the course to do so."

Dr Martin Ashton-Key, Scientific Director at the NIHR Evaluation Trials and Studies Coordinating Centre added "The findings of this NIHR-funded research will be of real value to patients with diabetes and clinicians in the NHS."

The journal articles are available in the *BMJ* and *Health Technology Assessment*.

More information: *BMJ*, www.bmj.com/content/356/bmj.j1138

Provided by University of Sheffield

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