The effect of closed-loop glucose control on C-peptide secretion in youth with newly diagnosed type 1 diabetes: the CLOuD RCT

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Plain language summary

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In type 1 diabetes the body's immune system attacks and destroys the cells that make insulin in the pancreas. At diagnosis, there are usually a small number of cells left which still make insulin. Over time, people with type 1 diabetes lose the ability to make insulin themselves. Good glucose control in the early years after diagnosis might help to preserve insulin production. Even making a small amount of insulin can help with more stable glucose control and reduced risk of diabetes-related complications.

Closed-loop systems have been shown to be safe and improve glucose control in people with type 1 diabetes. A closed-loop system is made up of a glucose sensor which continuously measures glucose levels, an insulin pump and a computer algorithm on a smartphone that automatically adjusts the amount of insulin given by the pump, depending on the glucose levels. The Closed Loop from Onset in Type 1 Diabetes study aimed to find out if a closed-loop system can preserve insulin production compared to standard insulin treatment in children and young people recently diagnosed with type 1 diabetes. The Closed Loop from Onset in Type 1 Diabetes consortium secured external funding for participants to continue on beyond 12 months but the funding by National Institute for Health and Care Research and the results reported here refer only to the 12 months follow-up.

A total of 97 people were included in the study; 51 were assigned to use the closed-loop system and 46 used normal insulin treatment (control group). Every 6 months we measured how much insulin was being made by the pancreas. We also compared glucose control between the two groups and we asked participants using the closed-loop system how it affected their quality of life, using questionnaires and interviews.

We showed that, although the group using the closed-loop system had better glucose control than the control group at 12 months, there was no difference between the two groups in the amount of insulin being made. This suggests that in young people recently diagnosed with type 1 diabetes, closed-loop glucose control does not preserve insulin production.

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