

Research findings

Reduction in Hypoglycaemia with Low Glucose Suspension in Individuals with Type 1 Diabetes

▶ **WHAT WAS THE AIM?**

Hypoglycaemia, or low blood glucose, is an ongoing problem in the lives of people living with Type 1 Diabetes. These episodes can be self-managed most of the time. However, sometimes, hypoglycaemia can cause lethargy, confusion and will need third-party assistance in treatment. The episodes can occasionally be severe and can lead to coma and convulsions. This is more likely in patients with reduced awareness of hypoglycaemia who are not able to perceive the symptoms of low blood glucose and adequately respond to it. Awareness can be improved if hypoglycaemia is avoided. Hence, we used the low glucose suspend (LGS) feature with pump therapy as an intervention to reduce hypoglycaemia and compared the incidence of severe and moderate hypoglycaemia with insulin pump therapy alone, in individuals with impaired awareness to hypoglycaemia.

▶ **HOW DID WE DO IT?**

Children and adults with Type 1 Diabetes who had impaired awareness of hypoglycaemia were recruited from December 2009 to January 2012. Participants were either randomised to 'insulin pump only' (control group) or insulin pump therapy with LGS (intervention group) for six months. The 'insulin pump only' group were provided standard clinical care during the study. In the LGS group, participants wore the Medtronic Veo pump with the Enlite sensor. LGS caused cessation of basal insulin infusion when sensor detected hypoglycaemia and resumed insulin delivery after a fixed two-hour period.

▶ **WHAT DID WE FIND?**

Of the 95 patients randomised, 49 were assigned to the pump-only therapy and 46 to the LGS group. Participants using the LGS feature had a significant reduction in the number of moderate and severe hypoglycaemic events. These participants had a substantial reduction in time spent in hypoglycaemia with no impact on the long-term glucose control. There were no episodes of diabetic ketoacidosis or hyperglycaemia with ketosis.

▶ **WHAT DOES THIS MEAN IN PRACTICE?**

LGS can reduce both the number of severe hypoglycaemic events and the time spent in hypoglycaemia. Patients with impaired awareness of hypoglycaemia and/or history of severe hypoglycaemia will benefit from the use of LGS in their clinical management.