

THE BENEFICIAL EFFECT OF THE PREDICTIVE LOW GLUCOSE MANAGEMENT SYSTEM ON HYPOGLYCAEMIA INCIDENCE AND GLYCAEMIC CONTROL IN TYPE 1 DIABETES MELLITUS

Thomakos P¹, Mitrakou A², Kepaptsoglou O¹, Taraoune I¹, Barreto C¹, Zoupas CS¹.

¹Diabetes Center and Clinic, Hygeia Hospital, Athens Greece, ²Diabetes Center, Department of Clinical Therapeutics, Alexandra Hospital, Athens, Greece.

Background and Aims

Continuous Subcutaneous Insulin Infusion (CSII) is considered the most advanced therapy of choice for the optimum management of Type 1 Diabetes Mellitus (T1DM). The aim of our study was to assess the effect of the Predictive Low Glucose Management (PLGM) system of the MiniMed 640G Insulin Pump, compared to the Low Glucose Suspend system (LGS) of the MiniMed Veo Insulin Pump, on hypoglycaemia frequency and glycaemic control in people with Type 1 Diabetes Mellitus. The **PLGM** system can prevent hypoglycaemia by suspending insulin delivery based on predicted sensor glucose values and the **LGS** system automatically suspends insulin delivery when the sensor glucose value reaches a preset threshold.

Methods

A cross-sectional study was conducted in 30 T1DM patients using the MiniMed 640G vs 30 using the MiniMed Veo sensor-augmented Insulin Pump for a minimum of 3 months. The patients were matched for Age and Diabetes duration. The effectiveness of these two sensor-augmented pumps was evaluated using CareLink software data. Hypoglycaemia was defined as an episode of interstitial glucose ≤ 54 mg/dl for ≥ 20 minutes and expressed as episodes per week.

Patient's characteristics

| Variable Mean \pm SD | PLGM | LGS | P |
|---------------------------------|-----------------|---------------------|----|
| n | 30 | 30 | |
| Gender (% male) | 50 | 53 | NS |
| Age (years) | 33.4 \pm 11.5 | 34.2 \pm 11.4 | NS |
| BMI (kg/m ²) | 23.4 \pm 3.6 | 24.5 \pm 3.4 | NS |
| Diabetes Duration (years) | 20.5 \pm 11.8 | 21.1 \pm 11.7 | NS |
| Total Daily Insulin Dose (i.u.) | 44.9 \pm 29.5 | 46.5 \pm 28.5 i.u | NS |

Results

| Variable Mean \pm SD | PLGM | LGS | P |
|--|---------------------------------|---------------------------------|---------------|
| Mean Sensor Glucose value (mg/dl) | 150.7 \pm 50.5 | 148.4 \pm 52.5 | NS |
| HbA1c (%) | 6.9 \pm 0.6 | 7.3 \pm 0.9 | 0.03 |
| Gold Score | 1.8 \pm 0.8 | 2.6 \pm 1.6 | 0.01 |
| Hypoglycaemia episodes / week | 1.9 \pm 1.3 | 3.6 \pm 1.9 | 0.0004 |
| Suspend Before Low activation / Low Suspend activation (times per day) | 2.2 \pm 1.6 | 1.8 \pm 0.8 | - |

Conclusions

Our results demonstrate that the use of the MiniMed 640G sensor-augmented pump system can help to reduce the frequency of hypoglycaemia, in combination with better glycaemic control.