

Real-world Glycemic and Person-Reported Outcomes after Tandem Control-IQ initiation in Children with Type 1 Diabetes [Get access >](#)

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Abstract

Aims

This multicenter prospective observational cohort study assessed real-world changes in glycemic and person-reported outcomes one-year after Control-IQ initiation in children and adolescents with type 1 diabetes.

Methods

Between October 2021 and December 2022, all children 6–18 years who started Control-IQ at 13 Belgian centers were consecutively recruited. Data were collected at start of Control-IQ and after 4, 8 and 12 months. Person-reported outcomes were evaluated through questionnaires (Diabetes Quality of Life for Youth [DQOLY], Hypoglycemia Fear Survey [HFS], HAPPI-D). Data are reported as mean ± SD or least-squares mean (95% CI).

Results

A total of 114 children were included, with a mean age of 12.0 ± 3.2 years and of whom 61.4% were girls. Time in range (3.9–10.0 mmol/L) increased from start (51.6% [47.6–55.5]) to 12 months (64.4% [61.2–67.5]) ($p < 0.001$). After 12 months, HbA1c decreased from 62 mmol/mol (60–65) (7.8% [7.6–8.1]) to 54 mmol/mol (52–56) (7.1% [6.9–7.3]) and time <3.9 mmol/L from 3.9% (3.1–4.8) to 2.7% (1.9–3.5) (all $p < 0.001$). Children scored better on DQOLY satisfaction (70.4 [67.8–73.0] vs 74.0 points [71.3–76.6]) and DQOLY impact (54.6 [50.9–58.3] vs 51.3 points [47.4–55.1]), and parents on HAPPI-D (22.5 [21.1–23.9] vs 19.6 points [18.2–21.0]) and HFS worry (25.0 [21.6–28.4] vs 20.3 points [17.0–23.5]) (all $p < 0.001$). Children missed fewer days of school (287 vs 30 days/100 person-years, $p = 0.001$) and parents missed less days of work (247 vs 47 days/100 person-years, $p < 0.001$).

Conclusions

One-year use of Control-IQ was associated with improved glycemic management, more diabetes-related quality of life and fewer school/work absences.

Keywords: Type 1 diabetes, Children and adolescents, Hybrid closed-loop, Control-IQ technology, t:slim X2, automated insulin delivery

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