CLOSER LOOK

MEMORANDUM

Diabetes Care publishes study assessing glycemic outcomes with Control-IQ and Omnipod 5 in youth with low bolus frequency – December 12, 2025

Control-IQ yields 8% higher TIR (55%) than Omnipod 5 (47%), driven by greater time in automated mode and automated boluses

Diabetes Care published a study on Thursday, "Effect of Low Bolus Frequency on Automated Insulin Delivery System Performance in Youth With Type 1 Diabetes," by Dr. Prerana Chatty (Children's Hospital of Philadelphia) and Dr. Brynn Marks et al. The study compared glycemic outcomes in youth using Omnipod 5 (n=75) and Tandem's Control-IQ algorithm (n=127) at the Children's Hospital of Philadelphia who had low bolus frequency (n=202). It aimed to evaluate AID performance in children who struggle to bolus consistently despite education on its importance. Although user-initiated bolus frequency was the same across systems (2.2 boluses/day), Control-IQ users achieved significantly higher TIR (+8%), leading authors to conclude that algorithm-specific responses to bolus frequency should be considered when selecting an AID system.

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Study design: Youth averaging ≤3.0 user-initiated boluses/day; Control-IQ sees greater time in automated mode

The study included youth ≤22 years with T1D using Control-IQ or Omnipod 5 with Dexcom G6, averaging ≤3.0 user-initiated boluses/day, and providing at least two weeks of AID data. Key baseline differences included: (i) longer T1D duration in Control-IQ users (8.8 vs. 7.9 years; p=0.001), higher total daily insulin (59.6 vs. 45.5 units/day; p=0.001); (ii) higher CGM active time (92% vs. 80%; p=0.001); and (iii) greater time in automated mode (81% vs. 62%; p=0.001). The number of user-initiated boluses were similar (2.2 vs. 2.1/day), but Control-IQ users ultimately received 8.6 total boluses/day due to automated corrections, leading to over six more boluses per day, on average, than Omnipod 5.

Researchers next propensity score-matched 98 youth. After matching, differences in T1D duration, CGM active time, and total daily insulin were no longer significant.

Results: Control-IQ yields higher TIR despite similar user-initiated bolusing

Adjusted TIR was 8% higher in Control-IQ users (55% vs. 47%; p<0.05), though overall glycemic management across both systems remained suboptimal in this population that was not regularly bolusing. Just 10% of Control-IQ users and 4% of Omnipod 5 users achieved ≥70% TIR. All participants who achieved ≥70% TIR did so while meeting the <4% Time below Range (TBR) goal.

Much of the higher TIR with Control-IQ use was driven by lower time at >250 mg/dL (22% vs. 29%; p=0.001). Time spent at 54-69 mg/dL and <54 mg was slightly higher with Control-IQ (see figure below), though both cohorts met goals of <4% TBR and <1% Time <54 mg/dL. Mean GMI was also found to be 0.6% lower with Control-IQ use (7.6% vs. 8.2%; p=0.001).

Figure 1: Glycemic outcomes with Control-IQ and Omnipod 5 after propensity-matching

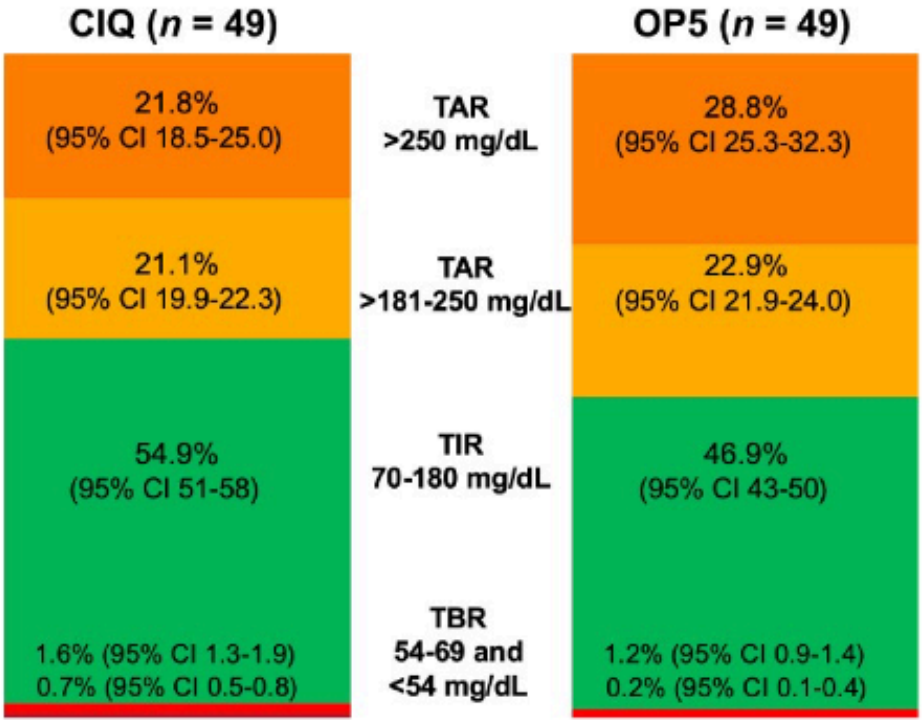

Figure 1—CGM TIR (70–180 mg/dL), TAR (181–250 mg/dL and >250 mg/dL), and TBR (<54 mg/dL and 54–69 mg/dL) for youth with T1D using OP5 or CIQ who bolus dose ≤3 times/day.

Source: *Diabetes Care*, "Effect of Low Bolus Frequency on Automated Insulin Delivery System Performance in Youth With Type 1 Diabetes," Dr. Prerana Chatty (December 11, 2025)

The authors posited that differences in algorithm design and higher time in automated mode among Control-IQ users likely drove the outcomes. They recommended discussing these algorithm-specific effects of bolus frequency with families when selecting an AID system.

Close Concerns' Questions

1. Were there any differences in user settings (basal rates, correction factors, insulin-to-carbohydrate ratios, and glucose targets) between the two systems, and if so, how might these have affected the results?
2. When each system was used with its recommended or "optimal settings," did outcomes differ meaningfully between groups?
3. To what extent might user behaviors such as physical activity or average meal size influenced glycemic outcomes?

--by Jeremy Alkire, Elizabeth Rose, Monica Oxenreiter, and Kelly Close