



Real-World Patient Experience from 5,024 Patients Using the t:slim X2 Insulin Pump With Basal-IQ Technology

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Introduction

The t:slim X2™ insulin pump with Basal-IQ® technology is a predictive low-glucose suspend (PLGS) system that helps reduce the frequency and duration of low-glucose events by predicting sensor glucose values 30 minutes ahead and suspending insulin if they are expected to drop below 80 mg/dL, or if a CGM reading falls below 70 mg/dL.

PROLOG (PLGS for Reduction of Low Glucose) trial results showed a 31% relative reduction in sensor time below 70 mg/dL with Basal-IQ technology. Additionally, the system was rated high in usability, in which 91% of study participants said the Basal-IQ feature on the t:slim X2 pump was easy to use.¹

Patient experience is an important indicator of adherence as well as improved glycemic and psychosocial outcomes.^{2,4} While the patient experience scores reported in clinical trials are important, real-world use provides enhanced data insights to estimate ongoing sustainability and usefulness of diabetes technologies. This is the first large-scale study to evaluate patient experience of Basal-IQ technology during real-world use.

Method

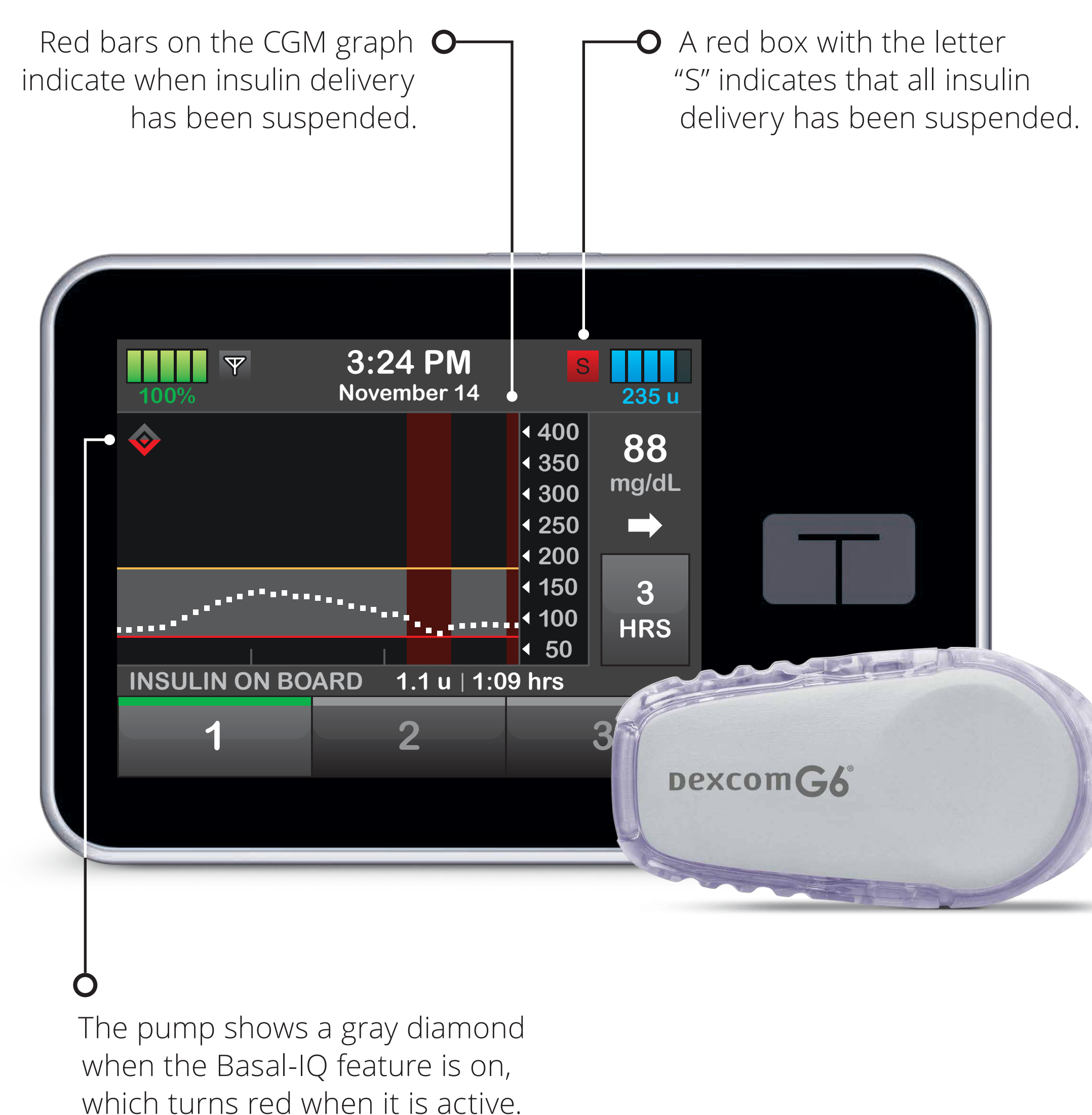
In May 2019, 5,024 users of the t:slim X2 insulin pump with Basal-IQ technology voluntarily responded to an online survey via Qualtrics, an online survey software. Nine metrics measured satisfaction, trust, usability, and utility of the system on a 5-point Likert scale.

All participants reported current use of the t:slim X2 pump with Basal-IQ technology. This system includes: the t:slim X2 insulin pump, the Dexcom G6 continuous glucose monitoring (CGM) system, and the Basal-IQ technology algorithm.

▼ **TABLE 1: Demographics.** Individuals with diabetes who use Basal-IQ technology.

Age		Diabetes Type	
M±SD	38.57±19.14	Type 1	92%
Gender		Type 2	8%
Female	53%	Pre-Tandem Therapy	
Male	47%	Insulin Pump	60%
Self-Reported HbA1c		Multiple Daily Injections	40%
M±SD	7.08±1.32		

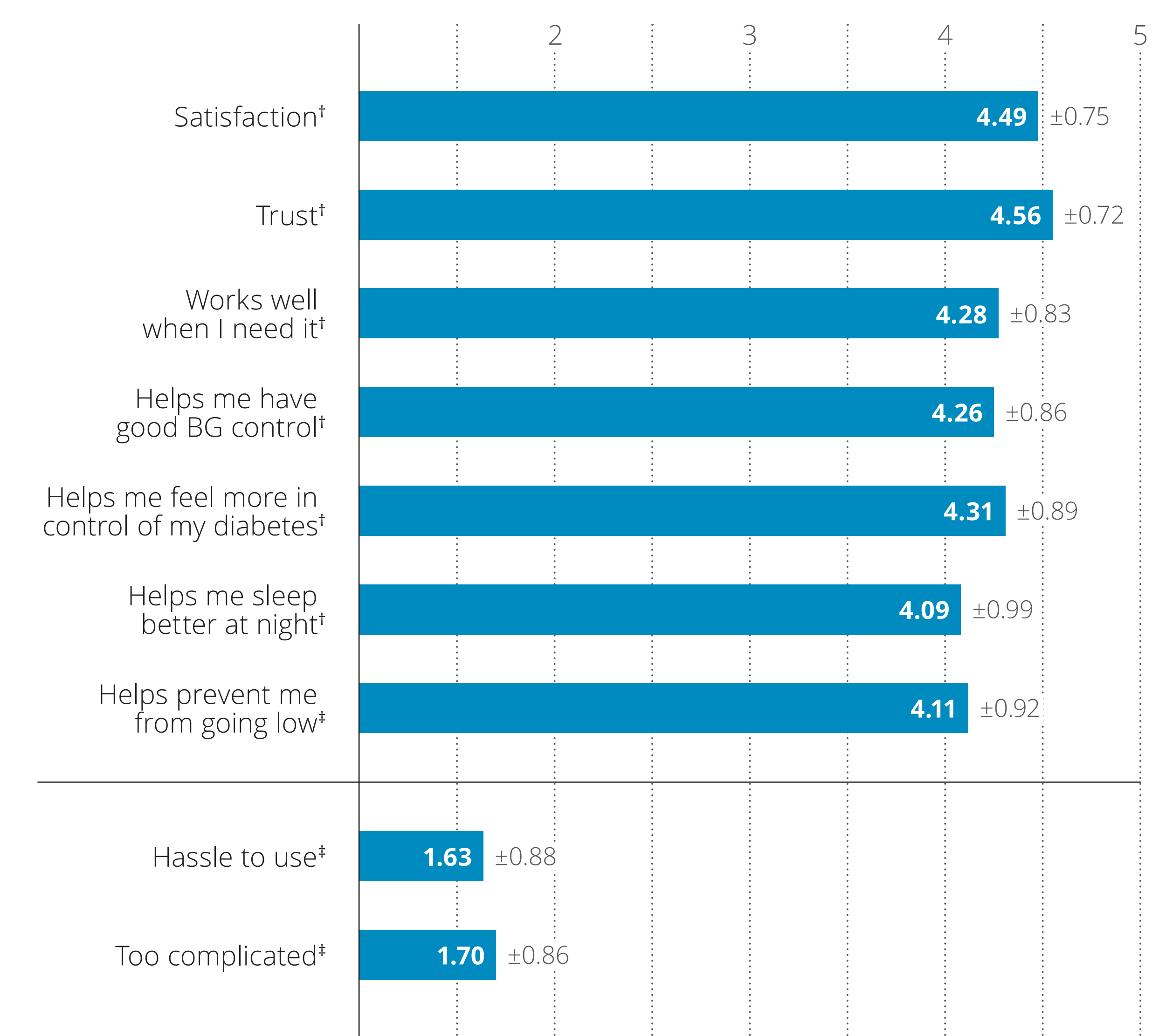
▼ **FIGURE 1: The t:slim X2 Insulin Pump With Basal-IQ Technology.** The predictive low-glucose suspend system is integrated with Dexcom G6 CGM.



Results

Participants reported high levels of satisfaction, trust, and overall usability. Survey findings showed that users perceived that the system has helped improved their sleep and overall blood glucose (BG) control (for mean scores of all patient experience metrics, see Figure 2). Results did not vary by age or prior therapy.

▼ **FIGURE 2: Patient Experience Outcome Variables.** Mean scores and standard deviations for the t:slim X2 insulin pump with Basal-IQ technology.



Conclusion

Study findings supported a very positive real-world experience of Basal-IQ technology in a large sample of users. Patient satisfaction with diabetes device technology has shown to be a critical factor in successful long-term diabetes management. Studies like these are therefore critical to ensure that patients have positive experiences when onboarding to new technology. Moreover, immediate and ongoing measurement of patient reported outcomes can provide important insights for system design improvements and the development of future device technology.

*Tandem Diabetes Care. † Higher mean scores are associated with more positive outcomes, while lower mean scores are more negative. ‡ Lower mean scores are associated with more positive outcomes, while higher mean scores are more negative.

References: 1. Forlenza GP, Li Z, Buckingham BA, et al. Predictive low-glucose suspend reduces hypoglycemia in adults, adolescents, and children with type 1 diabetes in an at-home randomized crossover study: Results of the PROLOG trial. *Diabetes Care*. 2018;41(10):2155-2161. 2. Tanenbaum ML, IturraldeE, Hanes SJ, et al. Trust in hybrid closed loop among people with diabetes: perspectives of experienced system users. *J Health Psychol*. doi:10.1177/1359105317718615. 3. Weissberg-Benchell J, Hood K, Laffell, et al. Toward development of psychosocial measures for automated insulin delivery. *J Diabetes Sci Technol*. 2016;10(3):799-801. 4. Farrington C. Psychosocial impacts of hybrid closed-loop systems in the management of diabetes: a review. *DiabetMed*. 2018;35(4), 436-449.

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