

Adaptive Therapy Settings: Qualitative Insights from People with Type 1 Diabetes Using Multiple Daily Injections Transitioning to an Automated System

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Background

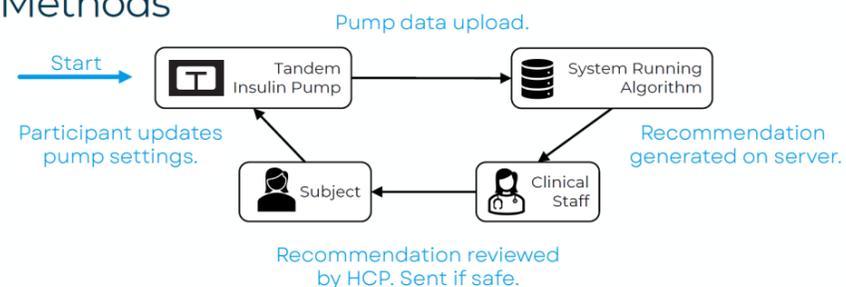
There is an increasing desire to understand how automating profile settings may influence multiple daily injection (MDI) users who fear insulin pump therapy due to its perceived complexity.

In this prospective single center 13-week study, 30 T1D adults using MDI were invited to use an advanced hybrid closed-loop (AHCL) system (Control-IQ technology, Tandem Diabetes Care) with Adaptive Therapy Settings (ATS) recommendations. ATS recommendations were generated by analyzing uploaded pump data and sent to study providers for safety review on Day 3, Day 7, and every seven days. Participants were then prompted to manually update their settings on their insulin pump.

The overall study explored the safety and efficacy of ATS

Adaptive Therapy Settings are automatically generated from consistent patterns in glucose data over 3-7 days to adjust pump settings.

Methods



recommendations on an insulin pump.

Aim

To describe the qualitative experience of study participants using ATS recommendations.

The intention was to examine the trust and confidence in the ATS recommendations.

Methods

As part of the larger study, we

invited participants to do a phone interview to discuss their experiences with ATS.

We conducted six, 30-minute semi-structured interviews. All interviews were conducted by two interviewers and recorded.

Interviews were analyzed using thematic analysis. Interview questions were designed to understand the experience, challenges, benefits, and changes in diabetes management while using the system.

TABLE 1

Participant Characteristics and Results

PID	Age	Gender	Education Level	# of Settings Changes	TIR (70-180 mg/dL) [%]			TB70 (<70 mg/dL) [%]			Post-Trial Therapy
					Run in	Final 30 days	Change	Run in	Final 30 days	Change	
P01	32	M	Master's	0*	55.8	76.4	+20.5	1.47	0.77	-0.70	Tandem
P02	33	F	Bachelor's	13	65.6	70.4	+4.8	2.76	1.42	-1.34	Insulet
P03	40	M	Associate	14	43.2	71.7	+28.5	0.21	0.84	+0.63	Tandem
P04	38	M	Master's	13	50.3	69.1	+18.8	2.50	2.98	+0.48	Tandem
P05	47	F	Some College	14	51.5	63.1	+11.6	1.09	2.03	+0.94	Working to get Tandem
P06	35	F	Bachelor's	13	60.7	73.1	+12.4	1.22	0.98	-0.24	MDI (wants Tandem, insurance issues)

*No settings recommendation provided since manual boluses were missing.

Results

Overall, participants were generally comfortable with the settings that were recommended to them. By the end of the study, participants believed they were equipped with well-tuned settings.

Conclusion

Overall, participants had a positive experience with ATS and reported improved glucose control, relief from the burden of managing glucose, improved sleep, and overall better quality of life.

Participants expressed trust in ATS to optimize their settings.

ATS recommendations are promising for MDI users who may need more tools to feel comfortable with pump therapy.

“It was nice to have such a fine-tuned of a carb ratio.” – P06

“The extra bandwidth that the system gave me exponentially increased my agency within the rest of my life.” – P01

“A couple of times I felt like I was fine, and they would say to make a change. Sometimes it felt like they would do that, and then I would be a little higher.” – P02

“It’s obvious that the pump is way better than my own doctoring skills of calculating my own carb ratios and insulin. I can’t compete with the pump.” – P03

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2. Battelino T, et al. Continuous glucose monitoring and metrics for clinical trials: an international consensus statement. *Lancet Diabetes Endocrinol.* 2023;11(1):42-57. doi: 10.1016/S2213-8587(22)00319-9.

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