Table 1: Time-in-range improvements associated with AID use in T1D

AID system	Study type and reference	n	Baseline therapy used prior to AID in AID group	TIR before AID use in AID group (%)	TIR after use of AID (%)	Absolute TIR improvement with AID use (%)	Duration of AID use (weeks)	Comparator used in control group; TIR change with control (%)
C-AID								
Tandem Control IQ	Meta-analysis, pooled 3 RCTs[1]	256 AID, 113 control	MDI or non-AID pump	57	70	**13**	13-26	Varied in the three trials pooled TIR 56 57
Medtronic MiniMed 780G	RCT[2]	41 AID, 41 control	MDI + intermittently scanned CGM	36	71	**35**	24	MDI + CGM; TIR 42.6 → 43.6
CamAPS	RCT[3]	46 AID, 40 control	Pump without CGM	52	65	**13**	12	SAPT; TIR 52 → 54
	RCT[4]	36 AID, 37 control	Non-AID pump	70	80	**10**		SAPT; 70 → 71
Omnipod 5	Single-arm prospective study[5]	241	Various	Adult: 65 Child: 52	Adult: 74 Child: 68	Adult: **9** Child: **16**	12	N/A
OS-AID								
Open APS/ AAPS	RCT crossover[6]	20	Pump without CGM	61	77	**16**	4	Non-AID pump; mean TIR was 58% (crossover design)
	RCT[7]	44 AID, 53 control	Pump therapy	61	71	**10**	24	SAPT; TIR 58 → 55
	Observational[8]	15	SAPT	75	84	**9**	12	N/A
	Observational[9]	12	Pump + CGM	68	79	**11**	12	N/A
	Observational[10]	26	MDI or pump	69	81	**12**	12	N/A
Loop	Observational (patient-reported data)[11]	558	Various	67	73	**6**	24	N/A
	Observational[10]	108	MDI or pump	64	81	**17**	3	N/A
iAPS	Observational[10]	114	MDI or pump	63	79	**16**	3	N/A

AID = Automated insulin delivery; C-AID = Commercial automated insulin delivery; CGM = Continuous glucose monitor; MDI = Multiple daily injection; OS-AID = Open-source automated insulin delivery; RCT = Randomised controlled trial; SAPT = Sensor-augmented pump therapy;

TIR = Time-in-range, defined as percentage of time with sensor glucose level 3.9-10mmol/L.

References

1. Beck RW, Kanapka LG, Breton MD, et al. A Meta-Analysis of Randomized Trial Outcomes for the t:slim X2 Insulin Pump with Control-IQ Technology in Youth and Adults from Age 2 to 72. *Diabetes Technol Ther* 2023; 25(5):329-42.
2. Choudhary P, Kolassa R, Keuthage W, et al. Advanced hybrid closed loop therapy versus conventional treatment in adults with type 1 diabetes (ADAPT): a randomised controlled study. *Lancet Diabetes Endocrinol* 2022; 10(10):720-31.
3. Tauschmann M, Thabit H, Bally L, et al. Closed-loop insulin delivery in suboptimally controlled type 1 diabetes: a multicentre, 12-week randomised trial. *Lancet* 2018; 392(10155):1321-9.
4. Boughton CK, Hartnell S, Thabit H, et al. Hybrid closed-loop glucose control compared with sensor augmented pump therapy in older adults with type 1 diabetes: an open-label multicentre, multinational, randomised, crossover study. *Lancet Healthy Longev* 2022; 3(3):e135-e42.
5. Brown SA, Forlenza GP, Bode BW, et al. Multicenter Trial of a Tubeless, On-Body Automated Insulin Delivery System With Customizable Glycemic Targets in Pediatric and Adult Participants With Type 1 Diabetes. *Diabetes Care* 2021; 44(7):1630-40.
6. Nanayakkara N, Sharifi A, Burren D, et al. Hybrid Closed Loop Using a Do-It-Yourself Artificial Pancreas System in Adults With Type 1 Diabetes. *J Diabetes Sci Technol* 2023:19322968231153882.
7. Burnside MJ, Lewis DM, Crocket HR, et al. Open-Source Automated Insulin Delivery in Type 1 Diabetes. *N Engl J Med* 2022; 387(10):869-81.
8. Wu Z, Luo S, Zheng X, et al. Use of a do-it-yourself artificial pancreas system is associated with better glucose management and higher quality of life among adults with type 1 diabetes. *Ther Adv Endocrinol Metab* 2020; 11:2042018820950146.
9. Gawrecki A, Zozulinska-Ziolkiewicz D, Michalak MA, et al. Safety and glycemic outcomes of do-it-yourself AndroidAPS hybrid closed-loop system in adults with type 1 diabetes. *PLOS ONE* 2021; 16(4):e0248965.
10. Samuel P, Khan, N, Klein, G, Skobkarev, S, Mammon, B, Fournier, M, Hawke, K, Weissinger, A and Elliott, T. Open-Source Artificial Pancreas Systems are Safe and Effective When Supported In-Clinic: Outcomes in 248 Consecutive T1 Patients. *Canadian Journal of Diabetes*, online 5 October 2023, https://doi.org/10.1016/j.jcjd.2023.09.003.
11. Lum JW, Bailey RJ, Barnes-Lomen V, et al. A Real-World Prospective Study of the Safety and Effectiveness of the Loop Open Source Automated Insulin Delivery System. *Diabetes Technol Ther* 2021; 23(5):367-75.

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