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Supplementary Table 1. Participant Characteristics at Enrollment – *medians (IQR)* or *n (%)*

Characteristic	N=30
Age (yrs)	44 (29, 51)
Range	18 to 66
Male	17 (57%)
Race*	
White non-Hispanic	24 (96%)
Asian	1 (4%)
Diabetes duration (yrs)	19 (13, 28)
Body-mass index (kg/m^2)	25 (23, 27)
A1C (%)	7.3 (7.1, 7.7)
Daily total insulin (U/kg/day)	0.57 (0.42, 0.72)
Daily basal insulin (U/kg/day)	0.27 (0.20, 0.37)

* Ethnicity/Race was not collected for five patients due to French laws.

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Supplementary Table 2. Additional Efficacy and Safety Outcomes (N=29 participants*)

Time of Day	**Overall (Day and Night)**			**Night Only (11:00PM to 7:00AM)**			**Day Only (7:00AM to 11:00PM)**		
Study Phase	**Baseline**	**Overnight-only CLC**	**24/7 CLC**	**Baseline**	**Overnight-only CLC**	**24/7 CLC**	**Baseline**	**Overnight-only CLC**	**24/7 CLC**
Total sensor *hours** *median*	335	336	336	115	113	112	217	219	218
Time Spent <50 *mg/dL median* (*IQR*)	0.8% (0.1%, 1.3%)	0.2% (0.1%, 0.5%)	0.2% (0.0%, 0.4%)	0.3% (0.0%, 1.0%)	0.0% (0.0%, 0.1%)	0.0% (0.0%, 0.1%)	0.9% (0.1%, 1.2%)	0.2% (0.1%, 0.7%)	0.2% (0.0%, 0.4%)
P-value vs. Baseline	*NA*	*<0.001*	*<0.001*	*NA*	*<0.001*	*0.005*	*NA*	*0.006*	*<0.001*
P-value vs. Night CLC†	*NA*	*NA*	*0.29*	*NA*	*NA*	*>0.99*	*NA*	*NA*	*0.09*
Time Spent <60 *mg/dL median* (*IQR*)	2.2% (0.7%, 3.5%)	1.1% (0.5%, 1.5%)	0.7% (0.3%, 1.0%)	1.4% (0.4%, 2.9%)	0.2% (0.0%, 0.6%)	0.1% (0.0%, 0.6%)	2.4% (0.8%, 3.5%)	1.4% (0.7%, 1.9%)	0.7% (0.4%, 1.1%)
P-value vs. Baseline	*NA*	*0.002*	*<0.001*	*NA*	*<0.001*	*<0.001*	*NA*	*0.04*	*<0.001*
P-value vs. Night CLC†	*NA*	*NA*	*<0.001*	*NA*	*NA*	*0.26*	*NA*	*NA*	*<0.001*
Low Blood Glucose Index (LBGI) *median* (*IQR*)	1.1 (0.6, 1.9)	0.8 (0.6, 0.9)	0.6 (0.4, 0.8)	0.7 (0.4, 1.6)	0.4 (0.3, 0.5)	0.3 (0.2, 0.6)	1.2 (0.8, 1.7)	0.9 (0.7, 1.2)	0.7 (0.4, 0.9)
P-value vs. Baseline	*NA*	*0.006*	*<0.001*	*NA*	*<0.001*	*<0.001*	*NA*	*0.05*	*<0.001*
P-value vs. Night CLC†	*NA*	*NA*	*<0.001*	*NA*	*NA*	*0.53*	*NA*	*NA*	*<0.001*
Area Over the Curve (AOC) 70 *mg/dL median* (*IQR*)	0.5 (0.2, 0.9)	0.3 (0.1, 0.4)	0.2 (0.1, 0.3)	0.3 (0.1, 0.6)	0.1 (0.0, 0.2)	0.0 (0.0, 0.2)	0.6 (0.2, 0.9)	0.3 (0.2, 0.5)	0.2 (0.1, 0.3)
P-value vs. Baseline	*NA*	*<0.001*	*<0.001*	*NA*	*<0.001*	*<0.001*	*NA*	*0.03*	*<0.001*
P-value vs. Night CLC†	*NA*	*NA*	*<0.001*	*NA*	*NA*	*0.22*	*NA*	*NA*	*<0.001*
High Blood Glucose Index (HBGI) *median* (*IQR*)	6.8 (5.9, 7.8)	5.0 (4.3, 6.2)	5.5 (4.6, 6.7)	7.5 (5.4, 9.7)	5.1 (4.1, 5.7)	5.4 (4.3, 6.7)	6.4 (5.2, 8.0)	5.1 (4.4, 7.1)	5.5 (4.7, 6.3)
P-value vs. Baseline	*NA*	*<0.001*	*0.001*	*NA*	*<0.001*	*<0.001*	*NA*	*0.03*	*0.02*
P-value vs. Night CLC†	*NA*	*NA*	*0.26*	*NA*	*NA*	*0.05*	*NA*	*NA*	*0.52*

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Average Daily Risk Range (ADRR) *median* (*IQR*)	27 (25, 34)	24 (21, 28)	24 (19, 27)	NA	NA	NA	NA	NA	NA
P-value vs. Baseline	*NA*	*0.003*	*<0.001*						
P-value vs. Night CLC†	*NA*	*NA*	*0.71*						
Area Under the Curve (AUC) 180 *mg/dL median* (*IQR*)	15.0 (11.7, 18.4)	9.2 (7.7, 13.4)	11.3 (7.6, 14.2)	17.7 (7.9, 26.4)	8.4 (5.7, 11.0)	9.1 (6.4, 14.2)	13.6 (9.6, 17.9)	10.0 (7.7, 15.3)	9.8 (7.5, 14.0)
P-value vs. Baseline	*NA*	*<0.001*	*<0.001*	*NA*	*<0.001*	*<0.001*	*NA*	*0.02*	*0.003*
P-value vs. Night CLC†	*NA*	*NA*	*0.39*	*NA*	*NA*	*0.06*	*NA*	*NA*	*0.86*
Time Spent >250 *mg/dL median* (*IQR*)	7% (4%, 11%)	4% (3%, 7%)	5% (3%, 7%)	8% (3%, 14%)	3% (2%, 6%)	4% (2%, 6%)	6% (3%, 10%)	5% (3%, 6%)	5% (3%, 7%)
P-value vs. Baseline	*NA*	*<0.001*	*<0.001*	*NA*	*<0.001*	*<0.001*	*NA*	*0.07*	*0.006*
P-value vs. Night CLC†	*NA*	*NA*	*0.74*	*NA*	*NA*	*0.09*	*NA*	*NA*	*0.68*
Time Spent >300 *mg/dL median* (*IQR*)	2% (1%, 3%)	1% (0%, 2%)	1% (0%, 2%)	2% (0%, 6%)	0% (0%, 1%)	0% (0%, 2%)	2% (0%, 3%)	1% (1%, 2%)	1% (0%, 2%)
P-value vs. Baseline	*NA*	*0.006*	*0.005*	*NA*	*<0.001*	*0.006*	*NA*	*0.67*	*0.09*
P-value vs. Night CLC†	*NA*	*NA*	*0.62*	*NA*	*NA*	*0.23*	*NA*	*NA*	*0.22*

*****One participant was excluded due to missing baseline CGM data

† Post-hoc comparison of overnight-only CLC vs. 24/7 CLC.

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Supplementary Table 3. Overall Change from Baseline in Time below 70, between 70 and 180, and above 180 mg/dL by Study Phase and Baseline – *median (IQR)* (N=29 participants*)[a]

	Difference in Time <70 mg/dL		Difference in Time in Range		Difference in Time >180 mg/dL	
	Baseline <4% (N=13)	**Baseline ≥4% (N=16)**	**Baseline <65% (N=15)**	**Baseline ≥65% (N=14)**	**Baseline <35% (N=19)**	**Baseline ≥35% (N=10)**
Overnight-only CLC	-0.4% (-0.7%, +0.6%)	-3.2% (-4.5%, -0.8%)	+12% (+7%, +20%)	+5% (-1%, +10%)	-4% (-12%, +2%)	-13% (-22%, -8%)
24/7 CLC	-0.9% (-1.5%, +0.3%)	-5.1% (-6.7%, -2.7%)	+13% (+8%, +21%)	+2% (-2%, +9%)	-2% (-7%, +4%)	-13% (-17%, -8%)

*****One participant was excluded due to missing baseline CGM data

a - A negative change from baseline denotes an improvement for time <70 mg/dL and time >180 mg/dL, whereas a positive change from baseline denotes improvement for time in range.

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Supplementary Table 4. System Performance Metrics (N=30 participants) – *median (IQR)*

	Overnight-only CLC	**24/7 CLC**
% Successful Automated Pump Bolus Requests during DiAs Operation	99.8%	99.8%
Number of Pump Disconnections from DiAs per 24Hr	0.2 (0.2, 0.4)	0.2 (0.1, 0.3)
% Successful CGM Communication with DiAs (received by DiAs vs. available on CGM receiver during periods DiAs was active)	99.9%	99.2%
Number of CGM Disconnections (loss of connectivity for at least 18 minutes) per 24Hr	0.8 (0.6, 1.0)	0.7 (0.5, 1.3)
Number of CGM Calibrations per 24Hr	4.1 (3.1, 4.8)	3.1 (2.4, 4.5)
Number of System Reboots per 24Hr	1.3 (0.7, 1.8)	0.7 (0.4, 1.5)
% of Time in CL Mode While DiAs Was Active	85.2%*	90.0%
Mean Hours of Continuous CL Segments	3.9*	7.8
Number of Manual Correction Boluses per 24Hr	2.1 (1.2, 4.0)	1.7 (0.7, 2.5)
Number of CHO Hypo Treatment events per 24Hr	1.2 (0.8, 1.9)	1.9 (1.3, 3.0)

* For the Overnight CL column, the % of Time in CL Mode While DiAs Was Active assessment and Mean Hours of Continuous CL Segments assessment were restricted to overnight (11:00PM to 7:00AM) only. The other rows were calculated using data over all 24 hours.

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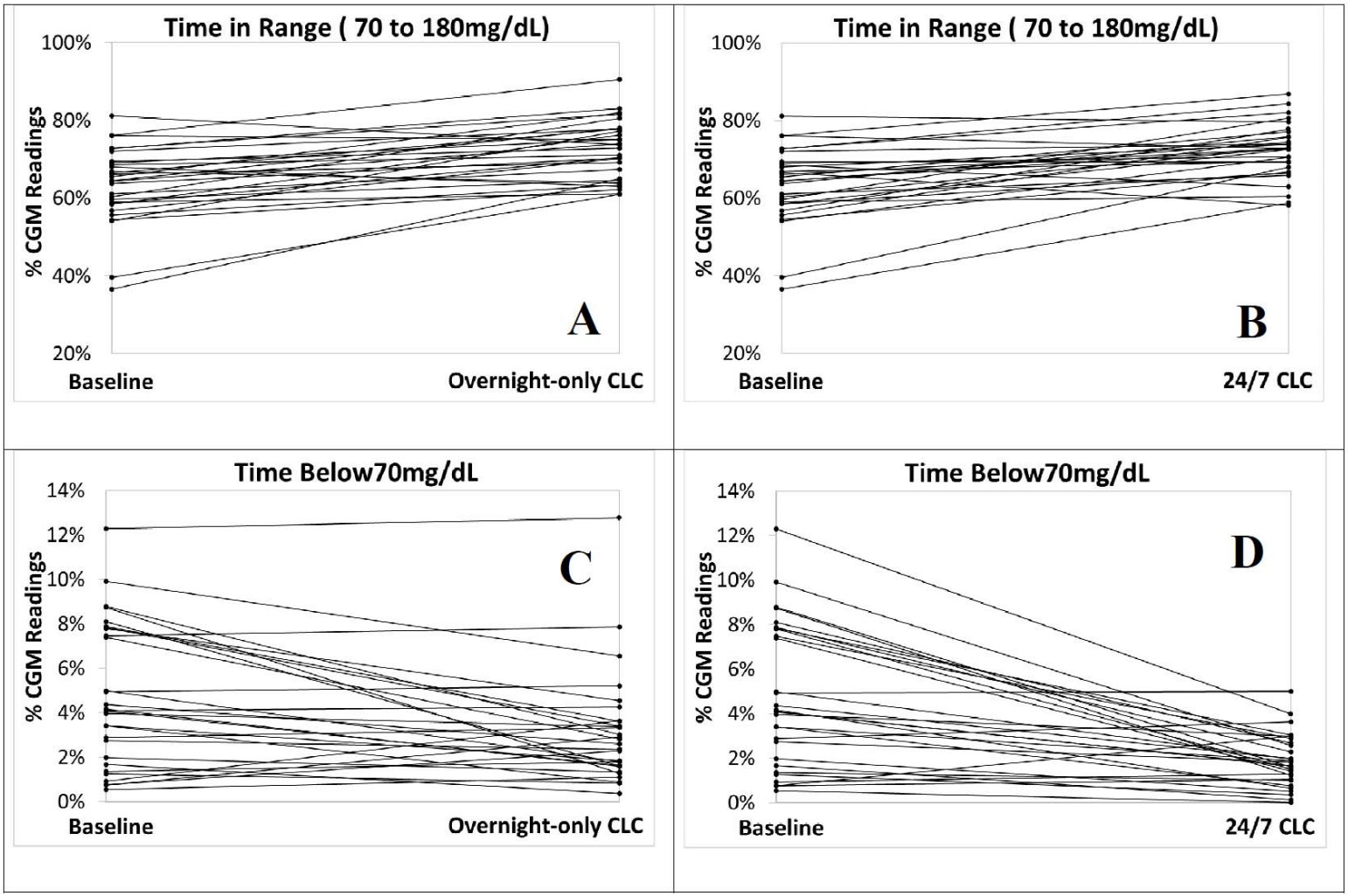
Supplementary Figure 1. Participant-Level Overall (Day and Night) Time below 70 mg/dL and Time in Range (70 to 180 mg/dL) by Study Phase (N=29 participants; one participant was excluded due to missing baseline CGM data**).** Time in range and time below 70 mg/dL during baseline and overnight-only CLC phases are shown in Panels A and C; while baseline and 24/7 CLC phase metrics are shown in Panels B and D.



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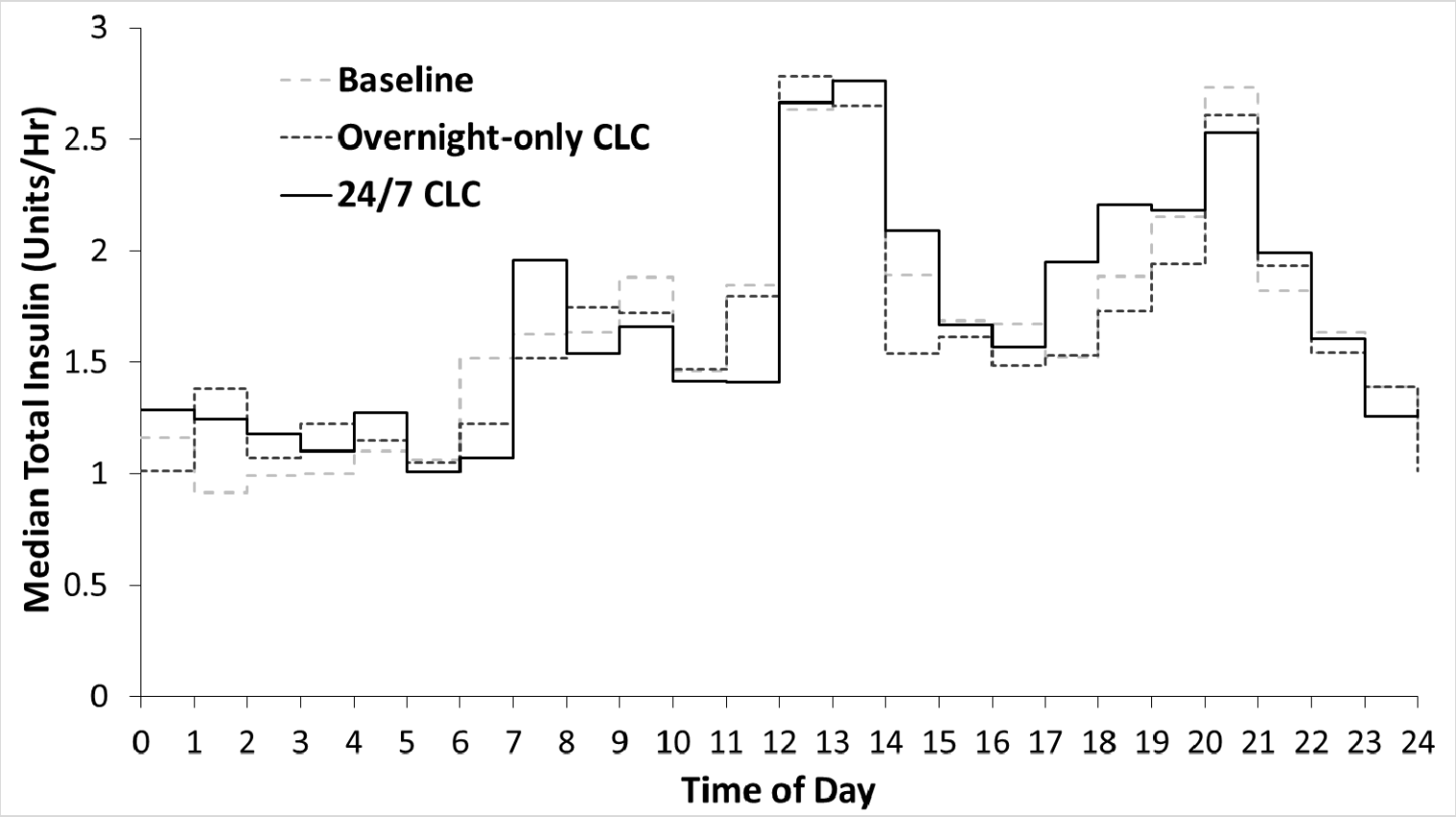
Supplementary Figure 2. 24-Hour Median Total Delivered Insulin Comparing Baseline with Overnight-only CLC and with 24/7 CLC (N=29 participants; one participant was excluded due to missing baseline insulin data)



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Supplementary Appendix A. Summary of Participant Suggestions for Improvements or Enhancements to DiAs

Some of the features that the participants appreciated included the intuitive interface, the combined CGM and insulin delivery plot, and the meal screen. Participants also liked not having to think about correction boluses, as the system attenuated insulin delivery in real time. Additional features were requested for subsequent versions including the ability to set a temporary basal rate and the inclusion of an extended meal bolus, both features that have subsequently been implemented in DiAs for future studies. Suggestions for alarm timing and thresholds were offered to prevent alarm fatigue, which occurred for some participants. These included a hyperglycemia alarm set above 250 mg/dL that would not repeat more often than hourly and a hypoglycemia alarm that would not repeat more than every 30-60 minutes to allow recovery of the CGM trace after treatments. Pump disconnections, pairing issues and Bluetooth reliability were still problematic in this generation of the AP system. Participants requested that access to remote monitoring be given to caregivers/family. Some participants felt that the algorithms were not aggressive enough, while others felt they were too aggressive and the ability of the algorithm to adapt to the user automatically was a desired feature. After using the system, participants reported enjoying the ability of the system to prevent hypoglycemia overnight and the reduced extremes of high and low blood sugars; one participant claimed to feel “100% better physically.” Participants reported enjoying being able to sleep through the night and “feeling safe about diabetes.” They trusted that the DiAs-USS Virginia would prevent hypoglycemic events as they slept and result in “ideal outcomes in the morning.”