Supplementary Material

Complete participant eligibility criteria

Inclusion criteria for participation:

1) Age ≥ 18 and ≤ 45 years at the time of screening.
2) Clinical diagnosis of type 1 diabetes
3) Currently using an insulin pump at the time of screening.
4) HbA1c ≤ 9%, as performed by point of care or central laboratory testing. A1c will be assessed at the screening visit, or if already completed within 2 months of the screening visit, the prior lab value may be used in lieu of repeating this assessment.
5) Pregnant 14-32 weeks gestation.
6) Singleton pregnancy without any other significant known complications.
7) No proven or suspected fetal malformations diagnosed in the current pregnancy prior to enrollment.
8) Willingness to bolus for all meals and snacks that contain ≥ 5 grams of carbohydrate.
9) Willingness to switch to Novolog or Humalog for the closed-loop session.
10) Willingness not to start any new non-insulin glucose-lowering agent during the course of the trial.
11) Willing to abide by the study protocol and use study-provided devices.

Exclusionary criteria:

1) Known unstable cardiac disease or untreated cardiac disease, as revealed by history or physical examination.
2) Concurrent use of Afrezza or any non-insulin glucose-lowering agent other than metformin (including GLP-1 agonists, Symlin, DPP-4 inhibitors, SGLT-2 inhibitors, sulfonylureas).
3) Hemophilia or any other bleeding disorder
4) Laboratory results:
    a. A1C > 9%
    b. Abnormal liver or renal function (Transaminase >2 times the upper limit of normal, creatinine > 1.5 mg/dL)

c. Labs drawn at screening visit or within three months prior to screening (for other purposes) will suffice for enrollment purposes

5) Dermatological conditions that would preclude wearing a CGM sensor or infusion site.

6) Any condition that could interfere with participating in the trial, based on investigator judgment.

7) Participation in another pharmaceutical or device trial at the time of enrollment or during the study.

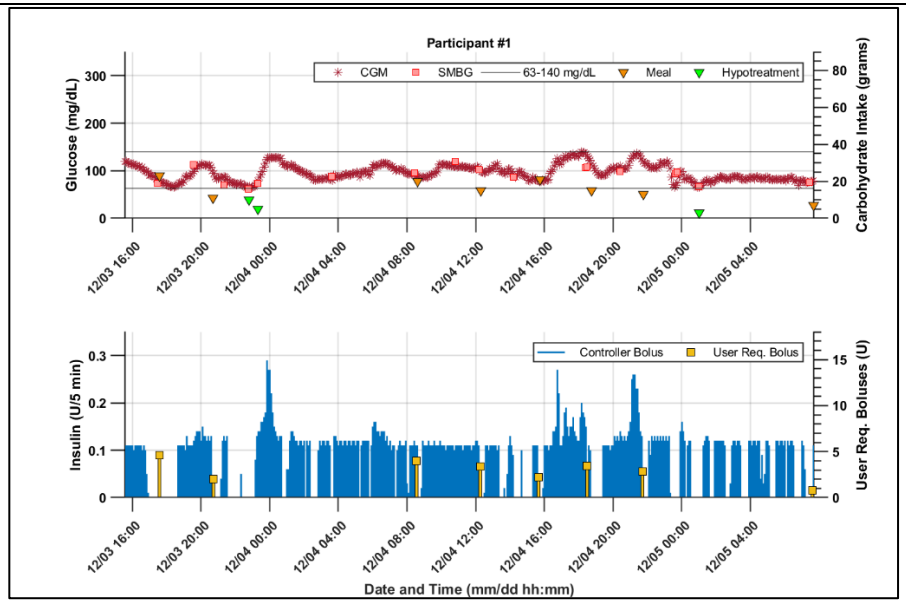
8) Having a direct supervisor at place of employment who is also directly involved in conducting the clinical trial (as a study investigator, coordinator, etc.); or having a first-degree relative who is directly involved in conducting the clinical trial

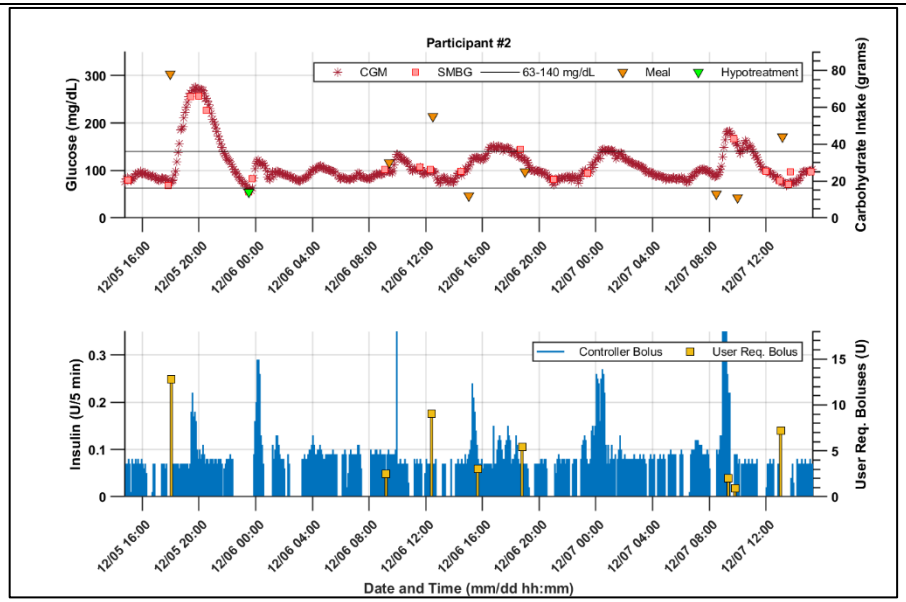
Pregnancy Specific Design of Zone-MPC

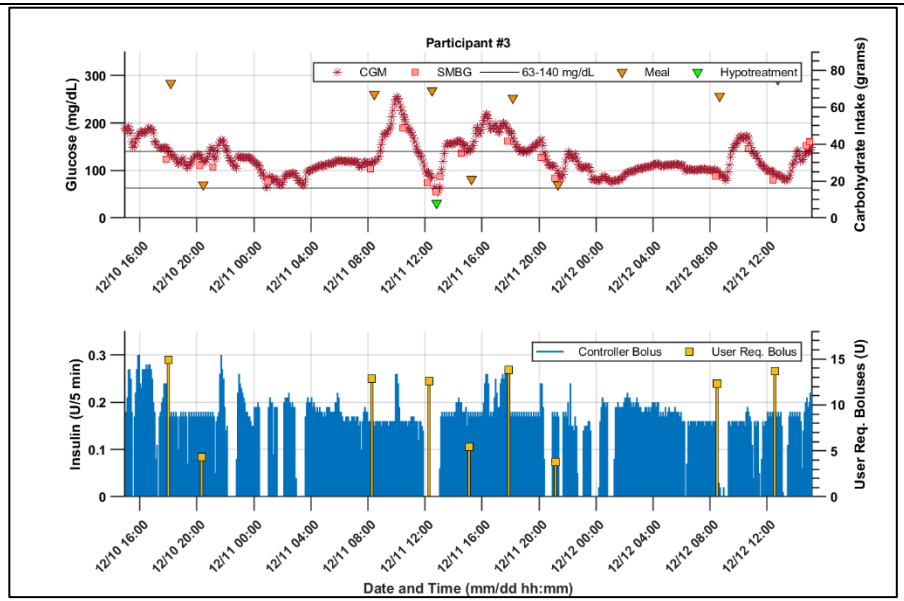
Closed Loop Control			
	Nominal Value	**Pregnancy Value**	**Effect of the Change**
Day-time target glucose zone	90-120 mg/dL	80-110 mg/dL	Tighter glucose control as recommended for pregnant women with diabetes
Night-time target glucose zone	100-120 mg/dL	80-100 mg/dL	Tighter glucose control as recommended for pregnant women with diabetes
Reference fasting glucose	110 mg/dL	90 mg/dL	Controller deviation variables are calculated using a lower glucose value in the center of the zone
Active glucose velocity penalty range	140-180 mg/dL	120-180 mg/dL	Reduced post-prandial glucose exposure as recommended for pregnant women with diabetes
User-requested bolus insulin decay curve	4 hours	3 hours	Earlier relaxation of the insulin on board related constraint on the controller action
Meal and Correction Control			
	Nominal Value	**Pregnancy Value**	**Effect of the Change**
Additional correction bolus threshold (added to the meal bolus)	150 mg/dL	100 mg/dL	Reduced post-prandial glucose exposure and more assertive correction bolus as recommended for pregnant women with diabetes
Target glucose in corrections	150 mg/dL	90 mg/dL	More assertive postprandial glucose control to reduce post-prandial glucose exposure as recommended for pregnant women with diabetes
Glucose threshold for reducing meal bolus	120 mg/dL	70 mg/dL	Reduced post-prandial glucose exposure as recommended for pregnant women with diabetes

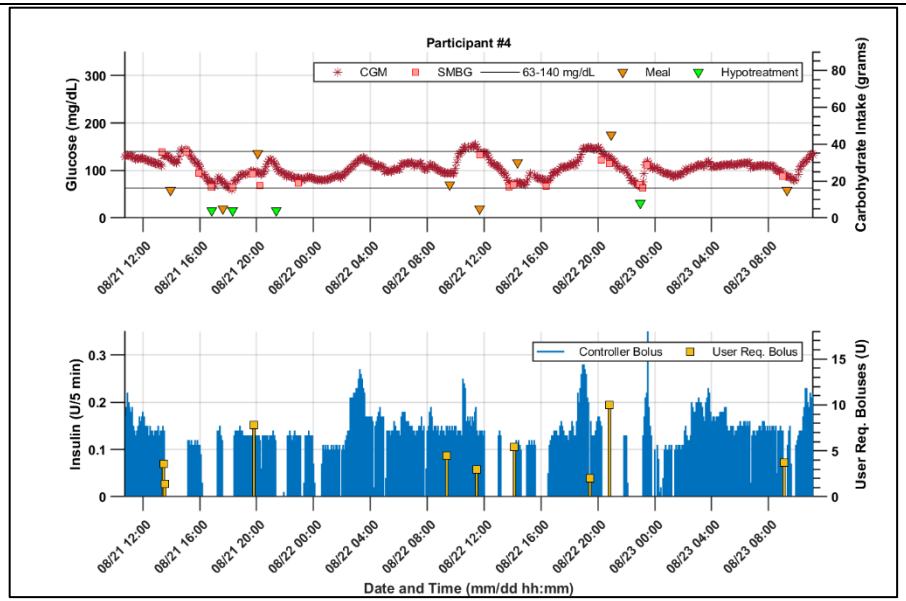
CLC Session Figures for Each Participant

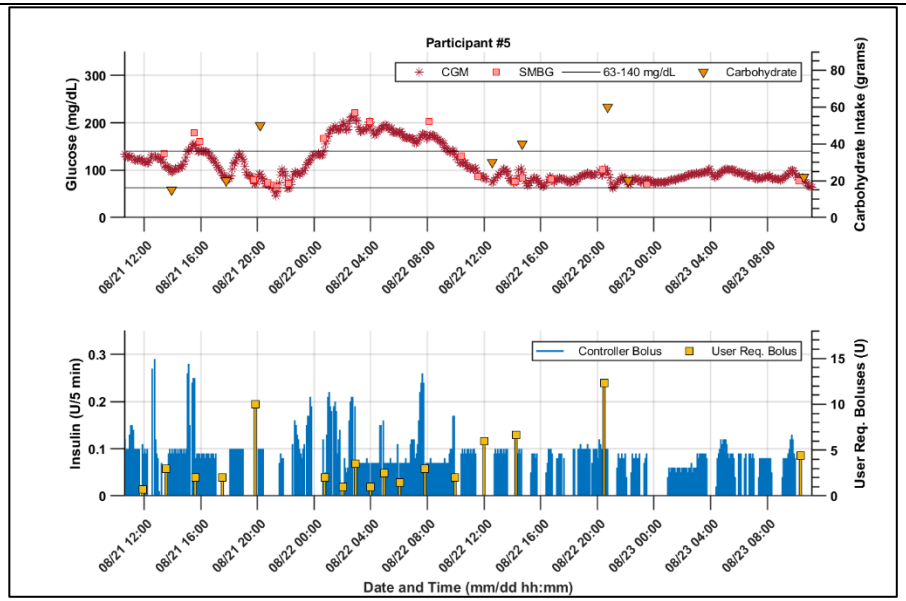
Note: Participant numbers are assigned randomly.

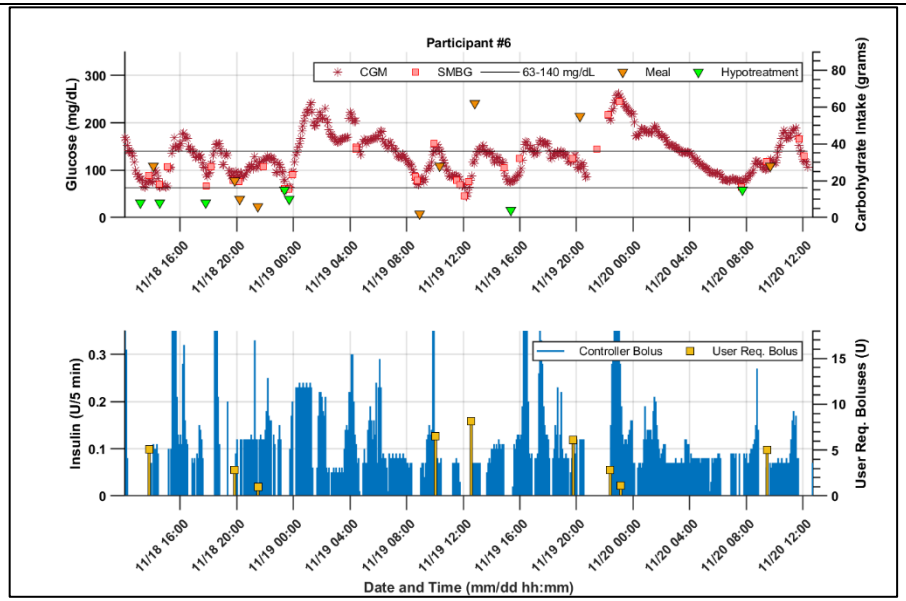


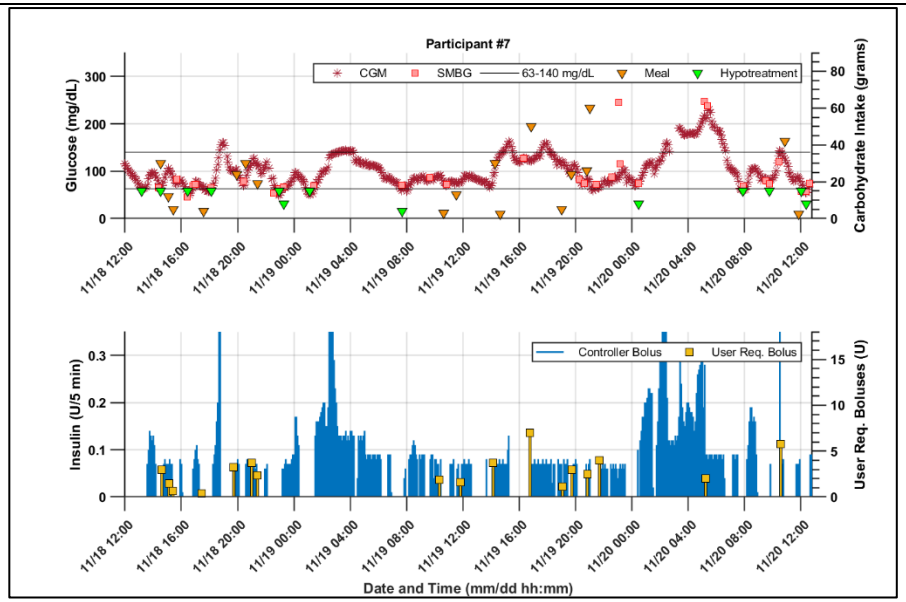


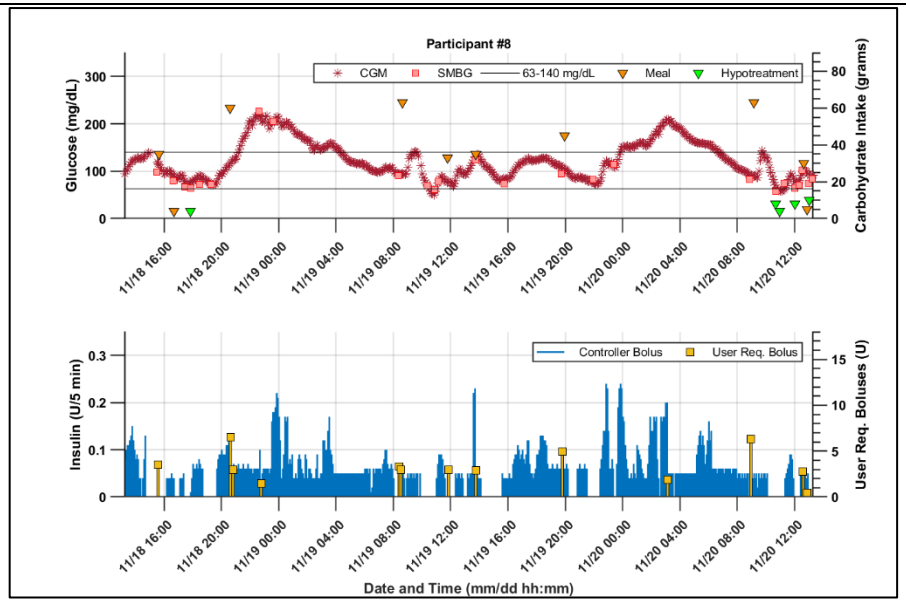


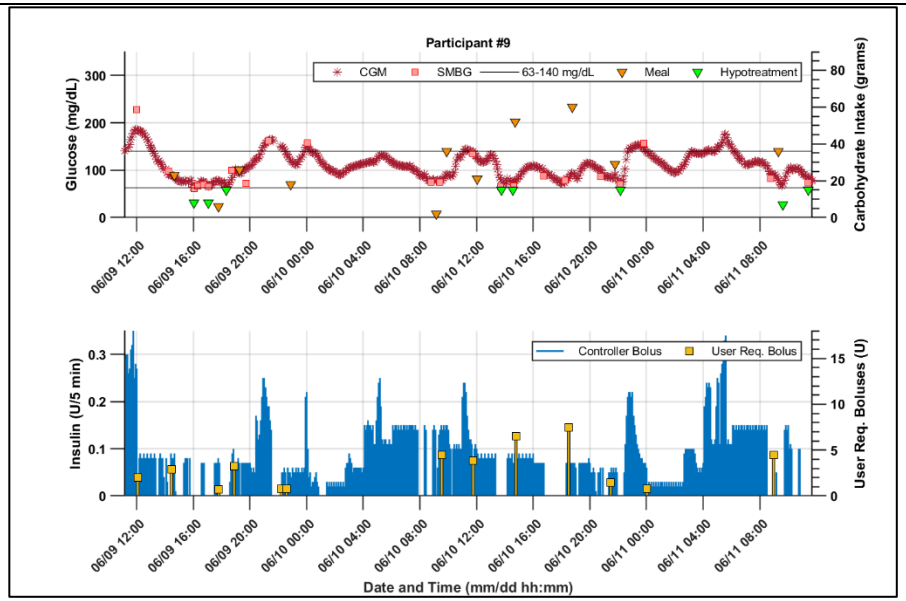


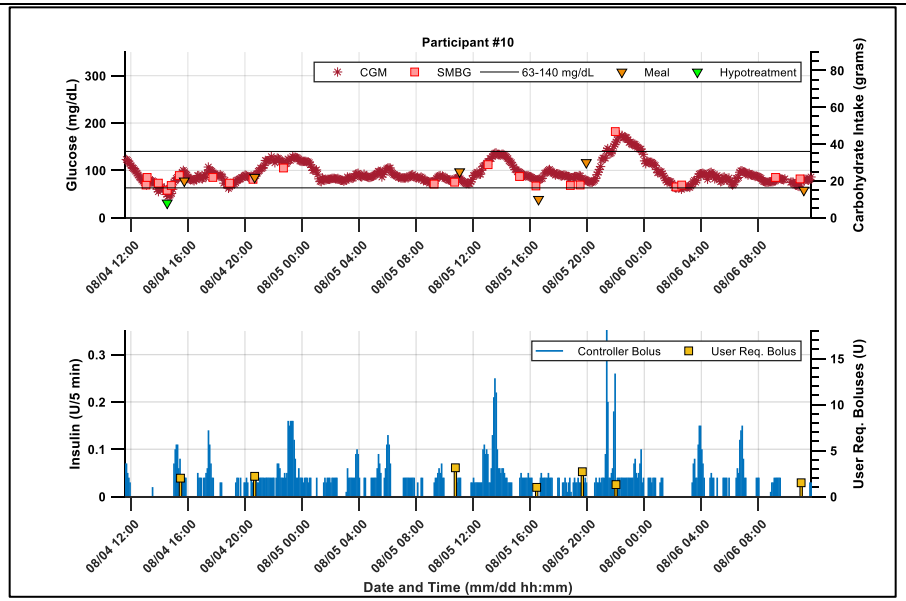

Participant #5
CGM
SMBG
63-140 mg/dL
Carbohydrate
Glucose (mg/dL)
Carbohydrate Intake (grams)
Controller Bolus
User Req. Bolus
Insulin (U/5 min)
User Req. Boluses (U)
Date and Time (mm/dd hh:mm)

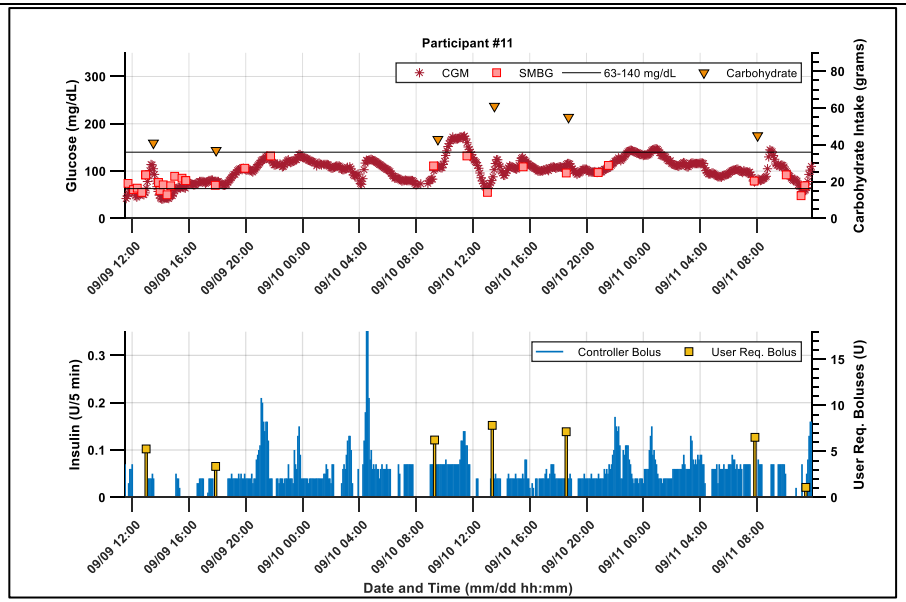

Participant #6
CGM
SMBG
63-140 mg/dL
Meal
Hypotreatment
Glucose (mg/dL)
Carbohydrate Intake (grams)
Controller Bolus
User Req. Bolus
Insulin (U/5 min)
User Req. Boluses (U)
Date and Time (mm/dd hh:mm)


Participant #7
CGM
SMBG
63-140 mg/dL
Meal
Hypotreatment
Glucose (mg/dL)
Carbohydrate Intake (grams)
Controller Bolus
User Req. Bolus
Insulin (U/5 min)
User Req. Boluses (U)
Date and Time (mm/dd hh:mm)


Participant #8
CGM
SMBG
63-140 mg/dL
Meal
Hypotreatment
Glucose (mg/dL)
Carbohydrate Intake (grams)
Controller Bolus
User Req. Bolus
Insulin (U/5 min)
User Req. Boluses (U)
Date and Time (mm/dd hh:mm)


Participant #9
CGM
SMBG
63-140 mg/dL
Meal
Hypotreatment
Glucose (mg/dL)
Carbohydrate Intake (grams)
Controller Bolus
User Req. Bolus
Insulin (U/5 min)
User Req. Boluses (U)
Date and Time (mm/dd hh:mm)


Participant #10
CGM
SMBG
63-140 mg/dL
Meal
Hypotreatment
Glucose (mg/dL)
Carbohydrate Intake (grams)
Controller Bolus
User Req. Bolus
Insulin (U/5 min)
User Req. Boluses (U)
Date and Time (mm/dd hh:mm)


Participant #11
CGM
SMBG
63-140 mg/dL
Carbohydrate
Glucose (mg/dL)
Carbohydrate Intake (grams)
Controller Bolus
User Req. Bolus
Insulin (U/5 min)
User Req. Boluses (U)
Date and Time (mm/dd hh:mm)

Total recorded carbohydrate ingestion and hypoglycemia treatment information per participant during CLC

Participant #	Total Meal and Snack Related Carbohydrate Consumption (g)	Number of Rescues	Total Rescue Related Carbohydrate Consumption (g)
Participant #1	125	3	18
Participant #2	268	1	14
Participant #3	472	1	8
Participant #4	168	4	20
Participant #5	257	0	0
Participant #6	239	7	68
Participant #7	382	13	163
Participant #8	373	5	34
Participant #9	309	8	98
Participant #10	122	1	8
Participant #11	282	9	101
Average	**272.5**	**4.7**	**48.4**
Std. Deviation	**109.6**	**4.1**	**52.4**

The participants' average daily entered carbohydrate ingestion during the run-in phase (obtained from insulin pump downloads)

Participant #	Daily Carbohydrate Entry into Insulin Pump (grams)*
Participant #1	306±36.67
Participant #2	144.29±30.77
Participant #3	326.43±34.85
Participant #4	88.43±15.52
Participant #5	134.29±22.63
Participant #6	77.57±10.2
Participant #7	56.29±26.61
Participant #8	191.29±25.6
Participant #9	192±57.61
Participant #10	72±16.3
Participant #11	211±32.55
Average (SD)	**163.6±92.89**

***This may not fully represent daily carbohydrate intake as some participants reported omitting carbohydrate entry for some meal boluses and/or not bolusing for some meals.