

Supplemental Appendix

Table A1 shows outcomes of eating in scenario and eating out scenario studies based on sensor glucose.

Table A2 shows outcomes combining eating in scenario and eating out scenario studies based on sensor glucose.

Cumulative probabilities of plasma glucose and sensor glucose combining eating in scenario and eating out scenario studies from the start of closed-loop and from midnight are shown in Figures A1 and A2, respectively.

Figure A3 shows plasma ethanol concentration during eating out scenario.

Table A1: Summary of outcomes based on sensor glucose in eating in scenario and eating out scenario studies.

Study	Outcome	N	Closed-loop	Conventional	P
Eating in scenario	Sensor glucose at start of closed-loop (mmol/L)	12	6.6 (1.9)	6.6 (2.4)	-
	Overnight sensor glucose (mmol/L)	12	^a 6.6 (0.7) ^b [6.5 (0.7)]	6.5 (1.3) [6.4 (2.3)]	0.61 [0.76]
	SD of overnight sensor glucose (mmol/L)	12	1.0 (0.7 to 1.3) [0.8 (0.6 to 0.9)]	1.5 (1.2 to 2.3) [0.7 (0.7 to 1.6)]	0.02 [0.63]
	^c MAGE of overnight sensor glucose (mmol/L)	12	2.5 (1.6 to 3.2) [2.4 (1.2 to 2.7)]	3.8 (2.6 to 5.4) [2.7 (1.3 to 3.9)]	0.07 [0.28]
	Time when sensor glucose in target range 3.91 to 8.0mmol/L (%)	12	94 (82 to 100) [99 (85 to 100)]	63 (49 to 78) [48 (33 to 76)]	<0.001 [0.001]
	Time for which sensor glucose ≤ 3.5mmol/L (%)	12	0 (0 to 1.8) [0 (0 to 0)]	0 (0 to 4) [0 (0 to 6)]	0.36 [0.05]
	Time for which sensor glucose ≤ 3.9mmol/L (%)	12	0 (0 to 3) [0 (0 to 0)]	2 (0 to 25) [1 (0 to 35)]	0.06 [0.03]
	Time for which sensor glucose > 8.0mmol/L (%)	12	4 (0 to 15) [0 (0 to 15)]	17 (12 to 36) [13 (0 to 59)]	0.01 [0.05]
	Low blood glucose index	12	0.5 (0.3 to 0.8) [0.4 (0.0 to 0.6)]	1.2 (0.4 to 4.4) [1.5 (0.0 to 6.2)]	0.07 [0.04]
Eating out scenario	Sensor glucose at start of closed-loop (mmol/L)	12	9.9 (3.9)	10.5 (3.7)	-
	Overnight sensor glucose (mmol/L)	12	7.3 (1.3) [7.1 (1.0)]	7.5 (2.0) [7.3 (2.6)]	0.77 [0.74]
	SD of overnight sensor glucose (mmol/L)	12	1.5 (1.3 to 2.2) [1.4 (1.2 to 1.8)]	2.7 (1.9 to 3.0) [1.8 (0.9 to 2.7)]	0.03 [0.25]
	^c MAGE of overnight sensor glucose (mmol/L)	12	4.3 (3.0 to 6.8) [3.5 (2.5 to 5.4)]	5.6 (4.9 to 9.6) [5.6 (3.8 to 7.4)]	0.02 [0.13]
	Time when sensor glucose in target range 3.91 to 8.0mmol/L (%)	12	73 (49 to 83) [78 (52 to 87)]	40 (28 to 62) [56 (21 to 64)]	0.01 [0.02]
	Time for which sensor glucose ≤ 3.5mmol/L (%)	12	0 (0 to 0) [0 (0 to 0)]	2 (0 to 15) [2 (0 to 18)]	0.05 [0.05]
	Time for which sensor glucose ≤ 3.9mmol/L (%)	12	0 (0 to 4) [0 (0 to 2)]	6 (0 to 25) [7 (0 to 29)]	0.07 [0.05]
	Time for which sensor glucose > 8.0mmol/L (%)	12	27 (10 to 48) [22 (8 to 46)]	43 (15 to 60) [39 (1 to 67)]	0.11 [0.55]
	Low blood glucose index	12	0.6 (0.1 to 1.1) [0.2 (0.2 to 1.1)]	1.7 (0.4 to 5.3) [2.0 (0.3 to 5.3)]	0.14 [0.15]

^a From start of closed-loop control to 08:00 in eating in scenario and from 22:00 to 12:00 in eating out scenario

^b Values in brackets are from midnight to 08:00 in eating in scenario and from midnight to 12:00 in eating out scenario

^c The mean amplitude of glucose excursions

Table A2: Summary of outcomes based on sensor glucose after pooling data from eating in scenario and eating out scenario

Study	Outcome	N	Closed-loop	Conventional	P
Eating in and eating out scenarios combined	Sensor glucose at start of closed-loop (mmol/L)	24	8.3 (3.4)	8.6 (3.7)	-
	Overnight sensor glucose (mmol/L)	24	6.9 (1.1) [6.8 (0.9)]	7.0 (1.7) [6.9 (2.4)]	0.94 [0.88]
	SD of overnight sensor glucose (mmol/L)	24	1.3 (1.0 to 1.6) [1.0 (0.8 to 1.4)]	1.9 (1.4 to 2.7) [1.4 (0.7 to 2.2)]	<0.001 [0.27]
	^c MAGE of overnight sensor glucose (mmol/L)	24	3.1 (2.3 to 4.9) [2.5 (2.1 to 3.5)]	5.1 (3.6 to 7.0) [3.9 (1.7 to 6.0)]	0.004 [0.08]
	Time when sensor glucose in target range 3.91 to 8.0mmol/L (%)	24	82 (62 to 96) [87 (71 to 100)]	57 (34 to 72) [53 (26 to 70)]	<0.001 [<0.001]
	Time for which sensor glucose ≤ 3.5mmol/L (%)	24	0 (0 to 0) [0 (0 to 0)]	0 (0 to 10) [0 (0 to 13)]	0.05 [0.01]
	Time for which sensor glucose ≤ 3.9mmol/L (%)	24	0 (0 to 4) [0 (0 to 0)]	3 (0 to 25) [2 (0 to 29)]	0.02 [0.005]
	Time for which sensor glucose > 8.0mmol/L (%)	24	14 (0 to 38) [10 (0 to 29)]	29 (13 to 47) [32 (0 to 61)]	0.002 [0.05]
	Low blood glucose index	24	0.5 (0.1 to 1.0) [0.3 (0.1 to 0.6)]	1.3 (0.4 to 4.7) [1.6 (0.1 to 5.6)]	0.01 [0.02]

^a From start of closed-loop control to 08:00 in eating in scenario and from 22:00 to 12:00 in eating out scenario

^b Values in brackets are from midnight to 08:00 in eating in scenario and from midnight to 12:00 in eating out scenario

^c The mean amplitude of glucose excursions

Figure A1: Cumulative probability of plasma glucose (solid lines) and sensor glucose (dashed lines) during closed-loop insulin delivery from start of closed-loop to the end of closed-loop (red lines) and during continuous subcutaneous insulin infusion (grey lines) combining data observed in eating in scenario and eating out scenario studies (each N = 12).

The vertical dashed lines denote the glucose target range (3.91 to 8.00mmol/L). Values at the top represent the percent time for plasma glucose below, at, and above the target glucose range from start of closed-loop until end of closed-loop. Values in brackets denote percentage time based on sensor data.

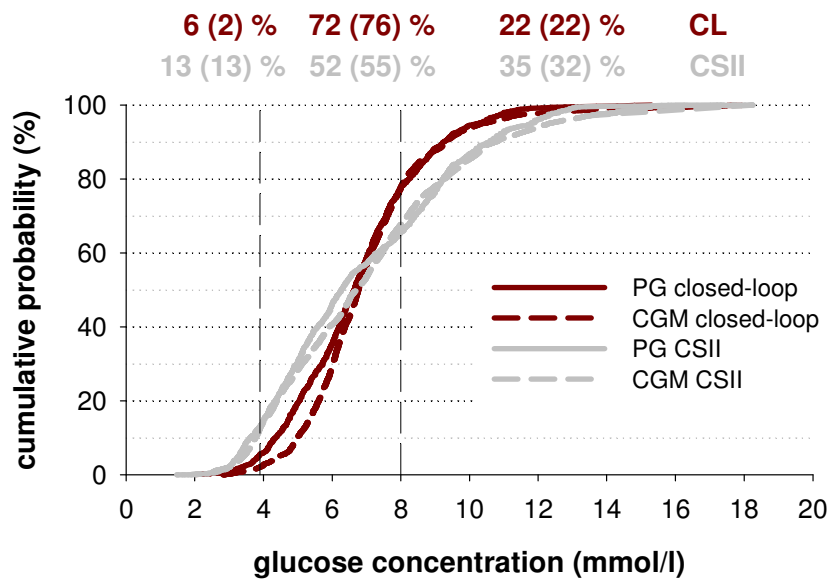


Figure A2: Cumulative probabilities of plasma glucose (solid lines) and sensor glucose (dashed lines) during closed-loop insulin delivery from midnight to the end of closed-loop (red lines) and during continuous subcutaneous insulin infusion (grey lines) combining data observed in eating in scenario and eating out scenario studies (each N = 12)..

The vertical dashed lines denote the glucose target range (3.91 to 8.00mmol/L). Values at the top represent the percent time for plasma glucose below, at, and above the target glucose range from start of closed-loop until end of closed-loop. Values in brackets denote percentage time based on sensor data.

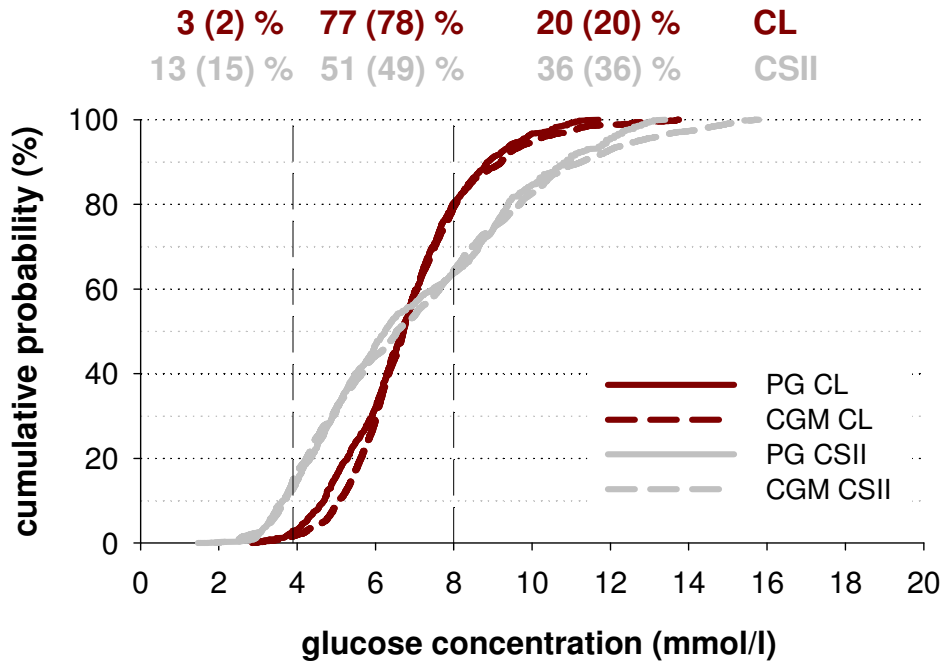


Figure A3: Plasma ethanol concentration during eating out scenario (N = 12; median [interquartile range]).

