Supplementary Data

SUPPLEMENTARY TABLE S1. MMPPC TUNING PARAMETERS

Parameter	*Lower Bound*	*Nominal Value*	*Upper Bound*	*Description of the Expected Effect*
L_{awake} (mg/dL)	40	100	120	This variable is the lower bound target for daytime bolus calculations. Lowering this makes the controller more aggressive during the day.
R_{awake} (%)	10	25	40	This determines how much risk of hypoglycemia is acceptable with a future 50% basal rate buffer. Lowering this will make the controller more cautious during the day.
L_{asleep} (mg/dL)	60	100	160	This variable is the lower bound target for nighttime bolus calculations. Lowering this makes the controller more aggressive during the night.
S_{asleep}	6	18	30	This determines how smooth we want our control to be at night. Decreasing this will make the controller more aggressive at night.
Y^{-}_{CGM} (mg/dL)	80	80	120	The threshold below which the hypoglycemia warning light will be at least yellow. Changing this will not affect algorithm performance.
$R^{-}_{CGM,Awake}$ (mg/dL)	60	70	100	The threshold below which the hypoglycemia warning light will be red when the patient is awake. Changing this will not affect algorithm performance.
$R^{-}_{CGM,Asleep}$ (mg/dL)	60	60	100	The threshold below which the hypoglycemia warning light will be red when the patient is asleep. Changing this will not affect algorithm performance.
R^{+}_{CGM} (mg/dL)	200	300	390	The threshold required for the insulin based hyperglycemia alarm to sound. Changing this will not affect algorithm performance.
R^{+}_{IOB} (% of TDD)	5	20	40	The insulin on board as a percentage of the total daily dose that is required for the insulin-based hyperglycemia alarm to sound.
R^{++}_{CGM} (mg/dL)	200	390	390	The CGM threshold above which the hyperglycemia red light will sound.
S_{Δ}	5	30	50	This threshold determines the orientation boundary between sleep and wake. Increasing this threshold will make it more likely that the controller acts conservatively, as though the patient is asleep.