Adjusting Settings for the twiist™ Loop Algorithm

Assessing twiist Settings

This guide is designed to assist healthcare professionals with adjusting various settings to optimize glycemia using the twiist Loop algorithm. If adjustments are needed, consider changing only 1-2 settings at a time.

Fundamentals of the twiist Loop Algorithm

twiist Loop creates a 6-hour glucose forecast by predicting glucose for each 5-minute period. Each 5-minute adjustment is determined by 4 main factors:

1) CGM History
2) Insulin Delivery History ("Insulin on board")
3) Carbohydrate Entry History ('Carbs on board')
4) Therapy Settings

Which Therapy Settings can be adjusted?

Insulin pump settings serve as the foundation for twiist Loop algorithm calculations. Personalized twiist settings serve as the basis for the algorithm to limit hypoglycemia and hyperglycemia. All settings may be adjusted as needed.

Pump settings

Max Basal Rate
A critical setting to ensure the algorithm does not hit a "ceiling" on delivering the modulated basal rates.

Scheduled Basal Rate
Amount of insulin to cover background insulin needs

Carb Ratio
Amount of carbohydrates covered by 1 unit of insulin

Insulin Sensitivity
Impact of 1 unit of insulin on glucose

twiist personalized settings

Correction Range (87-180 mg/dL)
The glucose value or range of values for twiist to aim for in adjusting basal insulin and helping to calculate boluses. May have multiple correction ranges.

Glucose Safety Limit (67-110 mg/dL)
If predicted glucose level falls below this limit within a 3-hour window, basal delivery and bolus recommendations are suspended until the prediction is above this limit

References:

1. Chambers A, et al. Do-It-Yourself Automated Insulin Delivery: A Health-care Practitioner User's Guide. Can J Diabetes 2023;47(5):389-397.

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Clinical Considerations* for adjusting settings on the twiist AID System:

If user is experiencing lows, evaluate for:

Pattern of lows with frequent or extended reduction of scheduled basal	Decrease basal rates by 10-20%
Highs followed by lows	Weaken ISF by 10-20%
Post-prandial lows	Weaken ICR by 10-20%
User overriding boluses?	Coach patient behavior

If user is experiencing highs, evaluate for:

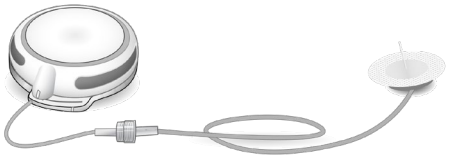
Consistent highs or frequent or extended increase of scheduled basal	Increase basal rates by 10-20% Increase Max Basal to at least 5x the highest programmed basal rate
Observed plateau of basal rate	Increase Max Basal rate to at least 5x the highest programmed basal rate
Persistent hyperglycemia	Strengthen ISF by 10-20%
Post-prandial highs	Strengthen ICR by 10-20%

If user is experiencing variability, evaluate for:

During fasting periods	Evaluate basal rates
During post-prandial periods	Evaluate ICR and bolus timing

Other scenarios to evaluate for:

Desire for more aggressive glycemic control	Evaluate recent glycemic history, risk for hypoglycemia, and daily routines. Decrease correction range as appropriate
Frequent 'No Bolus Recommended'	Decrease Glucose Safety Limit as appropriate



References:

1. Chambers A, et al. Do-It-Yourself Automated Insulin Delivery: A Health-care Practitioner User's Guide. Can J Diabetes 2023;47(5):389-397.

*Always use your clinical judgement when modifying Therapy Settings

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