Starting Settings for the twiist™ AID System

How does the twiist Loop Algorithm work?

twiist Loop creates a 6-hour glucose forecast by predicting glucose for each 5-minute period. The calculation of each glucose prediction 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

The **Therapy Settings** are the factor that can be impacted by the healthcare professional.

What are the Therapy Settings?

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

Traditional pump settings

Scheduled Basal Rate
Amount of insulin to cover background insulin needs
Recommendation: Use formula on opposite side

Carb Ratio
Amount of carbohydrates covered by 1 unit of insulin
Recommendation: Use formula on opposite side

Insulin Sensitivity
Impact of 1 unit of insulin on glucose
Recommendation: Use formula on opposite side

Max Basal Rate
A critical setting to ensure the algorithm does not hit a "ceiling" on delivering the modulated basal rates.
Recommendation:
5x highest scheduled basal rate

twiist personalized settings

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
Recommendation:
Set at 75 mg/dL for adults and 80 mg/dL for kids

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.
Recommendation:
Set at 100-110 mg/dL for adults and 100-115 mg/dL for kids

Pre-Meal Preset (optional) (67-130 mg/dL)
Temporarily lowers the Correction Range in anticipation of a meal.
Recommendation:
Set at 80-100 mg/dL

Workout Range Preset (optional) (87-250 mg/dL)
Temporarily raises the Correction Range before, during and/or after physical activity.
Recommendation:
Set at 150-170 mg/dL

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Initiation Settings

1. Determine twiist Total Daily Dose (TDD)

New to Pump Therapy [1]

Total Daily Dose (TDD) Method

Pre-Pump Total Daily Dose (TDD) ____ units

Pre-pump TDD x **0.75** = _____ units **twiist TDD**

Weight-Based Method

Weight: _____ kg OR _____ lbs

____ lbs x **0.23** = _____ units **twiist TDD**

____ kg x **0.50** = _____ units **twiist TDD**

- If comparing both methods, consider the average of the Pre-Pump and the Weight-Based Method.
- If user is experiencing hypoglycemia, consider using the lower value between Pre-Pump TDD and Weight-Based TDD.
- If user's A1C is elevated, and user is experiencing little or no hypoglycemia, consider using the higher value of the two.

Existing Pump or AID User

Note: Therapy settings are not transferrable from one AID system to another. It is important to calculate pump settings from TDD before transferring settings to twiist.

Determine Total Daily Dose (TDD) in current pump or AID system. Use this amount as the **twiist TDD.**

- Consider adjusting this TDD if user is not currently meeting glycemic targets. For example, if time below 70 mg/dL is >4%, reduce **twiist TDD** by 10-20%.[2]

2. Calculate Traditional Pump Settings, based on twiist TDD[1]

Initial Basal Rate	**twiist TDD** x 50% = Total Daily Basal _____ Units Total Daily Basal Units/24 hours = initial basal rate _____ Units/Hour
Carb Ratio	450/ **twiist TDD** = _____ grams of carbs/unit
Insulin Sensitivity	1500-1700 / **twiist TDD** = _____ mg/dL/unit of insulin
Max Basal	5 times highest set basal rate

Note: The Maximum Basal Rate is a critical setting to ensure the algorithm is not hitting a "ceiling" on delivering the modulated basal rates. Maximum Basal Rate may need to be higher than in other AID systems due to its impact while looping.

References:

1. This guidance was developed in conjunction with clinical experts experienced in the management of patients using the twiist™ AID system and based on real-world outcomes of over 2000 patients.
2. 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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