



INSTRUCTIONS FOR USE

- 1 View reports at tidepool.org
- 2 Generate 14 day reports using Print feature. Select: AGP (CGM), Basics Chart, Daily Charts, and Device Settings
- 3 Follow this worksheet for step-by-step guidance on clinical assessment, user education and insulin dose adjustments.

STEP 1 **BIG PICTURE** (PATTERNS)

→ STEP 2 **SMALL PICTURE** (REASONS)

→ STEP 3 **PLAN** (SOLUTIONS)

OVERVIEW using C|A|R|E|S Framework

C | How it **CALCULATES**

- Adjusts basal rates every 5 minutes based on a 6-hr predicted CGM glucose, aiming for the target range (“correction range”). Glucose prediction is based on current glucose trends, insulin on board, carbs on board and programmed pump settings.
- The Correction Range can be set between 87-180 mg/dL. Users can program multiple correction ranges at different times of day, in 30-minute increments.

A | What you can **ADJUST**

- Can adjust all insulin pump settings: basal rates, carb ratios, sensitivity factor, max basal rate (which the algorithm uses as maximum basal delivery).
- Can use pre-meal preset to lower correction range up to 1 hour before meals and workout pre-set to raise correction target for exercise.
- Cannot change active insulin time (fixed at 6 hours).

R | When it **REVERTS** to manual mode

- If twiist loses connection with the CGM for more than 15 minutes, it will start delivering programmed basal rates without any adjustments within 30 minutes. Loop automation resumes when CGM data returns.

PANTHERPOINTERS® FOR CLINICIANS

- 1 The Max Basal Rate programmed in the pump is the ceiling for basal delivery for Loop and has significant impact on the algorithm. Program it to be 4-6x the programmed basal rate.
- 2 Encourage pre-meal carb entry for all meals and snacks (either a fixed carb amount or carb counting) to allow algorithm to track carbs on board.
- 3 To simplify system use, use a fixed carb entry for meals/snacks and limit use of optional features like carb absorption emojis and pre-meal preset.
- 4 Consider setting a 20 mg/dL range for correction range (e.g., 100-120mg/dL). For most aggressive insulin delivery, set correction range to 87-87mg/dL.

E | How to **EDUCATE**

- Pre-bolus for all meals and snacks in the bolus menu. Activate the pre-meal preset up to 1 hour before meals to get more aggressive basal insulin delivery before meals and reduce post-prandial glucose rises.
- Select the carb absorption emoji that best fits the meal. The lollipop 🍭 is a 30-min absorption, the taco 🌮 (default) is a 3-hour absorption, and the pizza 🍕 is a 5-hour absorption. This can change the up-front bolus and basal automation for the meal.
- Bolus for missed meals by changing the time of the meal in bolus menu. This will allow Loop to update the carbs on board and suggest a bolus dose if necessary for a late meal bolus.
- Turn on workout pre-set 1-2 hours prior to aerobic exercise to help manage hypoglycemia.
- The twiist pump contains advanced technology to detect occlusions. If the user receives a 'Line Blocked' alarm, they should replace their infusion set if no obvious tubing issue or disconnection is visible.

S | **SENSOR/SHARE** characteristics

- FreeStyle Libre 3 Plus: all CGM functions occur through the twiist app, including starting a new sensor and sensor alerts. Cannot use FreeStyle Libre apps.
- Eversense 365: CGM is started on Eversense app and then linked to twiist app after the first 2 calibrations are completed.
- Pump and CGM data is viewable using the twiist app on the iPhone or Apple Watch.
- twiist insight app for remote data sharing (pump & CGM data).

View the AGP and Basics Chart to assess system use, glycemic metrics, and identify glucose patterns.

A Is the person using the CGM and Automated Mode?

% Time CGM Active:
 Aim for > 90% time in use / <10% CGM inactive

Time in Automation %:
 Aim for > 90%. If less, ASSESS why.

- Problems accessing supplies/sensors not lasting the full wear period?
 → Contact sensor manufacturer for replacement sensors
- [Skin problems or difficulty keeping sensor on?](#)
 → Rotate sensor insertion sites (arms, hips, buttocks, abdomen)
 → Use barrier products, tackifiers, overtapes and/or adhesive remover to protect skin
- Problems with CGM connection with pump?
 → Wear pump on same side of body as CGM Sensor (to improve line of sight of Bluetooth)



SCAN TO VIEW: pantherprogram.org/skin-solutions

B Is the user giving meal boluses?

Average number of boluses per day:
 Total number of boluses given by the user, on average, each day

C Is the user meeting Glycemic Targets?

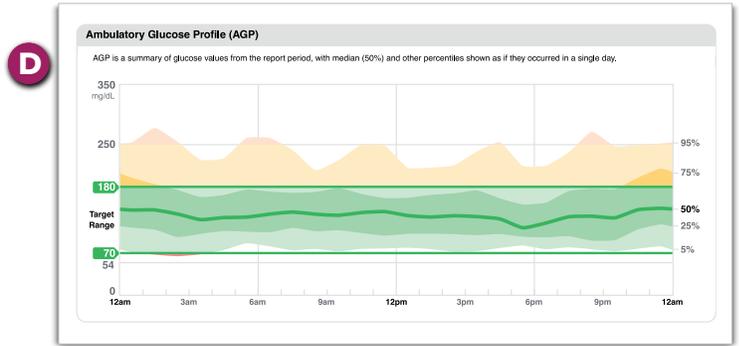
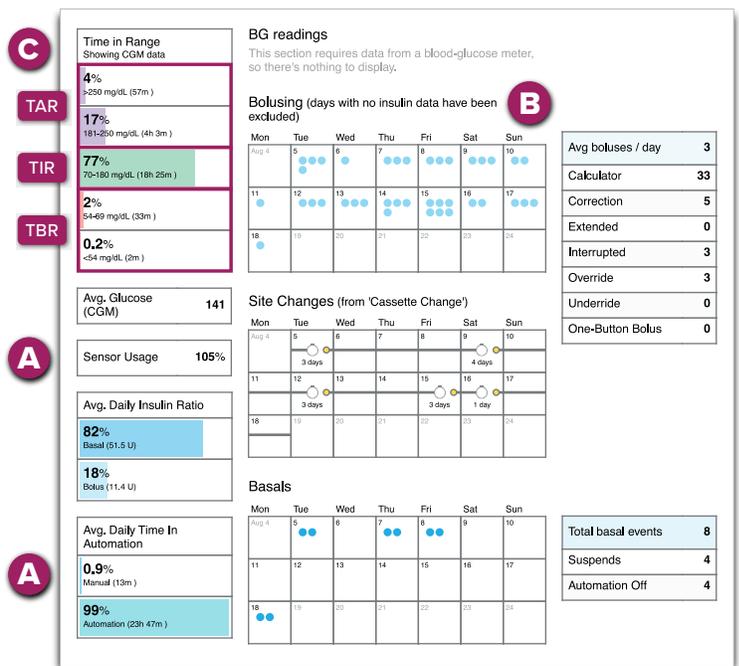
Time in Range (TIR) Goal is >70%
 70-180 mg/dL (3.9-10.0 mmol/L) "Target Range"

Time Below Range (TBR) Goal is <4%
 <70 mg/dL (< 3.9 mmol/L) "Low" + "Very Low"

Time Above Range (TAR) Goal is <25%
 >180 mg/dL (>10.0 mmol/L) "High" + "Very High"

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- 1 The goal of this therapy review is to increase Time in Range (70-180 mg/dL; or 3.9-10.0 mmol/L) while minimizing Time Below Range (<70 mg/dL; <3.9 mmol/L)
- 2 Is the Time Below Range **more** than 4%?
 If **YES**, focus on fixing patterns of **hypoglycemia**
 If **NO**, focus on fixing patterns of **hyperglycemia**



D What are their patterns of hyperglycemia and/or hypoglycemia?

Ambulatory Glucose Profile compiles all data from reporting period into one day; shows median glucose with the green line, and variability around the median with the shaded ribbons. Wider ribbon = more glycemic variability.

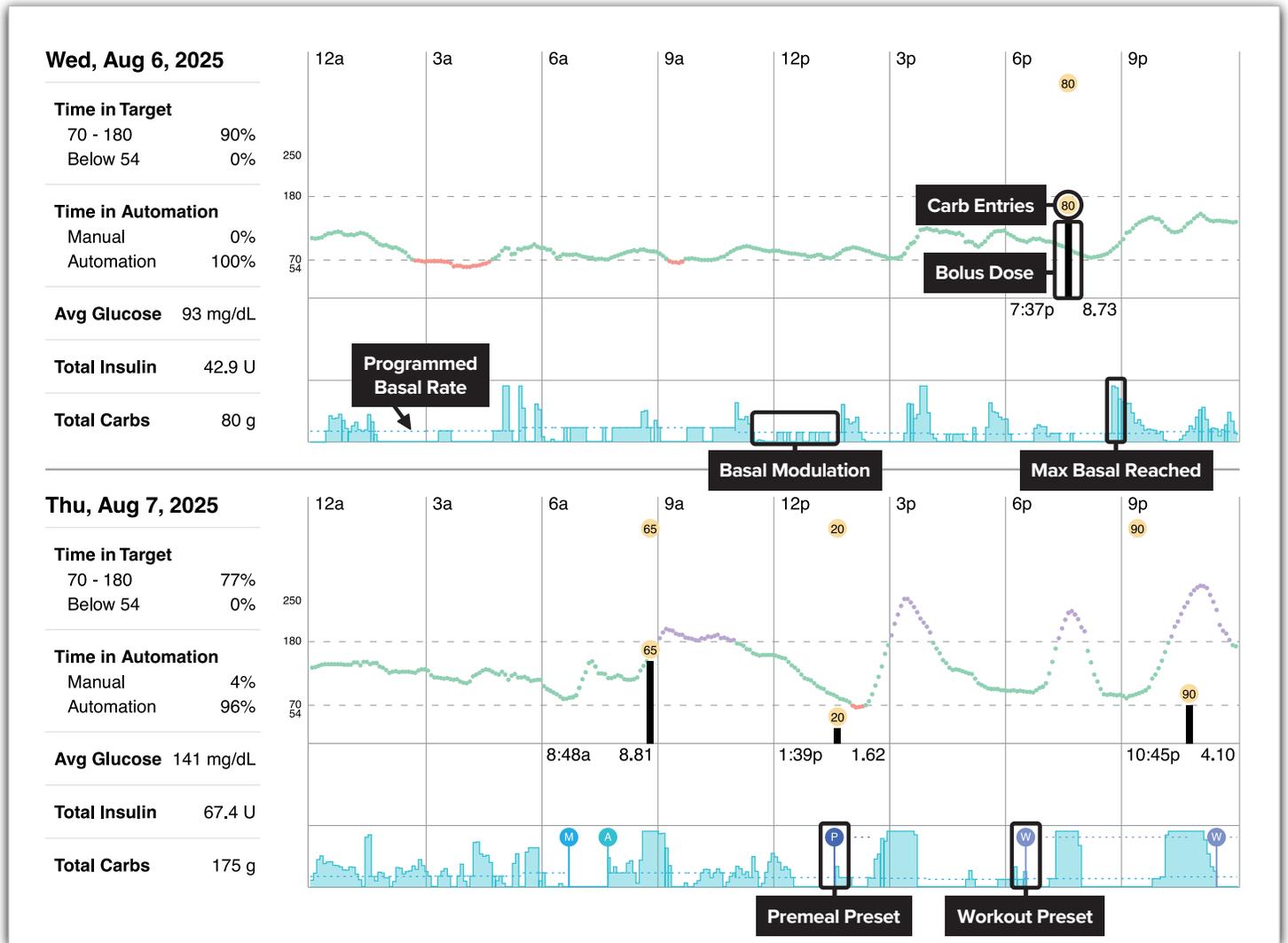
Identify the overall patterns by primarily focusing on the dark green shaded area.

Hyperglycemia patterns: (eg: high glycemia at bedtime)

Hypoglycemia patterns:

STEP 2 SMALL PICTURE (REASONS)

Use the **Daily Charts** and discussion with the user to identify causes of the glycemic patterns identified in STEP 1 (hypoglycemia or hyperglycemia).



Identify the predominant 1-2 causes of the hypo- or hyperglycemia pattern.

Is the **hypoglycemia** pattern occurring:

- Fasting / Overnight?
- Around mealtime?
(1-3 hours after meals)
- Where low glucose levels follow high glucose levels?
- Around or after exercise?

Is the **hyperglycemia** pattern occurring:

- Fasting / Overnight?
- Around mealtime?
(1-3 hours after meals)
- Where high glucose levels follow low glucose levels?
- After a correction bolus was given?
(1-3 hours after correction bolus)

Hypoglycemia	PATTERN	Hyperglycemia
SOLUTION		SOLUTION
<p>Decrease basal rates 10-20% or raise Correction Range (algorithm target) overnight (highest is 180 mg/dL)</p>	<p>Fasting / Overnight</p> 	<p>Increase basal rates <u>and</u> Max basal 10-20% or lower Correction Range overnight (lowest is 87 mg/dL)</p>
<p>Weaken I:C Ratios by 10-20% (e.g. if 1:10g, change to 1:12g)</p>	<p>Around mealtime (1-3 hours after meals)</p> 	<p>Consider use of Pre-meal pre-set (can be programmed from 67-130 mg/dL). Educate to give all meal boluses prior to eating. Encourage retroactive carb entry if missed boluses. Strengthen I:C Ratios by 10-20% (e.g. from 1:10g to 1:8g)</p>
<p>If due to bolus calculator overrides, educate user to follow the bolus calculator and avoid overriding to give more than recommended. The bolus dose may be smaller than expected due to insulin on board from basal modulation.</p>	<p>Low glucose follows high glucose</p> 	
<p>Weaken correction factor by 10-20% (e.g. if 1:50 mg/dL, change to 1:60 mg/dL) if hypoglycemia occurs 2-3 hours after a correction bolus.</p>	<p>High glucose follows low glucose</p> 	<p>Educate to treat mild hypoglycemia with fewer grams of carbs (5-10g) and wait 15 min before re-treating to give glucose time to rise.</p>
<p>Use the Workout preset 1-2 hrs before exercise begins (can be programmed from 87-250 mg/dL). Workout preset will temporarily raise the correction range to reduce risk of hypoglycemia. Adjust workout preset range as needed.</p>	<p>Around or after exercise</p> 	<p>Evaluate timing and use of the Workout preset. Evaluate type of exercise. Workout preset may not be needed for all exercise. Adjust Workout preset as needed.</p>
	<p>After a correction bolus was given (1-3 hours after correction bolus)</p>	<p>Strengthen sensitivity (e.g. from 50 mg/dL to 45 mg/dL)</p>

ADJUST insulin pump settings and EDUCATE.

All insulin settings impact the algorithm performance:

- 1. Basal Rates** – Used as the baseline for the basal modulation.
- 2. Max Basal Rate** – Ceiling on automated basal adjustments for the algorithm.
Consider programming at 4x the highest basal rate and increasing up to 6.4x basal rate as needed to help reduce hyperglycemia.
- 3. I:C Ratios** – Used for user-initiated meal boluses.
- 4. Sensitivity** – This impacts basal modulation and user-initiated correction doses.
- 5. Correction Ranges** – Programmed from 87-180 mg/dL. Algorithm aims for the middle of the range in its calculations. Can program different targets for different times of day.

To change settings, tap the **Settings** icon in the twist app and select **Therapy Settings**

With twist™ AID system, all settings will impact the algorithm and can be adjusted

Basal Rates U/hr		Correction Range mg/dL			Carb Ratios g/U		Insulin Sensitivities mg/dL/U	
Start time	Value	Start time	Low	High	Start time	Value	Start time	Value
12:00 am	0.600	12:00 am	100	100	12:00 am	8	12:00 am	40
6:30 am	0.700	7:00 am	100	115	5:00 pm	10	6:30 am	40
Total	16.150						5:00 pm	40

Correction Range is the target for the algorithm

Insulin Settings		Presets	
Setting	Value	Name	Correction Range (mg/dL)
Glucose Safety Limit	75 mg/dL	Premeal	80-90
Maximum Basal Rate	2.75 U/hr	Workout	160-180
Maximum Bolus	10 U		
Insulin Model	Rapid-Acting - Adults		

Consider a premeal preset of 20 mg/dL lower than the standard correction range

Consider a Max Basal rate of at least 4x the highest basal rate

TIP: Assess the Max Basal Rate

Max basal rate is the ceiling on basal modulation by the twist Loop algorithm. Any time basal rates are increased, Max Basal should be assessed for a potential increase. Consider starting with 4 times the highest basal rate and increase as needed to help reduce hyperglycemia and increase insulin delivery from algorithm.

TIP: Encourage users to enter retroactive carbs

If the user forgets to bolus, they can enter their carbs retroactively (entering time and amount of carb intake in the bolus menu). This will allow the system to update the carbs on board, and the algorithm will determine if a late bolus is necessary.

TIP: Recalculate settings

When starting twist AID, it is best to recalculate pump settings using standard formulas based on current TDI or weight-based TDI (e.g., basal ~50% TDI, 1700/TDI for sensitivity, 450/TDI for Carb Ratios).

AFTER VISIT SUMMARY

Great job using **twiist!**

Using this system can help you achieve your diabetes goals.

The American Diabetes Association suggests aiming for **70%** of your glucose levels to be between **70-180 mg/dL** (3.9–10.0 mmol/L), called **Time in Range** or **TIR**. If you are not currently able to reach 70% TIR, don't be discouraged! Start from where you are and set smaller goals to increase your TIR. Any increase in your TIR is beneficial to your lifelong health!

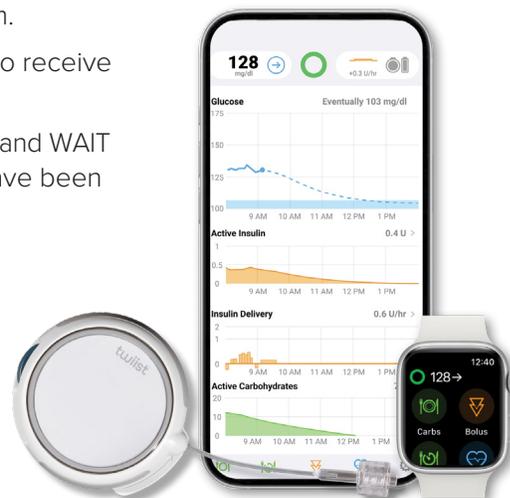
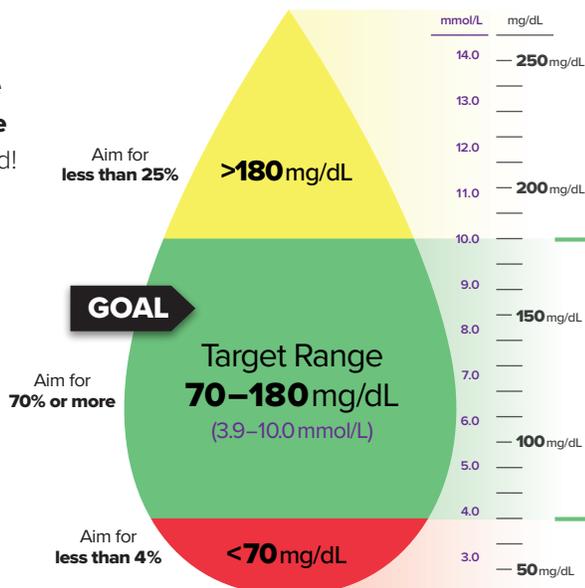


REMEMBER...

Don't overthink what **twiist** is doing in the background.
Focus on what you can do. See helpful tips below...

TIPS for **twiist**

- **HYPERGLYCEMIA >300 mg/dL (>16.7 mmol/L) for 2 hours or more?** Check ketones first! If ketones are >1.0 mmol/L (mod/large on urine test), give syringe injection of insulin and replace infusion set.
- **Bolus before eating.** If you forget to bolus, you can enter the carbs late and the time you ate them to get a recommended bolus for a previous meal. If the recommendation is no bolus, simply save the carb entry so that Loop can accurately track carbs on board for future calculations.
- **Do not override the bolus calculator:** Meal or correction bolus doses may be smaller than expected due to increased basal modulation from the algorithm.
- **Give correction boluses for hyperglycemia:** Tap the **Bolus Entry** button to receive a recommendation for a Correction Bolus.
- **Treat mild hypoglycemia with 5-10g carbs** to avoid rebound hyperglycemia and WAIT 15 min before re-treating to give glucose time to rise. Insulin delivery will have been suspended, resulting in little insulin on board when hypoglycemia occurs.
- **Keep **twiist** and CGM on same side of body** so they don't lose connection.
- **Use the workout preset for exercise** and turn on 1-2 hours before exercise to help reduce lows.
- **Clear Line Blocked alarms immediately**, troubleshoot the cause and replace infusion set if no clear issue with tubing. Your glucose may be within range when you receive this alert– the goal is to catch any blockage before glucose rises significantly.



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This PANTHER Program® tool for **twiist** was created with the support of danatech.



← SCAN TO VISIT
PANTHERprogram.org

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