INSTRUCTIONS FOR USE

1 Download user's device to **tconnect.tandemdiabetes.com** → Set report settings to Target Range 70-180 mg/dL

2 "Save and print" reports → 2 weeks → Select: a. Dashboard; b. Therapy Timeline; c. CGM Hourly; d. 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)

PANTHERTOOL™ for

CONTROL-IQ

t:slim X2 insulin pump with Control-IQ technology

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

C | How it **CALCULATES**

- Uses CGM glucose data to adjust the basal insulin delivery by increasing, decreasing, or suspending programmed basal rates; aiming for a target glucose range of 112.5-160 mg/dL
- Delivers automated correction boluses up to once per hour if glucose is predicted to rise above 180 mg/dL; uses 60% of the programmed correction factor when calculating automated correction boluses

A | What you can **ADJUST**

- Can change basal rates, I:C ratios, correction factors
- Cannot change active insulin time (5 hours) or correction bolus target (110 mg/dL)
- "Exercise Activity" targets glucose 140-160 mg/dL (to reduce insulin delivery)
- "Sleep Activity" narrows glucose target to 112.5-120 mg/dL and prevents automated correction boluses overnight

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

When the pump has not received CGM data for 20 minutes, it will revert to manual mode and deliver programmed basal rates without any adjustments to the doses. When CGM data resumes, Control-IQ will resume insulin automation automatically.

E | How to **EDUCATE**

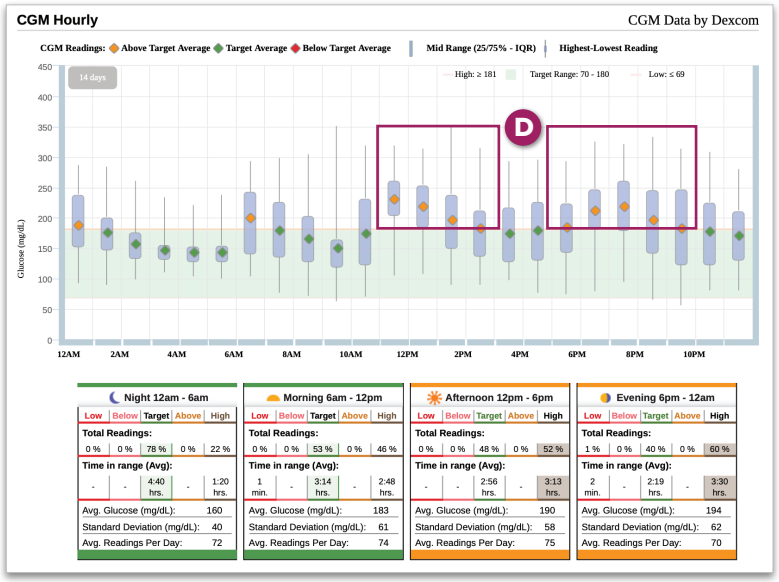
- Pre-bolus for all meals, ideally 10-15 minutes before eating
- Treat mild hypoglycemia with 5-10g carbs to avoid rebound hyperglycemia and WAIT 15 minutes before re-treating to give glucose time to rise
- Give correction boluses for hyperglycemia, following the dose recommended by the pump to avoid the risk of hypoglycemia
- Program the sleep schedule for each night

S | **SENSOR**/**SHARE** characteristics

- Dexcom G6: 10-day sensor life, factory calibrated
- Can use Dexcom Share for remote monitoring of CGM data

PANTHERPOINTERS™ FOR CLINICIANS

1. Focus on behavior: wearing the CGM consistently, giving all boluses, etc.
2. Set the Sleep Schedule for every night.
3. Make sure the user is bolusing before all meals and snacks.
4. When adjusting insulin pump settings, focus primarily on basal rates, I:C ratios and correction factors.



A Is the person using the Control-IQ system?

The goal is to use Control-IQ as much as possible.

Time in Use (How often Control-IQ in use):
Aim for > 90%. If less, ASSESS why.

CGM Inactive (Time sensor not active):
Aim for < 10%. If more, ASSESS why.

Daily Sleep (For tighter glucose targets overnight)
Make sure this averages 6 hours or more per day

→If not, check pump settings to turn on "Sleep Schedule" and select all days

- Skin problems or difficulty wearing sensor on body?

→Rotate sensor insertion sites (arms, hips, buttocks, abdomen)

→Use barrier preps, tackifiers, overtapes, or adhesive remover wipes as necessary

SCAN TO VIEW:
pantherprogram.org/skin-solutions

- Problems getting CGM data on pump?

→Wear pump on same side of body as CGM transmitter (to improve Bluetooth communication)

→Wear pump with screen facing outward (away from body)

B Is the user giving meal boluses?

If food bolus is <50% total insulin, ASSESS for missed meal boluses or insufficient I:C ratios.

C Is the user meeting Glycemic Targets?

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

Time Below Range (TBR)
<70 mg/dL (< 3.9 mmol/L) "Below Target" — Goal is <4%

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

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

Use CGM Hourly to understand mean CGM throughout day. Longer whiskers = more variability. Focus on the areas where the average glucose is out of target range.

Hyperglycemia patterns: (eg: high glycemia at bedtime)

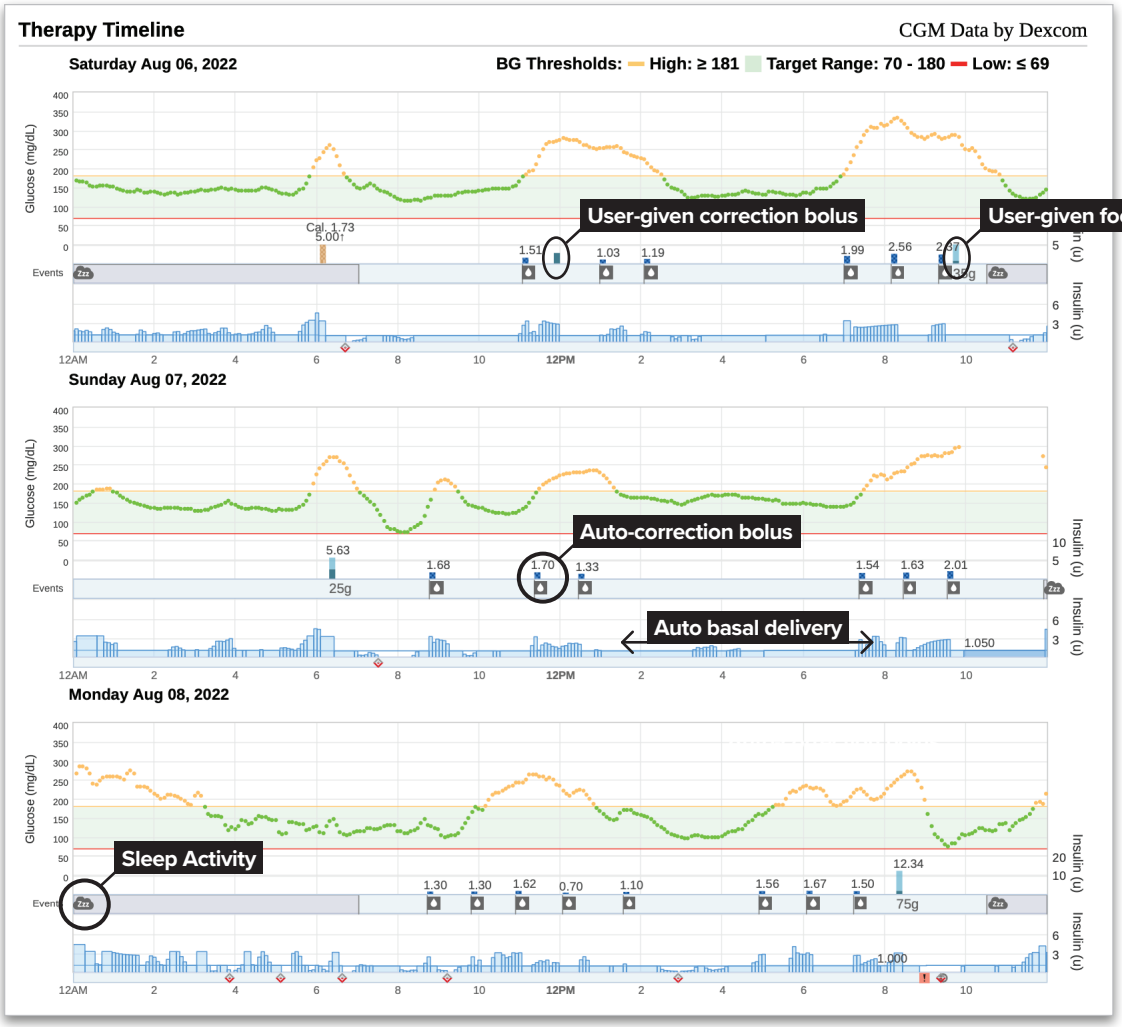
Hypoglycemia patterns:

PANTHERPOINTERS™ FOR CLINICIANS

1. The goal of this therapy review is to increase Time in Range (70-180 mg/dL; 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**

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



ASSESS Bolus Behavior

Estimate # food boluses per day by counting light blue boluses with grams of carbs listed.

Do not count auto-corrections ( ).

On average, how many food boluses are given each day?

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)

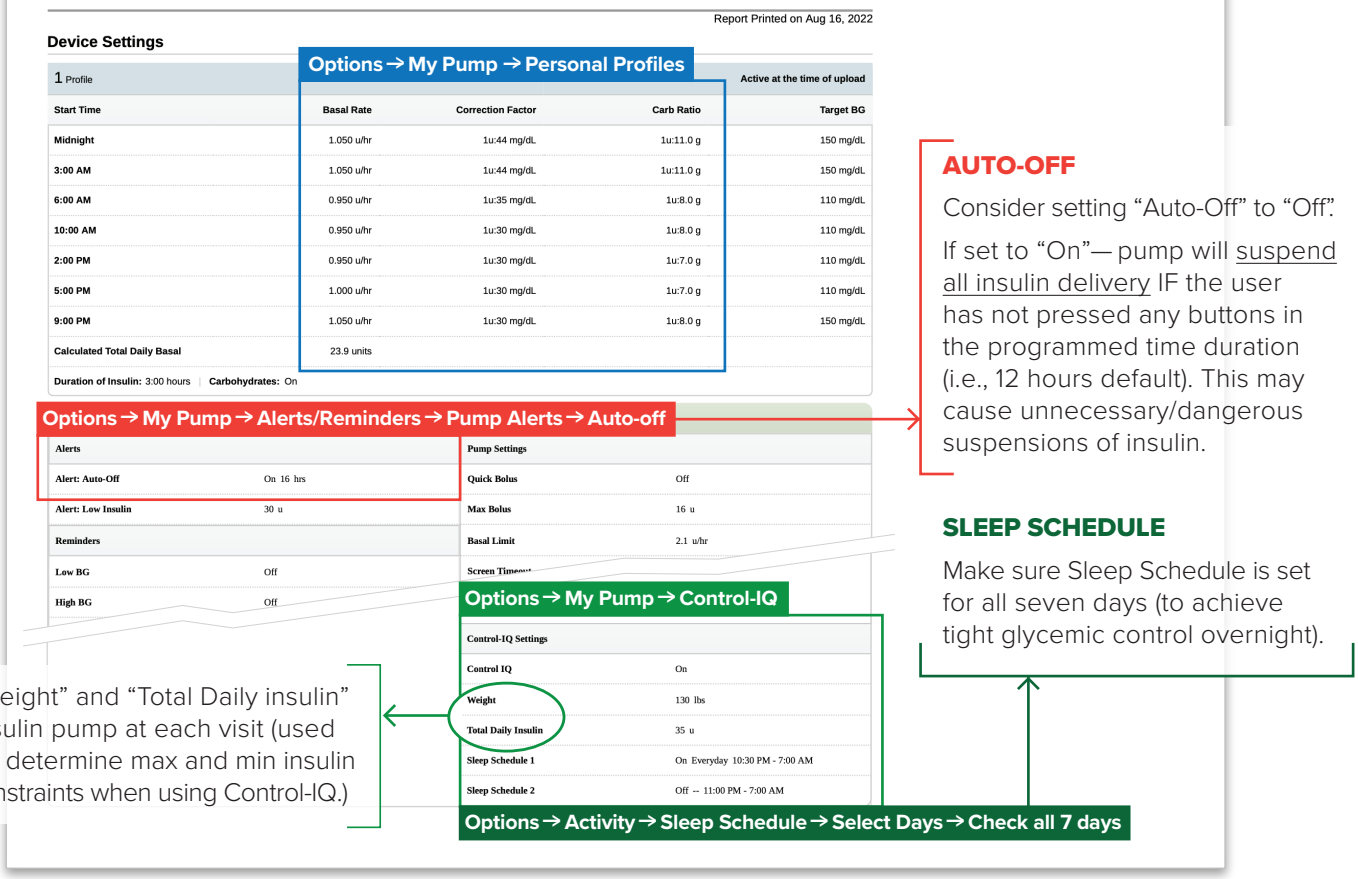
Hypoglycemia		Hyperglycemia
SOLUTION	**PATTERN**	**SOLUTION**
Reduce basal rates 10-20% in the 1-2 hours prior to hypoglycemia	**Fasting / Overnight** 	Make sure Sleep Schedule is turned on every night Increase basal rates 10-20% in the 1-2 hours prior to hyperglycemia
Assess carb counting accuracy, bolus timing, and meal composition. Weaken I:C Ratios by 10-20% (e.g. if 1:10g, change to 1:12g)	**Around mealtime** (1-3 hours after meals) 	Assess if meal bolus was missed. If yes, educate to give all meal boluses prior to eating. Assess carb counting accuracy, bolus timing, and meal composition. Strengthen I:C Ratios by 10-20% (e.g. from 1:10g to 1:8g)
If due to bolus calculator over-rides: Educate user to follow the bolus calculator and avoid overriding to give more than recommended. There may be a lot of IOB from AID that user is not aware of. Bolus calculator factors in IOB from increased AID when calculating correction bolus dose. Weaken correction factor by 10-20% (e.g. if 50 mg/dL, change to 60 mg/dL) if hypoglycemia occurs 2-3 hrs after correction bolus. This will impact both user-given and auto-correction boluses.	**Low glucose follows high glucose**  **High glucose follows low glucose** 	Educate to treat mild hypoglycemia with fewer grams of carbs (5-10g) and wait 15 min to allow time for the glucose to rise before re-treating with more carbs
Use the Exercise Activity feature 1-2 hours before exercise begins. This will temporarily reduce insulin delivery aiming to reduce risk of hypoglycemia. To use Exercise Activity, go to: Main Menu → Activity → Exercise → start	**Around or after exercise** 	
	After a correction bolus was given (1-3 hours after correction bolus)	Strengthen correction factor (e.g. from 50 mg/dL to 40 mg/dL). This will impact both user-given and auto-correction boluses

ADJUST insulin pump settings and EDUCATE.

Most impactful insulin dose settings to change:

1. **I:C Ratios** – It is common to need stronger I:C Ratios with AID
2. **Correction Factor** – Will affect both user-given correction boluses and auto-correction boluses given by the system
3. **Basal Rates** – Will affect fasting glucose levels

NOTE: Cannot change the correcion bolus target (fixed at 110 mg/dL) or Active Insulin time (fixed at 5 hrs) when Control-IQ is active



AUTO-OFF

Consider setting "Auto-Off" to "Off."

If set to "On"— pump will suspend all insulin delivery IF the user has not pressed any buttons in the programmed time duration (i.e., 12 hours default). This may cause unnecessary/dangerous suspensions of insulin.

SLEEP SCHEDULE

Make sure Sleep Schedule is set for all seven days (to achieve tight glycemic control overnight).

Update "Weight" and "Total Daily insulin" on their insulin pump at each visit (used primarily to determine max and min insulin delivery constraints when using Control-IQ.)

EDUCATE ON BOLUS BEHAVIOR

- **Do not override boluses** to give more insulin than the pump recommends (may cause hypoglycemia due to IOB from basal rate increases and/or auto-correction boluses).
- **Bolus before eating**. If bolusing after a meal, the user should reduce bolus by entering fewer carbs than they ate as system has already been increasing insulin for hyperglycemia.
- **Give correction boluses** for hyperglycemia if recommended by the bolus calculator.

OTHER EDUCATION

- **Treat hypoglycemia with 5-10 g carbs** since insulin may have been reduced/suspended for a period of time before hypoglycemia occurs.
- **Disconnecting**: If disconnected from the pump, SUSPEND insulin so Control-IQ can calculate insulin-on-board accurately.
- **Infusion set failure**: Change infusion set if un-explained persistent hyperglycemia. (i.e., >300 mg/dL for >2 hours). Give an injection of insulin if ketones are elevated.

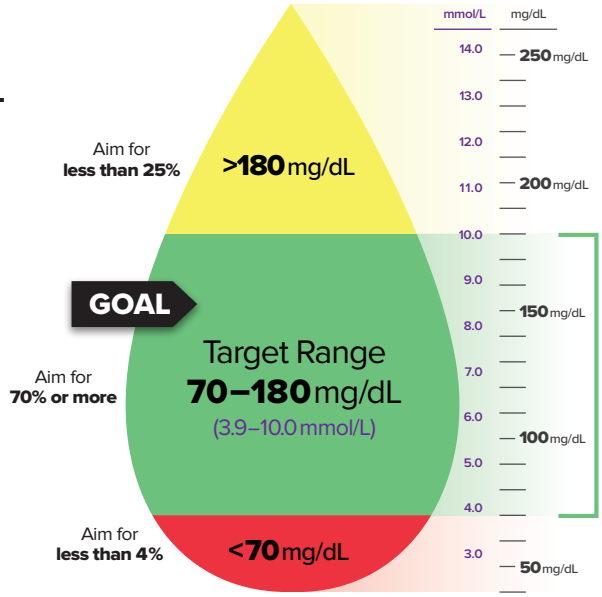
AFTER VISIT SUMMARY

Great job using **Control-IQ!**

Using systems like this can help you achieve better glucose control. Aim for more than **70%** of your CGM glucose levels to be between **70-180 mg/dL** (3.9-10.0 mmol/L). This is the goal for MOST people with type 1 diabetes. This is about the same as having an HbA1c level of 7%.

REMEMBER...

1. Wear the CGM consistently.
2. Set the Sleep Schedule for every night.
3. Bolus before all meals and snacks.
4. Give a correction bolus for hyperglycemia, if recommended by the bolus calculator.



TIPS for using Control-IQ

- **HYPERGLYCEMIA >300 mg/dL (or >16.7 mmol/L) for 2 hours or more?** Check ketones first! If ketones are >1.0 mmol/L (mod/large on urine strip), give a syringe injection of insulin and change your infusion set.
- **Do not override boluses** to give more insulin than the pump recommends (may cause hypoglycemia if Control-IQ has been increasing insulin delivery).
- **Bolus before eating**. If bolusing after a meal, reduce the bolus dose by entering less carbs than you ate as Control-IQ will have already increased insulin delivery for hyperglycemia.
- **Give correction boluses** for hypergylcemia, following the bolus calculator suggested dose.
- **Try treating hypoglycemia with 5-10g carbs** since insulin may have been reduced/suspended for a while before hypoglycemia occurs. Treating hypoglycemia with more than 5-10g may result in rebound hyperglycemia.
- **If disconnected** from the pump, SUSPEND insulin so Control-IQ calculates insulin-on-board accurately.
- **Check "Auto-off" settings**. Turn off or extend to 16 hours or longer.
- **CHANGE INFUSION SET** every 2-3 days, or as needed for persistent hyperglycemia.

v.06.2023

PANTHER™
Diabetes Technology. Deciphered.™

SCAN TO VISIT
PANTHERprogram.org

Have questions about your insulin pump?

tandemdiabetes.com

Tandem customer and technical support
1-877-801-6901

Have questions about your CGM?

dexcom.com

Dexcom customer support
1-888-738-3646

Dexcom technical support
1-844-607-8398