

SYSTEM PROFILE

Tandem Control-IQ at a glance

CF

Primary optimisation lever

Correction Factor (CF). Strongest CF quartile achieves 14% more TIR than the weakest (Messer 2023, 20,764 users).

BEST-QUARTILE TIR

79.1%

strongest CF cohort

REGISTRY

20,764

Messer et al. 2023

AGE

6+

years and older

Ref: Breton MD et al. 2020 NEJM (pivotal) · Messer LH 2023 · Shah VN 2026 DOM · Pemberton & Uday 2026 (configuration).

THE ESSENTIALS

- ✓ **Tubed pump.** 3-day infusion set, 300U reservoir.
- ✓ **Control-IQ algorithm** runs on the pump. Adjusts basal every 5 min.
- ✓ **Compatible CGMs:** Dexcom G6 / G7. Not Libre.
- ✓ **Fixed target 6.1 mmol/L.** Cannot be lowered. Optimisation is via CF and Sleep Mode.
- ✓ **Sleep Mode** - tighter overnight target. Can be activated 24/7 for more aggressive control.
- ✓ **Exercise Mode** - raises target to 7.8-8.9 mmol/L, reduces basal.
- ✓ **Most customisable AID.** Your settings (CF, ICR, basal) shape the algorithm.

GNL CONFIGURATION FRAMEWORK · PEMBERTON & UDAY 2026

Three tiers - pick the one that fits you

TIER	CORRECTION FACTOR	BASAL SPLIT	SLEEP MODE
Optimal	80 / TDD (aggressive)	65% algo / 35% user	24/7
Balanced	90 / TDD	55% / 45%	Usual hours
Protective	110 / TDD (conservative)	45% / 55%	Usual hours

CF is the biggest lever on Control-IQ. The algorithm uses your CF to size every correction. Too weak and it under-dosages; too strong and it stacks. Discuss the right starting tier with your team.

SLEEP MODE 24/7 - THE OPEN SECRET

A widely-used optimisation

- ▶ **Sleep Mode tightens target** to 6.25-6.7 mmol/L and allows more aggressive basal adjustment.
- ▶ **Switching to 24/7 Sleep** is a common strategy for those seeking tighter control than the default target allows.
- ▶ **Trade-off:** no auto-correction boluses in Sleep Mode. Control-IQ corrects via basal only. Some people benefit; some don't.
- ▶ **Discuss with your team** before enabling 24/7 Sleep - it changes how the algorithm behaves.

EXERCISE MODE

Managing exercise on Control-IQ

- ▶ **Activate 60-90 min pre-exercise.** Raises target range, reduces basal and disables auto-correction.
- ▶ **Stays on until you turn off.** Keep it on during the session and 60 min after.
- ▶ **Long sessions** - combine with reduced mealtime bolus. Exercise Mode alone won't cover 90 min running.
- ▶ **Don't forget to turn it off.** Leaving it on overnight will drive your glucose high.

AUTO-CORRECTIONS

What Control-IQ does on its own

- ▶ **Basal adjustment every 5 min** based on predicted glucose 30 min ahead.
- ▶ **Auto-correction bolus** delivered if predicted > 10 mmol/L and basal adjustment alone is insufficient. 60% of the calculated correction.
- ▶ **Not in Sleep Mode.** Auto-corrections disabled overnight (or all day if 24/7 Sleep).
- ▶ **Not replacing meal bolus.** Your pre-meal bolus still does most of the work.

MAJOR IN THE MAJORS · #1

Three settings that move almost everything

- ▶ **Correction Factor (CF).** Start at 80-90 / TDD based on your team's guidance. Review every 4 weeks.
- ▶ **Insulin-to-Carb Ratio (ICR).** Meal boluses live here. Get this right before optimising the algorithm.
- ▶ **Basal rates.** Hourly profile - Control-IQ adjusts around this. Foundation must be close to correct.
- ▶ **Sleep Mode hours.** Default overnight; expand to 24/7 if you want tighter control.

MAJOR IN THE MAJORS · #2

Infusion sets and sites

- ▶ **Change every 3 days maximum.** Longer wear = more absorption variability = algorithm struggles.
- ▶ **Site rotation.** Abdomen, lower back, thighs, upper outer arm. Don't reuse a site for 2 weeks.
- ▶ **Prime properly.** Forgetting to prime the cannula after insertion is a common cause of unexplained highs.
- ▶ **Consider steel sets** if teflon kinks. Less comfortable, more reliable in some people.
- ▶ **Change in the morning** - you'll spot absorption issues before bedtime.

MAJOR IN THE MAJORS · #3

Two actions that move HbA1c most

The AID Optimiser models what CF and Sleep Mode changes will do. Use it before you change anything.

ACTION 1 **AID Algorithm Optimiser** →
Model CF and Sleep Mode changes for Tandem Control-IQ. See expected TIR shift before you commit.

ACTION 2 **Exercise Planning Explorer** →
Exercise Mode timing and bolus reductions for your session type.

GO DEEPER

GNL explorers, guides & podcasts

Interactive tools, graded evidence and long-form reading when you want more than a leaflet.

GUIDE **Full AID Guide - 5-part series** →
How every AID algorithm works, side by side.

SYSTEM **GNL Tandem Control-IQ Page** →
Deep dive - TypeZero algorithm, registry data, Sleep Mode strategy.

PODCAST **AID Series - Control-IQ episodes** →
Tandem user experience, clinician perspective, optimisation discussion.

ASK **Grace - evidence-backed Q&A** →
Ask anything about Control-IQ, AID or T1D.