# Tiny Patients, Smart Pumps: Optimizing AID for Children ≤6 Years with T1D

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## BACKGROUND

- Few children ≤6 years with type 1 diabetes (T1D) achieve target HbA1c <7.0%, increasing lifetime exposure to hyperglycemia and risk of complications
- Unique insulin needs, increased sensitivity to carbohydrates, and less predictable intake and activity times complicate management.
- Optimized automated insulin delivery (AID) settings and tailored caregiver education can improve glycemic outcomes

## OBJECTIVE

- The multidisciplinary Young Children Diabetes Program (YCDP) at TCH was formed in 2022 with overarching aim of improving glycemia in this cohort.

## METHODS

- Developed and disseminated multidisciplinary, evidence-based guidelines for young children with T1D
- Implemented bundled QI interventions to:
  - Standardize insulin dosing and promote pre-meal dose timing (2023)
  - Increase AID adoption and optimize settings (2023-2026)
  - Prevent hypoglycemia overtreatment (2023)
  - Expand clinical follow-up and nutrition education, as well as psychosocial support for identified fear of hypoglycemia and caregiver distress (2024-2026)
  - Conducted AID optimization workshops (2023, 2025)

## KEY STRATEGIES

### Promote PRE-carb bolusing

Teach practical strategies to manage unpredictable eating.

### More boluses = Better HbA1c

Cover snacks
Correct any time
No "3-hour rule": pump subtracts insulin-on-board

### Robin Hood approach

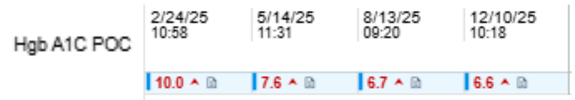
Steal from basal, give to bolus
**Up to 80%** of total daily dose from bolus
Tight **insulin-to-carb ratios**
500/1800 rules do not apply

### Adjust for age-specific patterns in ways that work with algorithms

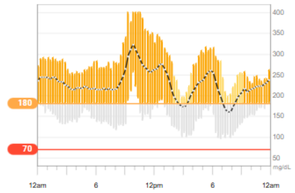
Including: lower early-morning basal needs
"Dusk phenomenon"
Prevent rebound highs

Handout with clinical recommendations and practical AID optimization strategies to share with your team

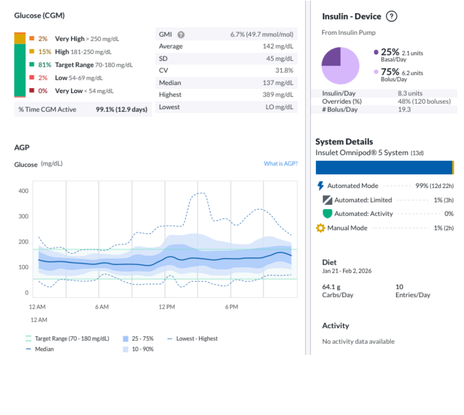
## REAL WORLD CASE: 28 MONTH OLD TODDLER




BEFORE




AFTER OPTIMIZATION




## RESULTS

**Between FY 2022 and 2026 in children ≤6 yr with T1D at TCH:**
**Mean HbA1c ↓ 0.86 pp (8.43% → 7.57%)**
**Pump/AID utilization ↑ 26.3 pp (45.9% → 72.2%)**
**Pre-meal bolusing ↑ 44.8 pp (50% → 94.8%)**

**Figure 1. HbA1c improvement**

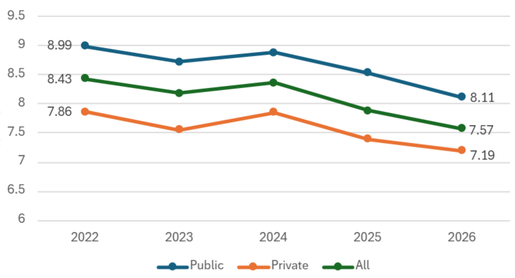
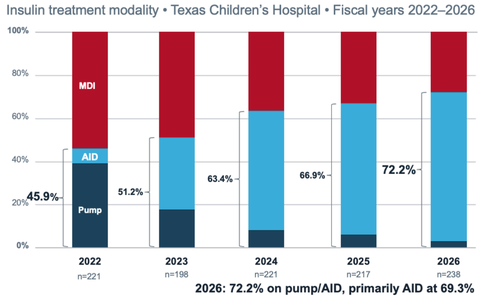



**Figure 2. Treatment modality**




## NEXT STEPS

- Disseminate YCDP guidelines and AID optimization resources to other pediatric diabetes programs.
- Continue monitoring glycemic outcomes and AID utilization, with new focus on reducing disparities and improving equity.

## REFERENCES

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Scan for more info on Texas Children's Diabetes Center