Increasing the Percentage of Patients on Automated Insulin Delivery Systems within Three Months of Diagnosis of Type 1 Diabetes

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Background

- Standards of care for type 1 diabetes (T1D) management emphasize the benefits of automated insulin delivery (AID) systems to improve glycemic outcomes by reducing A1c and increasing time in range. Despite these advantages, uptake of AID systems remains suboptimal.
- Starting insulin pump therapy within 6 months of diagnosis is associated with lower rates of severe hypoglycemia and hospitalization, lower A1c, and a more favorable cardiovascular risk profile.
- In 2024, only 62% of pediatric patients at CCHMC achieved optimal glycemic control (A1c ≤7.5%), and more than 35% of the population were on **not** AID systems.

Objective

To increase the percentage of pediatric patients starting insulin pump therapy within three months of diagnosis of type 1 diabetes from median baseline of 23% to 50%.

Methods

A multidisciplinary team was assembled to improve early adoption of insulin pump therapy and AID systems.

Decreasing Time from T1D Diagnosis to Insulin Pump (AID) Initiation Key Driver Diagram (KDD)

Project Leader(s): Hailee Delsart — Revision Date: *8/1/2025 (v6)*

Global Aim

Increase the number of T1D patients with A1c ≤7.5% and/or glucose TIR ≥70%

SMART Aim

Increase the percentage of patients on AID within 3 months of diagnosis of T1D from 23% to 50% by June 30th, 2025.

Population

Youth 0-18 yr diagnosed with Type 1 Diabetes (T1D) within the past year receiving care at CCHMC DM Center

Key Drivers

- Innovative healthcare delivery system
- Accurate understanding of DM tech for patients/families
- Standardized and patient-centered process for DM tech initiation
- Alleviate patient concerns and address DM stigma
- Consistent and equitable provider offering of DM tech

Interventions (LOR #)

- Utilize coordinator roles: financial counselor, insurance navigator, RN care coordinator (LOR 2)
- Provide education/training about and exposure to DM tech options (LOR 1)
- Initiate access to DM technology at CCHMC pharmacy and DME (LOR 2)
- Share patient experiences with other patients considering DM technology (LOR 2)
- Proactive Outreach for Missed Appts (LOR 2)
- Offer CGM at diagnosis (LOR 2)
- Include Shared Decision-Making Tool as part of check-in process at Clinic Visits (LOR 1)
- Roadmap from Diagnosis to Pump Start provided at Diagnosis (LOR 1)
- Scheduling of Pump Options at Dx (LOR 2)
- Offer Modified Pump Options On Demand (LOR 2)
- RN Care Coordinator Check-In after Pump Rx Completed (to Schedule Pump Start) (LOR 2)

Legend: Potential intervention; Active intervention; Adopted intervention; Abandoned intervention

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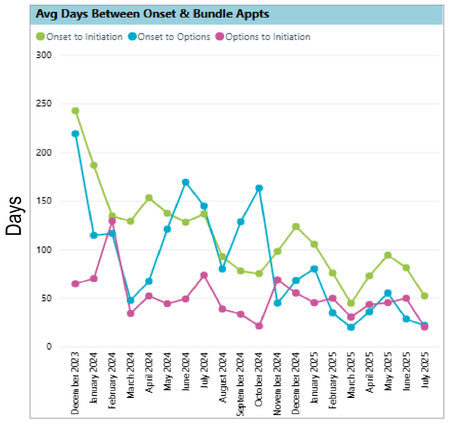
Note: LOR # = Level of Reliability Number, e.g., LOR 1

Results

Process Measure: Time from Onset to Pump Start Bundle Appointments

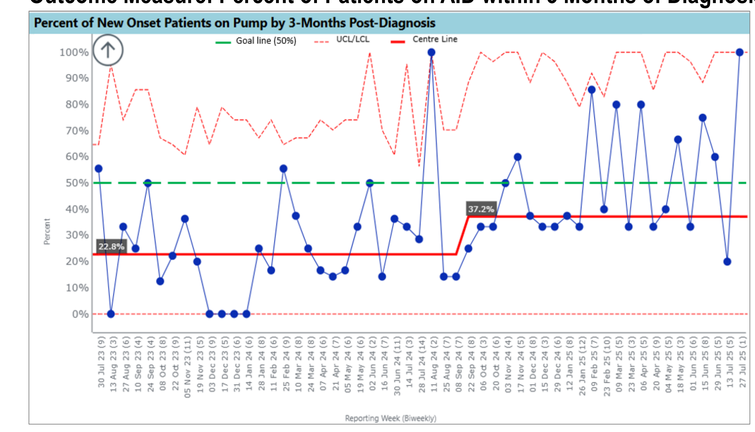


The average number of days between:

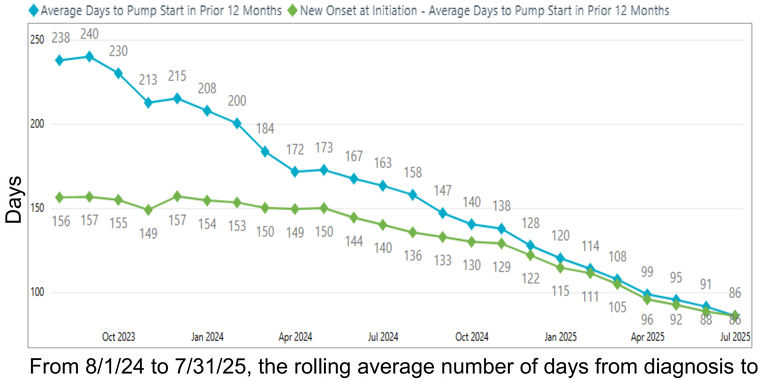
(1) date of diagnosis and pump options class (blue, ●)
(2) pump options class and pump initiation (pink, ●), and
(3) date of diagnosis and pump initiation (green, ●)

were assessed.

Outcome Measure: Percent of Patients on AID within 3 Months of Diagnosis



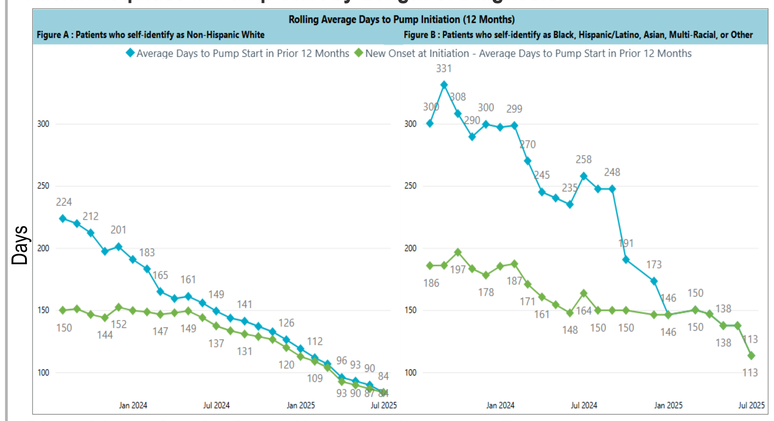
Average Number of Days from T1D Diagnosis to Pump Start



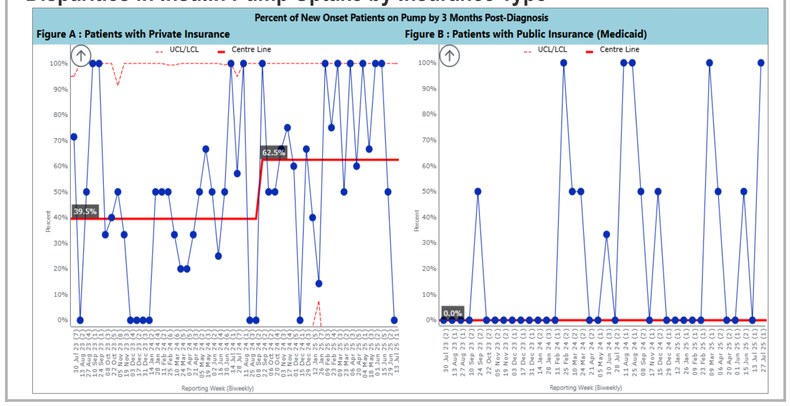
From 8/1/24 to 7/31/25, the rolling average number of days from diagnosis to pump start decreased from 158 to 86 days for all established patients with T1D (blue, ◆) and from 136 to 86 days for new onset T1D patients diagnosed within the past 12 months (green, ◆).

Results cont.

Racial Inequities in Pump Start by Length of Diagnosis



Disparities in Insulin Pump Uptake by Insurance Type



Conclusions

- Application of QI methodology successfully supported earlier introduction and uptake of diabetes technology following diagnosis. Ensuring consistent messaging that AID is the standard of care remains crucial.
- Rolling average days to pump initiation has decreased over time for all groups, with more pronounced improvements among patients who identify as White compared to those from racially and ethnically diverse groups.
- Addressing diabetes-related stigma by sharing diverse patient and family experiences with AID will be a key next step in promoting early adoption of diabetes technology and reducing disparities.