

Insulin Pump Uptake and Outcomes in Very Young Children with Type 1 Diabetes

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Background/Objective

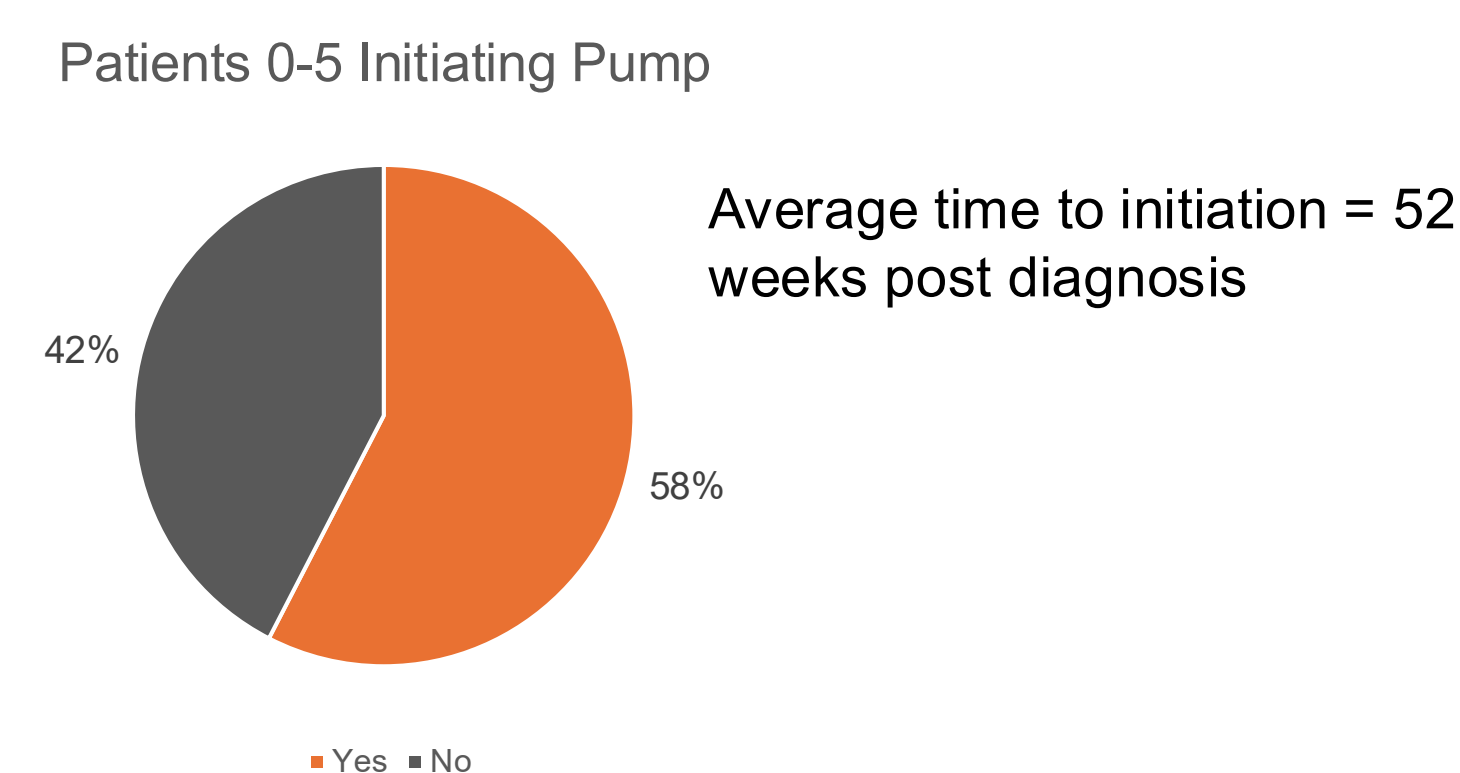
- Insulin pumps have transformed type 1 diabetes (T1D) management, yet their use in **very young children (0–5 years)** remains variable.
- Early pump initiation may improve glycemic control and reduce acute care utilization, but real-world uptake and outcomes are not well characterized.
- Objective:** To assess the **rate of insulin pump adoption** and its impact on **glycemic control** and **diabetes-related emergency care** among very young children with T1D followed in our clinic.

Methods

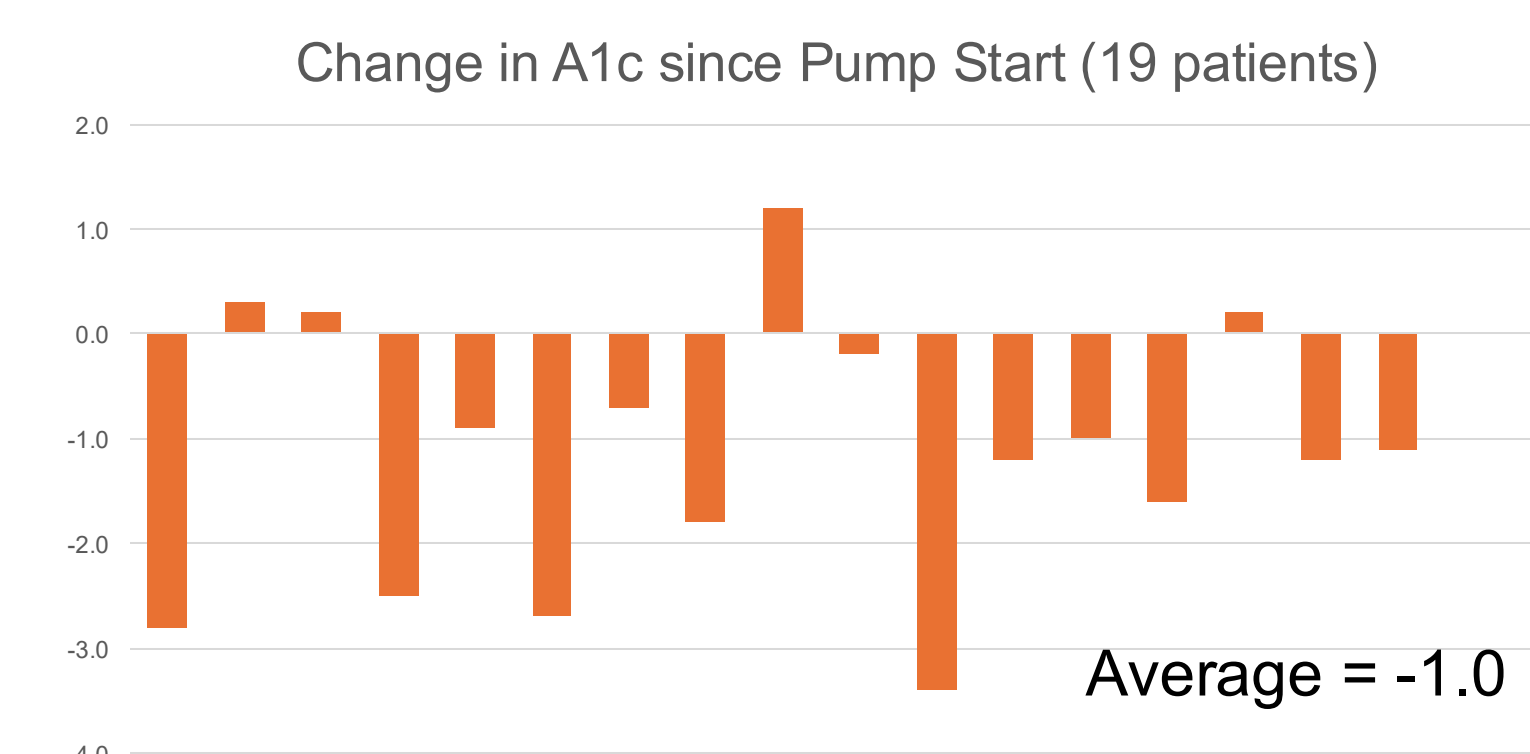
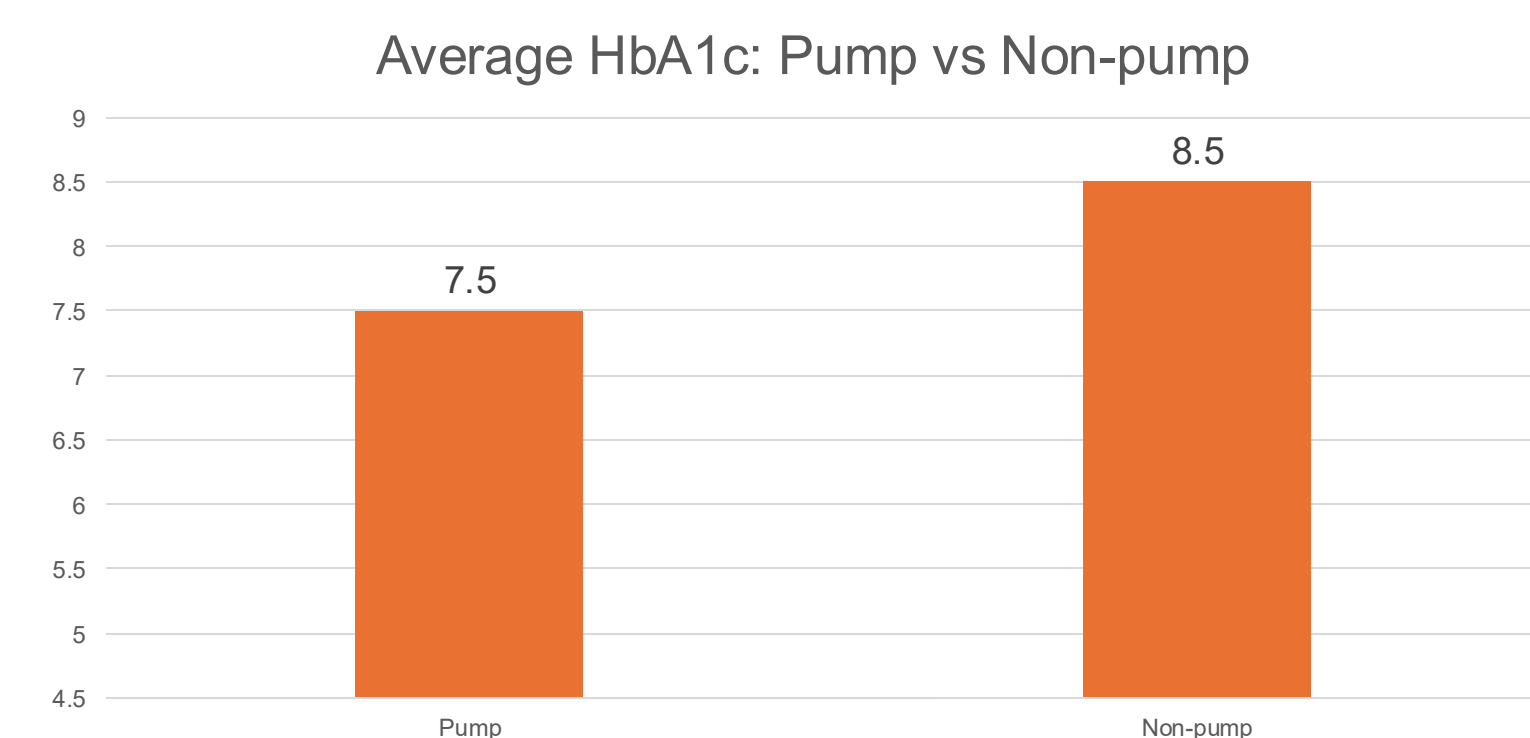
- In **October 2023**, *Little's Clinic* was launched within the **Le Bonheur Diabetes and Endocrinology Clinic** to improve care for children **ages 0–5** living with T1D.
- The clinic provided **more frequent visits**, caregiver education, and early discussion of insulin pump therapy when appropriate.
- Design:** Retrospective chart review of all patients aged 0–5 with T1D, through **August 2025**.
- Data collected:**
 - Pump use and timing of initiation
 - Hemoglobin A1c (HbA1c) trends
 - Diabetes-related **emergency department (ED)** visits and **hospitalizations (DKA)**
- Analysis:** Comparison between pump and non-pump users and pre/post comparisons among pump users.

Results

- Pump Uptake**
 - Of **33** children ages 0–5 with T1D, **19 (58%)** initiated insulin pump therapy.
 - Mean time to pump initiation: **52 weeks post-diagnosis**.



- Glycemic Control**
 - Mean HbA1c among pump users: **7.5%**, compared with **9.5%** in non-pump peers.
 - Within pump users, HbA1c improved by an average of **–1.0%** from initiation to present.



Fishbone Diagram for Little's Clinic

Policies and Procedures:
-Insulin pump starts have not always been initiated consistently for our T1DM patients
-Our 5 and under T1DM patients have not always been seen by one provider to offer continuity of care

Place:
-One dietitian available for diabetes education classes.
-Insulin pump class only available at downtown location with no virtual option.

Product:
-There are multiple insulin pumps on the market today and each one requires specific training and education.
-Each pump offers different benefits and should be considered when determining the best pump for our 5 and under patients
-Difficulty trouble shooting insulin pumps
-There can be difficulty obtaining supplies for diabetes technology

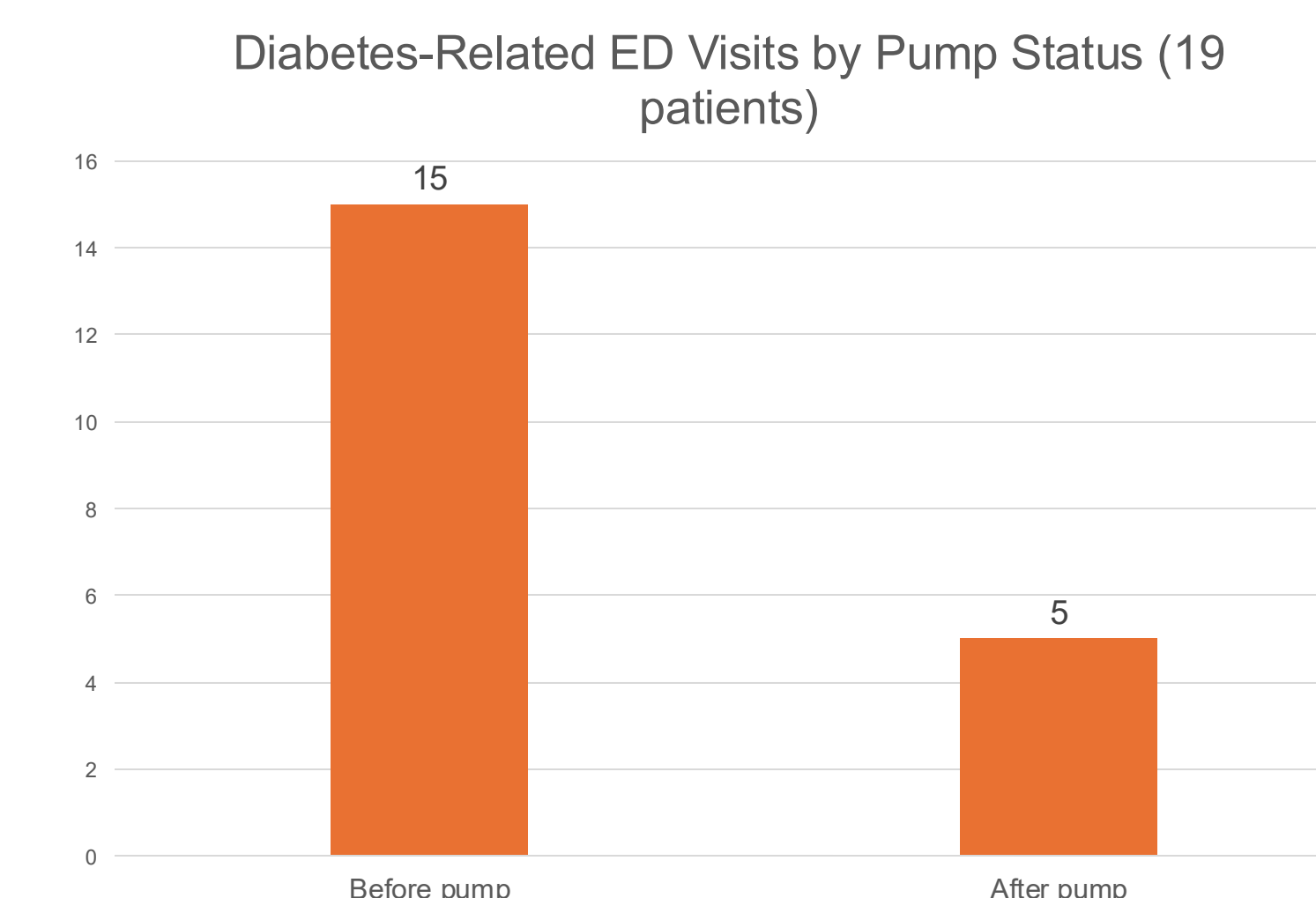
Process:
-Not consistently discussing insulin pumps with all patients
-Insulin pump start requires insulin pump class at our downtown clinic and education from insulin pump company.
-Utilizing educational handouts to assist with troubleshooting
-Two-week post pump start follow up appointments

People:
-Provider/staff forget to offer diabetes technology
-Patients unable to troubleshoot issues with insulin pump
-Patient unable to consistently get supplies
-Patients 5 and under

Smart AIM: To assess the rate of insulin pump adoption and its impact on glycemic control and diabetes-related emergency care among Type 1 Diabetes patient 5 years or younger with a decrease in A1C by 1%.

Results (continued)

- Acute Care Utilization**
 - DKA admissions:** No change in rate before vs after pump initiation.
 - ED visits:**
 - Before pump:** 15 of 19 (79%) had at least one diabetes-related ED visit.
 - After pump:** Only **5 of 19 (26%)** had such visits.



Conclusions

- Pump users demonstrated **substantially improved glycemic control** and **fewer diabetes-related ED visits** compared with non-pump peers.
- DKA rates remained stable**, suggesting safety of early pump use.
- These findings support **encouraging pump adoption soon after diagnosis** to improve outcomes in this high-risk population.

Acknowledgments

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