

# Early Initiation of Insulin Pump Therapy Among Pediatric Patients with Type 1 Diabetes

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## Background

- ❖ Early insulin pump initiation improves glycemic outcomes in pediatric patients with type 1 diabetes.
- ❖ Health disparities exist in the diabetes technology uptake of pediatric patients.
- ❖ It has been theorized that early pump insulin adoption may help preserve beta-cell function and prolong the honeymoon period.
- ❖ In 2024, the pump process at OHSU was revamped to allow for increased access, tripling the capacity for number of patients served.

## Project Aim

- ❖ This quality improvement initiative explores opportunities to increase pump starts for patients within their first year of diagnosis.

## Methods

### Provider Referral Practices Survey

- ❖ 13-item Qualtrics survey was sent to pediatric providers to evaluate provider beliefs, biases and perceived barriers to the pump referral process.

### Analysis of Pump Referral Pathway

- ❖ Reviewed number of patients served in pump process.
- ❖ Ascertained gaps in pump completion process.
- ❖ Stratified deidentified patient data of pump adoption based on patient demographics.

## Results

### Provider Referral Practices Survey

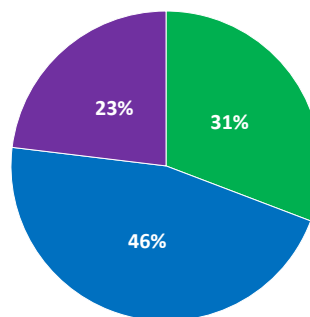
- ❖ 13 responses were received from 1 advanced practice provider, 1 fellow physician, and 11 attending physicians.

### Provider-Perceived Barriers to Pump Initiation Following Pump Referral

- ❖ Scheduling delays (primarily patient-driven)
- ❖ Patient/family decision to forgo pump therapy
- ❖ Missing labs (insurance requirement)
- ❖ Family unable to attend training at main clinic campus
- ❖ Technology issues
- ❖ Appointment no-shows or cancellations

## Results

### Provider-Reported Timing of Initial Pump Discussions



- During Hospital Admission at Initial Diagnosis
- At Initial Outpatient Visit, Following Diagnosis
- When the Patient/Family Wish to Discuss Pumps

### Main Identified Barriers to Provider-Initiated Pump Pathway Referrals

Lack or Inconsistent CGM use:	Psychosocial concerns:	Lack of diabetes skills/knowledge:	Family hesitation:	Patient Insulin requirements:
<ul style="list-style-type: none"> <li>• Inability to use automated pump features without consistent CGM use</li> <li>• Struggling to wear CGM consistently may implicate an inability to responsibly interact with pump technology</li> </ul>	<ul style="list-style-type: none"> <li>• Financial concerns raise questions of pump supply affordability</li> <li>• Resistance to technology due to patient shame</li> <li>• Challenges surrounding motivation for optimal diabetes management</li> <li>• Ability to problem-solve pump failure</li> </ul>	<ul style="list-style-type: none"> <li>• Higher risk of DKA</li> <li>• Family may struggle with adherence or capacity to learn new system leading to safety concerns</li> <li>• Sets the patient up for failure with the technology</li> </ul>	<ul style="list-style-type: none"> <li>• Defer referral until family is interested in pursuing further education</li> <li>• Pediatric patients need caregiver support for successful pump adoption</li> <li>• Providers do not feel comfortable pushing patients who do not feel ready</li> </ul>	<ul style="list-style-type: none"> <li>• Low insulin needs during honeymoon period</li> <li>• Meeting minimum total daily dose requirements of a pump</li> <li>• High insulin requirements with insulin resistance may necessitate more frequent set changes</li> </ul>

### Analysis of Pump Referral Pathway

- ❖ Of 93 total referrals, 55% were made within 1 year of the patient's diagnosis, and 17% of patients were initiated on pump therapy within 1 year of diagnosis.
- ❖ Among the patients started on pump therapy within 1 year of diagnosis, the majority were female (62.5%, n=10), white (94%, n=15), non-Hispanic (81%, n=13), with commercial insurance (63%, n=10), and an average age of 9.6 years.

## Results

### Pump Referral Pathway Patient Demographics

	Total Patient Referrals in Pump Pathway (n = 93)	Patient Referrals in Pump Pathway with Onset of Diagnosis ≤ 1 Year (n = 51)	Total Patients Started on Insulin Pump within 1 Year of Diagnosis (n = 16)
<b>Patient Age in Years</b>	10.8 ± 4.2	9.8 ± 4.2	9.6 ± 3.3
<b>Patient Sex</b>			
Female	45 (48.4)	20 (39.2)	10 (62.5)
Male	48 (51.6)	31 (60.8)	6 (37.5)
<b>Race</b>			
Asian	2 (2.2)	1 (2.0)	0 (0)
Black or African American	2 (2.2)	1 (2.0)	0 (0)
Declined or Unknown	3 (3.2)	1 (2.0)	0 (0)
Native Hawaiian or Other Pacific Islander	1 (1.1)	0 (0)	0 (0)
Multiracial	5 (5.4)	1 (2.0)	1 (6.3)
White	80 (86.0)	47 (92.2)	15 (93.8)
<b>Ethnicity</b>			
Hispanic Origin	20 (21.5)	7 (13.7)	2 (12.5)
Non-Hispanic Origin	64 (68.8)	42 (82.4)	13 (81.3)
Declined or Unknown	9 (9.7)	2 (3.9)	1 (6.3)
<b>Insurance Type</b>			
Medicaid	59 (63.4)	25 (49)	5 (31.3)
None	1 (1.1)	1 (2.0)	0 (0)
Private	31 (33.3)	23 (45.1)	10 (62.5)
Tricare	2 (2.2)	2 (3.9)	1 (6.3)

Data displayed as mean ± SD or n (%)

### Pump Pathway Referral Data as of June 30, 2025

Total Referrals	93
Referrals of Patients within 1 Year of Dx	51
Pump Starts of Patients within 1 Year of Dx	16

## Conclusions

- ❖ Despite increased referral practices among providers and increased clinic capacity for pump initiation, barriers persist in early adoption of pump therapy within the initial year of diagnosis.
- ❖ Targeted interventions are needed to mitigate psychosocial barriers, improve feedback of pathway utilization, and to promote health equity in pump uptake.