

AIM

Despite documented benefits in diabetes technology, the utilization inequalities continue. We propose a pilot program focused on improving rates of closed-loop system utilization in a pre-defined at-risk pediatric type 1 diabetes (T1D) population.

Background

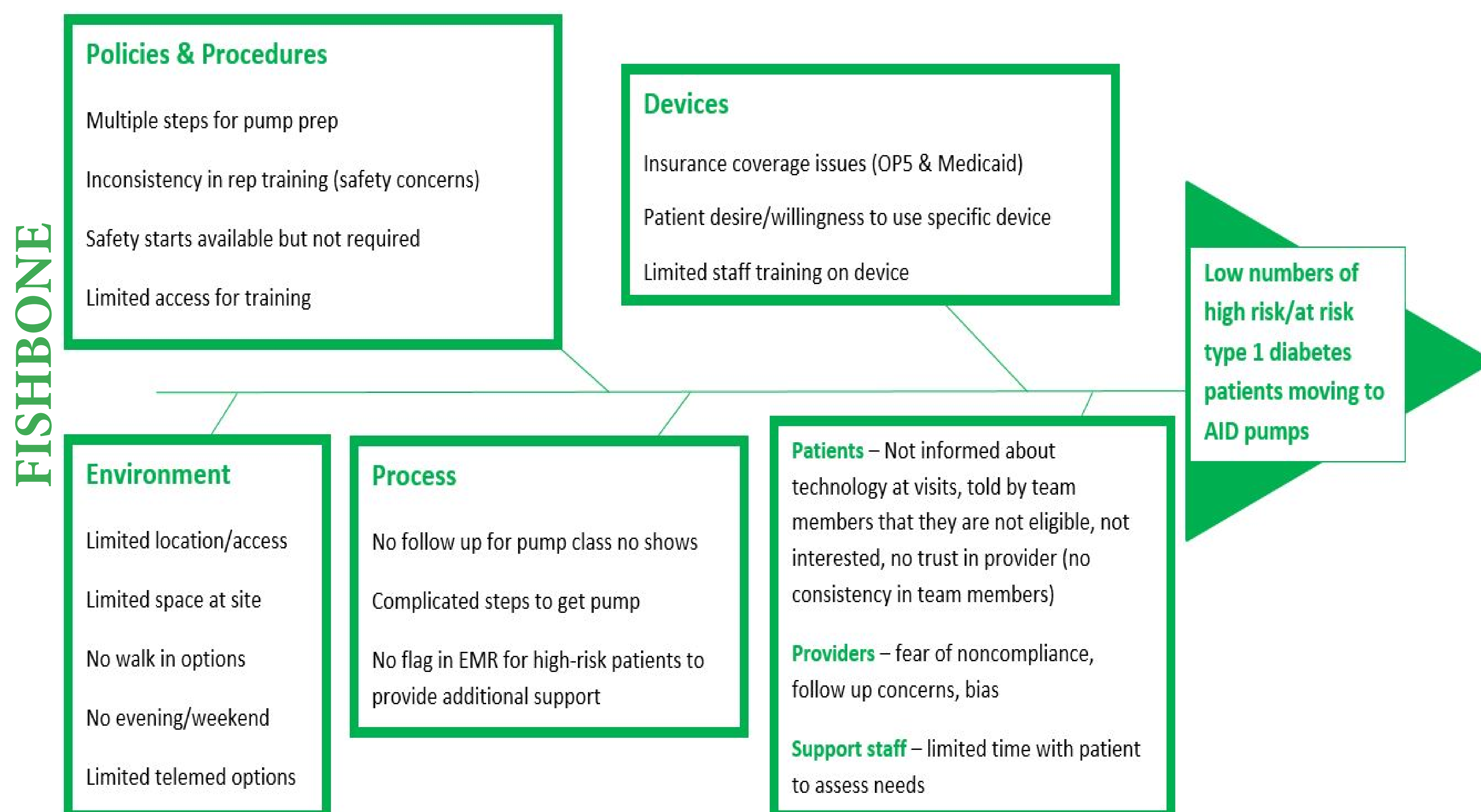
The Diabetes Support Program (DSP) implemented at CHOA in 2016 aims to reduce acute complications in patients at high-risk, defined as more than 2 diabetic ketoacidosis (DKA) events within 12 months, or at-risk, defined as 1 DKA within 12 months (diagnoses event excluded).

DSP includes a psychologist, a dedicated clinical diabetes educator (CDE) and social worker. Technology utilization has not previously been a focus.

2022	Non-DSP N 3134	DSP N 276
Average HbA1c (%)	8.5%	10.7%
Medicaid	47%	75%
% White	51%	34%
% pump use	42%	24%*

Table 1: 2022 CHOA T1D patient population

*Of our DSP patients with a pump, 2/3 were covered by Medicaid



Methods

DSP expanded with the addition of 3 providers and 3 CDEs.

Patients within the DSP population interested in pump technology with insurance that approves closed-loop systems were approached for enrollment.

Inclusion criteria was initially limited to patients of providers in the program. Criteria for involvement included: age under 18 years old, diagnosis of diabetes for more than 1 year, at least 2 clinic visits within the last 12 months, stable caregiver trained in diabetes care, no current DFCS involvement, familiarity with continuous glucose monitoring, and familiarity with carbohydrate counting.

To improve compliance, the team simplified pump initiation, standardized direct access to the team, and proposed an untethered start.

Protocol

Individual patient timeline:

	Baseline	Month 1	+ 3 days (Virtual)	+ 14 days (Virtual)	Month 2	+ 14 days (Virtual)	Month 6	Month 9	Month 12
Subject interest	x								
Introduction to pump technology	x								
Pump selection (options must provide closed loop technology)	x								
Manual mode pump start ¹		x							
1 st Pump site change			x						
Manual mode pump start follow up				x					
Switch to hybrid closed loop pump ²					x				
Hybrid closed loop pump start follow up						x			
Routine clinic visit							x	x	x

¹Manual pump mode: Continuous glucose monitor (CGM) is NOT connected to pump. There is no augmentation of insulin outside of what the patient is inputting into the pump. In this setting, patient will be administered 30% basal insulin through pump and 70% basal insulin as a subcutaneous injection.

²Hybrid closed loop pump: CGM communicates with insulin pump and augments basal and bolus insulin based on CGM information.

Conclusion

This quality initiative pilot aims to show high-risk patient populations can safely transition to closed-loop insulin delivery and improve their diabetes care using insulin pump therapy through a supportive, tailored program. Enrollment in this project is ongoing.