**Methods:** Semi-structured interviews were conducted with 39 youth, ages 10-25, and 28 parents at two U.S. diabetes centers. Interviews were audio-recorded, transcribed, and coded using thematic analysis. Youth (72% female, 82% white) were (M±SD) age 17.0±4.7 years, with T1D duration 9.4±4.9 years and HbA1c 8.4±1.1%; 79% were pump users and 82% were CGM users. 89% of parents were white and 96% were mothers.

**Results:** Youth and parents generally agreed that an ideal AP system would function without much effort from the patient, be small and discreet, and would personalize insulin dosing and alerts. However, youth mainly desired: the ability to personalize system aesthetics, less disruptive and less frequent alerts, and a system that would manage changing glucose levels autonomously. Parents desired a system that would not only reduce physical burden, but relieve emotional stress on their child by reducing the number of separate devices and encouraging their child's unrestricted freedom and normalcy. Parents also wanted the ability to remotely monitor and override the system.

**Conclusions:** Youth and parents agreed on some features for an ideal AP system, but had key differences in their expectations of how an AP system would benefit diabetes management. Youth mainly preferred to reduce physical efforts and burdens of management, while parents emphasized a unique desire to reduce emotional burdens. AP designers must understand and address both patient and parent preferences to maximize future AP uptake and reduce burdens for youth with T1D and their families.

## P322
## Pros and cons of Minimed 670G hybrid closed-loop system: first 6-month experience in Italy

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**Introduction:** After a long lead-in period, artificial pancreas (AP) technology is well on its way to revolutionizing the treatment of diabetes, but no AP is currently approved. Recently data about the use of a hybrid closed-loop (CL) insulin delivery has been presented.

**Objectives:** We evaluated pros and cons of Minimed 670G system, (Medtronic, CA, USA) in the market in Italy since late October 2018.

**Methods:** We prospectively analyzed data of all patients who started the system from November 2018 to May 2019. Main outcome is the time in range (TIR). Secondary outcomes are HbA1c change from baseline, time in hypo, time in hyper (>160 mg/dl), insulin total daily dose (TDD), %bolus and %basal rate, coefficient of variation (CV).

**Results:** After 1-6-month follow-up, 88 patients (mean age 13±4 yrs, range 7-20 yrs, diabetes duration 7±4 yrs) had a TIR of 65.5±9.7% when considering 70-160 mg/dl, and 74.3±11.1 mg/dl when considering 70-180 mg/dl. HbA1c significantly improved (7,22±0.74 vs 7.56 ±1.1, p=0.02). Time in hypo, in hyper and CV were respectively 2.1 ±1.7%, 32.4±11.5, and 35.3±9.1% (n.v. < 36%), perfectly in line with recommended target. TDD is 45.5±21.8 U/day, with a bolus and basal rate very similar (49 vs 51%).

**Conclusions:** 670G system seems effective to achieve a high TIR. A systematic educational pathway, as the one used by 640G users, could help reach these results, overcoming some constrains 670G system has (fixed glycemic target at 120 mg/dl, only simple bolus, etc.), and teaching patients how to avoid too many calibrations or to calibrate in uneasy times. It is solacing to know that we already have useful tools for the best possible care of our patients with type 1 diabetes while we wait for the commercial availability of an AP or a more performant hybrid CL system.

## P323
## Feasibility of a basal rate and carb ratio learning algorithm for closed-loop insulin delivery systems (artificial pancreas)

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**Objective:** Optimizing basal rates and carb ratios may improve the performance of closed-loop insulin systems (artificial pancreas). We tested the feasibility of a learning algorithm for a closed-loop system that updates daily basal rates and carb ratios.

**Methods:** We performed a randomized crossover trial at Camp Carowanis, a camp for youth with diabetes, in Quebec, Canada and included campers aged 8-21 years with type 1 diabetes on pump therapy. Participants underwent (i) 2 days of closed-loop insulin therapy and (ii) 6 days of closed-loop insulin therapy accompanied by the learning algorithm, with the order of the interventions randomized. During the closed-loop insulin therapy with the learning algorithm intervention, basal rates and carb ratios were updated daily based on the learning algorithm's recommendations. All algorithm recommendations were reviewed for safety by a physician.

**Results:** Thirty-four campers (age 13.9±3.9, 53% female, HbA1c 8.3% ±0.2) were included. 96% of algorithm recommendations were approved by camp physicians. Changes in basal rate ranged between -21% to +117%. Breakfast, lunch and supper carb ratio changes ranged between -17% to +40%, -36% to +37%, and -35% to +63%, respectively. The mean changes made by the algorithm were a 26% increase in basal rates, and a 10%, 1% and 9% increase in breakfast, lunch and supper carb ratio, respectively. Time in target (3.9-10 mmol/L) between the closed-loop therapy (55%) was similar to the closed-loop therapy with learning algorithm intervention (55%;