OR14-5: Challenges in Implementing Hybrid Closed Loop Insulin Pump Therapy (Medtronic 670g) in a 'Real World' Clinical Setting

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Methods: An observation study was conducted at Boston Children’s Hospital on patients with type 1 diabetes mellitus (T1DM) who elected to treat their diabetes with the FDA approved Medtronic 670G hybrid closed loop insulin pump. 83 pediatric and young adults were trained and started on the Medtronic 670G in automode between 5/30/17-9/7/18 (Age range 6-25 years). Average follow up time for the patient population was 8 months (range 3-18 months).

Results: 19% (16/83) of T1DM patients discontinued use of automode hybrid closed loop technology completely, often due to technical difficulties with the sensor or difficulties staying in automode. Calibration requirements, problems with sensor durability or adhesion, skin irritation and forced exits from automode were common areas of difficulty. 81% (67/83) continued to use automode although a wide range of percent time in automode was observed (10-90%).

A subset of 58 patients who continued to use automode technology and who had available hemoglobin a1c data obtained within 6 months before and within 6 months after starting automode were analyzed. A mean decrease in hemoglobin A1c of 0.27% (95% confidence interval is -0.5, -0.03) was seen after an average of 97 days using automode closed loop technology (P=0.025).

Conclusion: In conclusion, our data supports the observation that closed loop insulin delivery in subjects that are successful in using the technology improves glucose control (reduces HbA1c). Additional work is needed to understand barriers to successful implementation of technology.

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