COMMUNITY HEALTH CHARITIES℠ NEBRASKA

Medical Research Update: JDRF's Artificial Pancreas

In 2010, the first clinical trials for a Boston University study on the Artificial Pancreas (AP) took place. This study aimed to test the efficacy of a closed loop system to continuously monitor blood glucose levels, and to administer the proper drug to bring those levels up or down. The second round of trials took place in 2014, and the third in 2016. The most recent trial more closely mirrored daily living, as participants this time around could take part in normal daily activities like exercise.

The AP is so important because type 1 diabetics (T1D) have blood glucose levels that can rise and drop rapidly and cause serious complications and even death, especially at night during sleep when normal testing is obviously not practical.

The AP pairs two refined pieces of equipment that have been in use for years: a Continuous Glucose Monitor and an insulin pump. Additionally, the new AP also suspends insulin delivery when levels are low. And the fact that they are linked together comprises the so-called AP, more realistically called a hybrid closed loop system. The Medtronic MiniMed 670G hybrid closed-loop system was approved for use by the FDA in September 2016. As such, it is the first AP approved for use in the United States.

Ashlee Ernst of Lincoln was able to take part in a manufacturer trial of the newly approved device. She took part in a clinical trial at the Barbara Davis Center in Denver, near where she's attending nursing school at St. Regis University. The trial started in November 2015, and she's able to continue using the device after the trial's conclusion, as the study continues to gather data on the device's use.

The best part of taking part in this trial? "I can sleep through the night, without worrying about my blood glucose levels dropping too low. I also only have to test 3-4 times a day, where before I had to test 10+ times a day. Being able to trust the system is huge! I still carb count just like always, but I have a lot more comfort about it working when I'm low."

Ashlee says the downside is that "it has a lot of safety features - which are good, but can be frustrating." She also cautions that we're still a few steps away from a true AP. "Artificial Pancreas tells people that it's a perfect plug and play system. This is not that easy. I still have to be proactive about my diet and activity. It's truly a step in the right direction, but we have many more generations to go before we have a fully functional AP system. [Some of the other study participants and I] call it the iPhone 4 of APs. It's a great device, but we still have a ways to go." Ashlee says this device is best for patients who want that next step, not for patients who are burned out on T1D management. But for her, it's been a game changer. She went from 4+ lows every day to one every three. She's in her final year of nursing school, and will graduate in May 2017 with a BSN, and hopes to go into pediatric nursing after graduation.