Artificial Pancreas Project

The artificial pancreas project has caused many people whose lives are touched my diabetes to get excited.

Let's first talk about what it is not. The words "artificial pancreas" often conjures up the thought of a device being inserted in the body that to take the place of a damaged pancreas. However, the name is quite misleading.

The Artificial Pancreas is a system of three commonly used diabetes devices: a continuous glucose monitor, an insulin pump, and a blood glucose monitor.

- The continuous glucose (CGM) monitors blood glucose levels using an external sensor that it worn a week at a time.
- The insulin pump delivers insulin
- The blood glucose monitor is typically a blood glucose meter use to calibrate the CGM.

An algorithm controls the CGM and the insulin pump allowing continuous communication between the two devices. It's often referred to as a closed-loop system because it allows for automated control of the devices. When the CGM detects a rise in blood glucose levels, the insulin automatically delivers insulin according to the scale set by the algorithm. The insulin pump also reduces the flow of insulin when it detects that blood glucose levels may be going low.

While a fully automated closed system is still on the horizon, a significant milestone was reached in September 2016. That's when the FDA approved Medtronic's MiniMed 670 G, the world's first **hybrid** closed loop system. The 670G system is the first ever to automate insulin dosing. It is not a fully closed loop system as users still need to take some actions such as enter mealtime carbohydrates and accept bolus correction recommendations.

According to the JDRF, in clinical trials, the 670G system kept people with T1D within their desired blood sugar range 72 percent of the time, vs. 67 percent without the system. At night, the most dangerous time for blood sugar highs and lows, the difference was even more pronounced, 75 percent in range vs. 67 percent without the technology. Overall glucose control, as measured by A1c levels, improved from 7.4% at baseline to 6.9% at study end.

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TTD TOOLKIT

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This document is not intended to take the place of the care and attention of your personal physician or other professional medical services. Our aim is to promote active participation in your care and treatment by providing information and education. Questions about individual health concerns or specific treatment options should be discussed with your physician.

Recommended

Using an Insulin Pen

Rotating Injection Sites

Tracking and Reviewing Blood Glucose Data

External Resources

Companion Medical – InPen

Sources

Medtronic MimiMed 670 G

DIY Artifical Pancreas