

## **NICE publishes Medtech Innovation Briefing on the Tandem t:slim X2™ insulin pump for managing blood glucose levels in type 1 diabetes**

**The NICE briefing reports that studies show the t:slim X2™ insulin pump, with predictive low-glucose suspend technology or advanced hybrid closed-loop system, is more effective than comparators.**

The UK National Institute for Health and Care Excellence (NICE) has issued a Medtech Innovation Briefing (MIB) on Tandem Diabetes Care's t:slim X2™ insulin pump for managing blood glucose levels in type 1 diabetes. This is the first MIB to be published by NICE on an insulin pump with predictive low-glucose suspend technology or an advanced hybrid closed-loop system.

The first insulin pump of its kind, Tandem's t:slim X2 insulin pump is up to 38% smaller than other CGM-enabled insulin pumps and has a watertight (IPX7) aluminium case and a colour touchscreen interface. It features a rechargeable battery and USB connectivity.

Acknowledged in the MIB, the t:slim X2 insulin pump is the first CGM-enabled system approved to remove the need for sensor calibrations and finger prick testing prior to making treatment decisions<sup>1</sup>. It is the only pump capable of remote feature upgrades, much like a smartphone, which can be carried out throughout the 4-year warranty of the pump. Patients can also upload their pump data using the Diasend or Tidepool diabetes data management systems, allowing their clinical teams to then review patterns in data and help make changes in pump settings when necessary.

When integrated with the Dexcom G6 continuous glucose monitoring (CGM) system, users have the option of two predictive insulin delivery technologies.

**Basal-IQ™ Technology** is a predictive low glucose suspend feature that links with Dexcom G6 Mobile CGM to help the management of hypoglycaemia with zero fingersticks. Basal-IQ helps to reduce the frequency and duration of low-glucose events by predicting glucose levels 30 minutes ahead and suspending insulin if they are expected to drop below 4.4 mmol/L, or if an actual CGM reading falls below 3.9 mmol/L, meaning users can spend less time worrying about lows and more time living their life.

**Control-IQ™ Technology** is an advanced hybrid closed-loop system that uses Dexcom G6 CGM values to predict glucose levels 30 minutes ahead and adjusts insulin delivery accordingly, including the delivery of automatic correction boluses. If sensor glucose values are predicted to drop below 6.3 mmol/L, basal insulin delivery is reduced, and when predicted to be below 3.9 mmol/L, basal insulin delivery is stopped.

If sensor glucose values are predicted to be above 8.9 mmol/L, basal insulin will be increased. If sensor glucose values are predicted to be above 10 mmol/L, Control-IQ Technology calculates an

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<sup>1</sup> If your glucose alerts and CGM readings do not match your symptoms and expectations, you should perform a finger stick to confirm your blood glucose level.

automatic correction bolus. Automatic correction boluses are delivered up to once per hour as needed. Control-IQ Technology has been clinically proven to increase a user's time in range by, on average, 2.6 hours per day<sup>2</sup>.

As part of the briefing, NICE asked clinical experts to comment on the technology – all of the experts viewed the pump as an improvement to standard care when combined with the Dexcom G6 CGM. One expert thought it was innovative specifically with the additional use of Control-IQ software. Four of the experts mentioned improvements because calibration, from finger prick testing, is not needed for the Dexcom G6 CGM. Two experts mentioned the increased accuracy of this CGM. The other advantages of this device listed were the reduced size of the pump, larger touch screen and the ability to remotely update software.

Medtech Innovation Briefings (MIBs) are NICE advice. They are designed to support NHS and social care commissioners and staff who are considering using new medical devices and other medical or diagnostic technologies. The information provided includes a description of the technology, how it is used and its potential role in the care pathway. MIBs are designed to be fast, flexible and responsive to the need for information on innovative technologies. They help avoid the need for organisations to produce similar information locally, saving staff time and resources.

MIBs are commissioned by NHS England and produced in support of the NHS 5 Year Forward View, specifically as one of a number of steps which will accelerate innovation in new treatments and diagnostics.

The full MIB can be viewed here <https://www.nice.org.uk/advice/mib227>

### **About Air Liquide Healthcare**

Air Liquide Healthcare provides medical products and services that help protect vulnerable lives across the UK and Ireland. Its staff of clinical professionals, call centre advisors and onsite account managers ensure that patient care and safety is at the centre of all that they do. Included in Air Liquide Healthcare's service, is patient-focussed 24 hour support from their UK-based Customer Service team, as well as a team of clinical staff who support this function. Combined, they offer technical support and training to patients, as well as manage regular consumables ordering. Globally, Air Liquide supports over 40,000 patients with diabetes through the provision of equipment and related support and clinical services.

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<sup>2</sup> Brown SA, Kovatchev BP, Raghinaru D, et al. Six-month randomized, multicentre trial of closed-loop control in type 1 diabetes. *N Engl J Med*. 2019;381(18):1707-1717.