

# Do closed-loop insulin delivery systems improve blood glucose control in type 1 diabetes?

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In a closed-loop control approach to managing type 1 diabetes, glucose sensors placed under the skin continuously monitor blood sugar levels, triggering the release of insulin from an implantable insulin pump as

needed. The aim of this closed-loop insulin delivery system is improved control of blood glucose levels throughout the day and night. But a new study in adults and adolescents found that mean blood glucose levels remained at safe levels 53-82% of the time, according to the results published in *Diabetes Technology & Therapeutics (DTT)*.

Howard Zisser, MD and an international team of researchers representing the Control to Range Study Group measured plasma glucose levels every 15-30 minutes in a group of individuals with type 1 diabetes who participated in the "Control to Range" multinational artificial pancreas study. They monitored the adults and teens over 22 hours, including three meals and periods of day and night. The authors describe the risks of hypo- and hyperglycemia, the variability between participants, and the differences in daytime/nighttime results, and also propose improvements needed in the design and implementation of closed-loop systems in the article ["Multicenter Closed-Loop Insulin Delivery Study Points to Challenges for Keeping Blood Glucose in a Safe Range by a Control Algorithm in Adults and Adolescents with Type 1 Diabetes from Various Sites"](#).

"It appears that we are getting closer to an Artificial Pancreas option for patients with type 1 diabetes," says DTT Editor-in-Chief Satish Garg, MD, Professor of Medicine and Pediatrics at the University of Colorado Denver. "The first version may need to be a hybrid system in which meals and exercise are announced with necessary dose adjustments along with Automatic Threshold Suspend for hypoglycemia."

**More information:** The article is available free on the DTT website at <http://online.liebertpub.com/doi/full/10.1089/dia.2014.0066> until September 25, 2014.

Provided by Mary Ann Liebert, Inc

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