

# JDRF Launches Artificial Pancreas Initiative

Even though diabetic patients may have to wait years for the development of an artificial pancreas, early components of the technology can improve their quality of life today. Scientists and experts, in addition to patients suffering from diabetes, reached this consensus during a forum about continuous glucose monitoring and artificial pancreas technologies hosted by the Juvenile Diabetes Research Foundation (JDRF).

The JDRF has launched an aggressive, multiyear campaign to accelerate the development and availability of continuous glucose monitoring, and eventually, an artificial pancreas, according to a JDRF news release. A closed-loop mechanical system will integrate a real-time glucose sensor, a computer controller and an insulin-delivery system. The closed-loop system will provide precise doses of insulin as needed throughout the day, allowing patients to maintain normal glucose levels.

Experts attending the JDRF forum said an artificial pancreas is still years away from affordable broad-scale use. In the interim, technology linking the sensor with the insulin pump will be perfected, according to the JDRF.

"But a key component of the artificial pancreas — the continuous glucose sensor — is being used today with remarkable results," said Aaron Kowalski, PhD, director of strategic research projects at JDRF. Dr. Kowalski noted that, despite advances over the past few decades, current diabetes management is inadequate. Even patients who intensively manage their disease spend <30% of the day in normal glucose range. Research has shown that patients using continuous glucose sensors spent 26% more time in normal glucose range and had statistically significant improvements in HbA1c levels.

William V. Tamborlane, MD, professor and chief, department of pediatrics, Yale University School of Medicine; and Stuart Weinzimer, MD, assistant professor of pediatrics at Yale University School of Medicine, have conducted groundbreaking research on the arti-

cial pancreas. They investigated a teenaged cohort who wore a continuous glucose sensor and an insulin pump for 36 hours in a hospital setting. Results showed that glucose levels fluctuated less and remained in normal ranges substantially longer in all of the teens.

Two continuous glucose sensors have been approved by the US Food and Drug Administration (FDA) and are available commercially. Another is under FDA review.

"Continuous glucose sensors on the market today are expensive and none are reimbursed by health insurance, which means that many people with diabetes can't afford them," said Cynthia Rice, director of new technology access at JDRF. For example, the starter kit for one available monitor is about \$500. Sensors cost about \$30 each, and need to be replaced every few days.

"If continuous glucose sensors were reimbursed by insurance plans, more people would have access to them and we might start to see a reduction in the astronomically high long-term health costs associated with diabetes," said Ms. Rice. Total diabetes-related costs exceed \$132 billion a year, and 32% of Medicare expenditures are spent on people with diabetes, according to Ms. Rice.

The JDRF's Artificial Pancreas Project includes both research and advocacy initiatives. JDRF is funding research to quantify the benefits of continuous glucose monitoring and artificial pancreas technologies for patients with type 1 diabetes, and initiating efforts to speed regulatory approval and health insurance coverage of these treatments and devices.

For more information about the JDRF and its Artificial Pancreas Project, visit [www.jdrf.org/artificial-pancreas](http://www.jdrf.org/artificial-pancreas). ■



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