

Sensor and insulin pump results in better blood-sugar control in all age groups with diabetes

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Adding a continuous blood sugar level sensor to an insulin pump helps patients with type 1 diabetes achieve better blood sugar control compared to the common standard of care, multiple daily insulin injections, concludes a study published on-line today in the *New England Journal of Medicine*.

The paper is entitled, Effectiveness of Sensor-Augmented Insulin-Pump therapy in Type 1 Diabetes.

"Combining the best technologies for insulin delivery and [blood sugar](#) monitoring really pays off for diabetes control," says Dr. Bruce Perkins, one of the co-authors of the study, endocrinologist at Toronto General Hospital and Assistant Professor at the University of Toronto. "Being aware of continuous blood sugar trends and having the tools to do something about them can help committed patients of all ages self-manage their diabetes very well."

Research conducted at 30 centres across North America, including Toronto General Hospital, found a significant decrease in average blood sugar levels (or A1c levels, which measure the average blood sugar levels over the past two or three months) from a baseline of 8.3% to 7.5% in the group using sensors and insulin pumps, compared to 8.3% to 8.1% in the multiple daily injection group, at one year. The decrease in A1c levels in both adults and children occurred without an increase in the rate

of severe hypoglycemia, or low blood sugar, a common problem among patients who are trying to achieve better control of their blood sugar. Symptoms include shakiness, rapid heart beat, confusion and even unconsciousness.

Moreover, the proportion of participants who reached the A1c target of 7% or less was greater in the pump-therapy group than in the injection-therapy group. Adults with diabetes try and maintain A1c levels of seven percent or below in order to reduce the risk of complications from diabetes, such as kidney failure, heart disease and blindness.

The 485 study participants with inadequately controlled [type 1 diabetes](#) ranged in ages from seven to 70, and were treated for at least one year, in a randomized, controlled trial.

In the study, patients in the sensor-augmented pump therapy arm used an integrated system which incorporates an insulin pump, continuous glucose monitor and self-management software. A glucose (sugar) sensor reveals fluctuations in glucose levels in real-time, and transmits electric signals wirelessly to the insulin pump, which is about the size and shape of a small cell phone. The pump displays the blood sugar levels, allowing patients to react to either high or low levels before they become dangerous.

Provided by University Health Network

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