Medical Xpress

Long-acting insulin is safer, more effective for patients with type 1 diabetes

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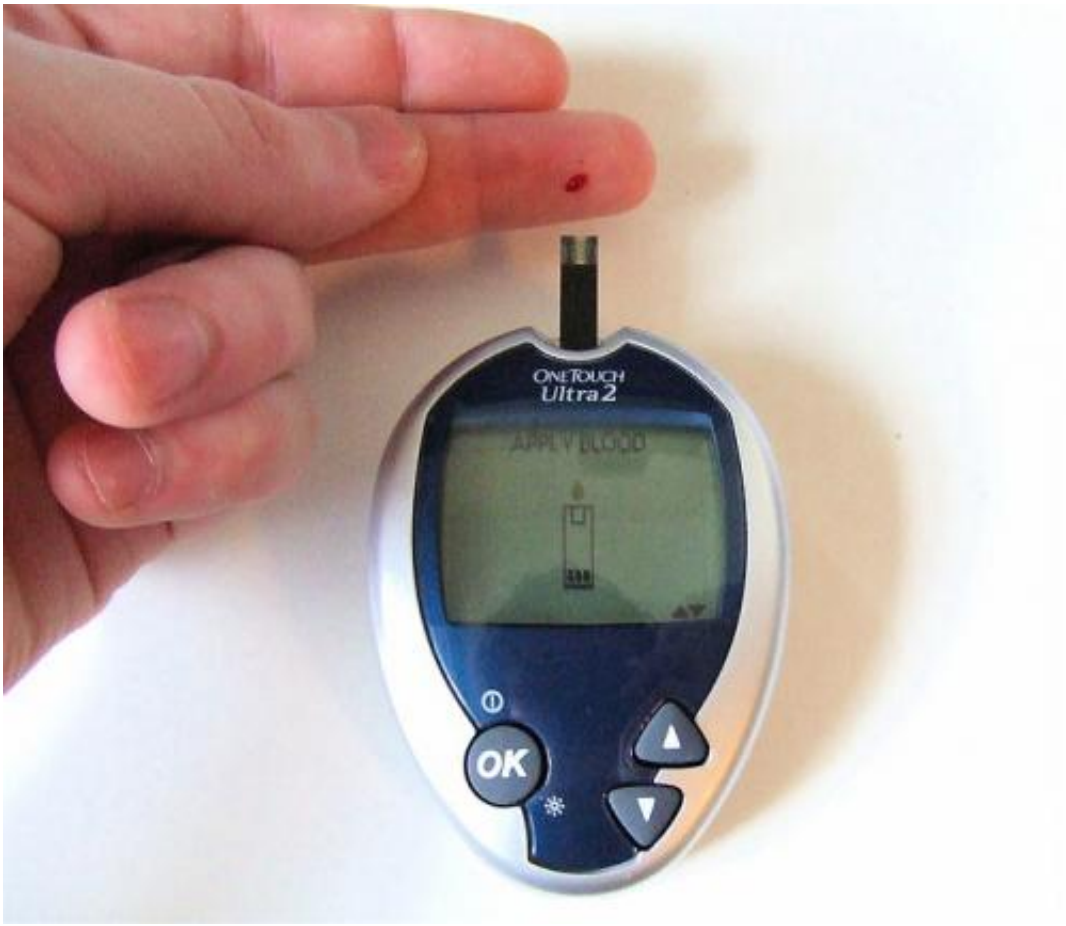

Blood glucose monitoring. Credit: Wikipedia

Long-acting insulin is safer and more effective than intermediate-acting insulin for patients with Type 1 diabetes, according to new research

published in the *BMJ*.

Researchers looked at once-daily and twice-daily doses of both long- and intermediate-acting insulin, ranking their effectiveness, safety and cost-effectiveness.

"In patients with Type 1 diabetes, we found that long-acting insulin is superior to intermediate-acting insulin when it came to controlling blood sugar, preventing weight gain and treating severe hypoglycemia," said Dr. Andrea Tricco, the lead author of the paper and a scientist in the Li Ka Shing Knowledge Institute of St. Michael's Hospital.

Using data from 39 studies, Dr. Tricco and her colleagues compared two long-acting forms of insulin – glargine and detemir – against intermediate-acting forms, such as such as Neutral Protamine Hagedorn.

Long-acting insulin takes about one hour after ingesting to begin lowering blood sugar and lasts up to 26 hours. Intermediate-acting insulin takes between one and three hours to begin lowering blood sugar and can last up to 16 hours.

Compared to intermediate-acting NPH, long-acting insulin significantly improved Hemoglobin A1C levels, a measure of effective blood sugar control over time.

"Those taking intermediate-acting insulin were more likely to gain weight," said Dr. Tricco, who has a PhD in population health and is also an assistant professor in the University of Toronto's Dalla Lana School of Public Health. "They gained an average of four to six pounds more than the participants who took most long-acting insulin doses."

Severe hypoglycemia, when someone has extremely low blood sugar, is a medical emergency where the individual is unable to treat themselves.

When someone is severely hypoglycemic, they need someone else to provide them with sugar quickly through food or via intravenous fluids.

The researchers found that people with Type 1 diabetes were 38 per cent less likely to experience severe hypoglycemia, on average.

Dr. Tricco also looked at the cost-effectiveness between the two types of insulin.

Of the 32 studies included in the review, there were 22 analyses evaluating the economic benefits of long- and intermediate-acting insulin. Seventy-seven per cent of those economic analyses found that long-acting insulin was more expensive but also more effective than intermediate-acting insulin. Twenty-three per cent found long-acting insulin more cost-effective.

"With this information, patients and their doctors should tailor their choice of insulin according to preference, cost and accessibility," said Dr. Tricco.

Provided by St. Michael's Hospital

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