

Study debunks belief insulin puts people with diabetes at risk of heart disease

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Researchers at McMaster University have discovered that long-term insulin use does not harm people with diabetes or pre-diabetes or put them at risk of heart attacks, strokes or cancer.

This is contrary to concerns that long-term use of insulin may cause heart disease, says Dr. Hertzl Gerstein, principal investigator of the study, professor of medicine at McMaster's Michael G. DeGroot School of Medicine and deputy director of the Population Health Research Institute at McMaster University and Hamilton Health Sciences.

"People have been debating the question of whether there are adverse consequences to long-term insulin use for years," he said. "This study provides the clearest answer yet to that question: No, there are not."

Gerstein is scheduled to present the findings of the ORIGIN study (Outcome Reduction with an Initial Glargine [Intervention study](#)), today at the scientific sessions of the [American Diabetes Association](#) in Philadelphia. The results are also published today in two papers in the medical journal [New England Journal of Medicine](#) (*NEJM*).

A second important finding of the study is that people with pre-diabetes who received daily basal [insulin injections](#) with insulin glargine had a 28 per cent lower chance of developing type 2 diabetes, even after the injections stopped.

Gerstein jointly led the study with Dr. Salim Yusuf, professor of medicine and director of the Population Health Research Institute.

Today, more than nine million Canadians are living with diabetes or pre-diabetes. Diabetes is a [chronic condition](#), often debilitating and sometimes fatal disease, in which the body either cannot produce insulin or cannot properly use the insulin it produces. This leads to high levels of glucose in

the blood which can damage organs, blood vessels and nerves. The body needs insulin to use glucose as a source of energy.

In the ORIGIN study, more than 12,500 people at 537 sites in 40 countries with an average age of 64, who are at high risk for, or in the early stages of type 2 [diabetes](#), were randomized to either one daily injection of insulin (glargine) or no insulin (standard care) for an average of six years.

Researchers found no difference among the two groups in cardiovascular outcomes or in the development of any type of cancer. This suggests daily insulin injections (with [insulin glargine](#)) to normalize glucose levels are not harmful when taken over long periods of time. Throughout the study, most of the participants given insulin maintained normal fasting glucose levels (below 6 mmol/l).

The study confirmed the presence of two previously known side effects of insulin - hypoglycemia (low blood sugar) and modest weight gain. Both were considered minor from a medical point of view, with participants gaining an average of 3.5 pounds during the study and experiencing a low, 0.7 per cent higher risk of severe hypoglycemia per year than the people not on insulin.

"We now know what the risks are of taking [insulin](#) on a long-term basis, and they are low," Gerstein said.

The study also discovered that daily doses of one-gram omega-3 fatty acid capsules did not prevent cardiac-related deaths in people with [type 2 diabetes](#) or prediabetes.

"There was neither benefit nor harm in the participants who were studied," said Jackie Bosch, associate professor of McMaster's School of Rehabilitation Science and project manager for the trial. "However, the effect of these supplements in

other groups, and the effect of a diet rich in omega 3 fatty acids was not studied."

Provided by McMaster University

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