

Gene map may identify heart disease risk for people with type 2 diabetes

April 4 2022



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A risk score based on a gene map predicted the likelihood of high blood pressure leading to heart problems or stroke in people with Type 2 diabetes, according to a study published today in the American Heart

Association's peer-reviewed journal *Hypertension*. This tool may be especially useful in guiding treatment for people who are newly diagnosed with Type 2 diabetes or for those with prediabetes.

Previous research has confirmed adults with Type 2 diabetes are twice as likely to have a heart attack or stroke than people who do not have Type 2 diabetes. Various measures of health status, such as [blood pressure](#), cholesterol and blood sugar levels, are commonly used to determine a person's risk for developing [heart disease](#). In this study, researchers explored whether genetic variants linked with high blood pressure are also linked to later heart disease or stroke for people with Type 2 diabetes and used that information to determine a risk score.

"Increased genetic risk of high blood pressure may predispose some people with Type 2 diabetes to a higher risk of [heart attack](#), stroke or [cardiovascular death](#)," said lead study author Pankaj Arora, M.D., director of the Cardiogenomics Clinic Program and the Cardiology Clinical and Translational Research Program at the University of Alabama at Birmingham. "We conducted the study to determine if this genetic risk score can identify people with Type 2 diabetes who have a higher risk for [cardiovascular events](#) and if tight control of blood sugar impacts the link between genetic hypertension risk and cardiovascular outcomes."

Arora and colleagues assessed the health records of 6,335 participants in the Action to Control Cardiovascular Risk in Diabetes (ACCORD) trial database for whom genetic data were available. The [study group](#) consisted of 37% women, and participants self-identified their race or ethnicity: 15% were African American, 6% were Hispanic; 70% were white; and 9% selected the category "other." All participants had Type 2 diabetes and elevated blood pressure, and they were followed for 3.5 years.

A genetic variant map of more than 1,000 common genetic variants known to affect blood pressure was compared to the DNA of the study participants to determine participants' genetic risk. More matches among the participant's DNA and the map of known blood pressure genetic variants equated to a higher genetic risk score.

Researchers found that the genetic risk score identified study participants with a higher risk of cardiovascular events:

- For people with higher than average genetic risk scores, each degree higher was associated with a 12% higher risk of heart disease or stroke events.
- The association of genetic risk with cardiovascular events was the same even if participants were taking medicines to manage [blood sugar levels](#).

Further evaluation of genetic risk scores in people who do not have Type 2 diabetes is needed to be able to apply these findings more broadly.

Arora and colleagues also noted the findings about differences in individuals' genetic risk scores for [high blood pressure](#) did not entirely explain why intensive glycemic control (aggressive treatment with insulin, medications, diet and exercise) did not appear to have a cardiovascular benefit for people with long-standing Type 2 diabetes.

"However, a genetic [risk score](#) maybe helpful for people newly diagnosed with Type 2 diabetes to identify who should have more intense lifestyle changes, such as changes in diet and exercise, and more aggressive management of weight, blood pressure and smoking cessation," said Arora.

"If you have Type 2 diabetes, there's a lot you can do to reduce your risk for heart disease," said Eduardo Sanchez, M.D., M.P.H., FAHA,

FAAFP, the American Heart Association's chief medical officer for prevention, who is the clinical lead for [Know Diabetes by Heart](#), a collaborative initiative between the American Heart Association and the American Diabetes Association addressing the link between diabetes and cardiovascular disease. "In addition to blood sugar control, which is absolutely paramount, we highly encourage people living with Type 2 diabetes to talk with their health care team about other personal and familial risk factors for heart disease or stroke, and what they can do to manage or modify them."

More information: Vibhu Parcha et al, Association of Polygenic Risk Score With Blood Pressure and Adverse Cardiovascular Outcomes in Individuals With Type II Diabetes: Insights From the ACCORD Trial, *Hypertension* (2022). [DOI: 10.1161/HYPERTENSIONAHA.122.18976](https://doi.org/10.1161/HYPERTENSIONAHA.122.18976)

Provided by American Heart Association

Citation: Gene map may identify heart disease risk for people with type 2 diabetes (2022, April 4) retrieved 25 April 2024 from <https://medicalxpress.com/news/2022-04-gene-heart-disease-people-diabetes.html>

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