

# Old-school health assessment beats genetic test for predicting heart disease

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A genetic risk for heart disease is far less predictive of problems than actual lifestyle risk factors such as high blood pressure, high cholesterol and diabetes—even among younger adults.

In a finding published July 26 in the journal *Circulation*, researchers led by a team at Duke AI Health found that genetic tests do little to accurately identify cardiovascular risks compared to a simple [risk](#) equation that uses basic health measures.

"It's important to intervene early to prevent [cardiovascular disease](#) from progressing," said senior author Michael Pencina, Ph.D., vice dean for data science at Duke University School of Medicine and director of Duke AI Health, which develops, evaluates and implements artificial intelligence initiatives at Duke Health and elsewhere.

"A lot of young people can be given a false sense of security if it looks like they have a low risk of inherited disease from their family," Pencina said. "But in the nature vs. nurture battle, it's nurture that is the stronger factor for cardiovascular disease: how a person lives throughout adulthood is a much bigger factor in the course of this disease."

Pencina and colleagues analyzed two large databases—the Framingham Offspring Study and the Atherosclerosis Risk in Communities study—and stratified participants into three groups by age: Younger adults (median 30 years old); early mid-life (median 43 years old); and late mid-life (median 52 years old).

They applied two predictive models. The first, called a polygenic risk score, calculates the number of inherited genetic variants that are likely to put a person at risk of developing cardiovascular disease.

The second was a scoring model that uses traditional long-term risk factors—including [high blood pressure](#), smoking, [diabetes](#) and [high cholesterol levels](#)—which are largely preventable depending on lifestyle choices.

In their analysis, the researchers found that the polygenic risk score

provided limited predictive accuracy for cardiovascular disease risk compared to the traditional health assessment. Even when a genetic score was added in as a factor among the traditional health measurements, it made little difference.

"What we find is consistent in all three age groups, even in the youngest, the risk factor-based model was superior to the genetics-based model for predicting cardiovascular disease," Pencina said.

"While genetic tests use new technology, they can be high-priced," Pencina said. "People should instead visit their doctor and have their actual, clinical factors measured, because this will do a much better job of determining their state of health. And for those who have a high risk of developing cardiovascular disease—especially young people—they should eat healthy foods, exercise and begin proper medications as warranted."

In addition to Pencina, study authors include Sadiya S. Khan, Courtney Page, Daniel M. Wojdyla, Yosef Y. Schwartz, and Philip Greenland.

**More information:** Sadiya S. Khan et al, Predictive Utility of a Validated Polygenic Risk Score for Long-Term Risk of Coronary Heart Disease in Young and Middle-Aged Adults, *Circulation* (2022). [DOI: 10.1161/CIRCULATIONAHA.121.058426](https://doi.org/10.1161/CIRCULATIONAHA.121.058426)

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