

Blood test predicts stroke risk in patients with diabetes

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Having diabetes is a risk factor for many other health conditions, including stroke.

"Every 40 seconds an American has a [stroke](#)," says Frederick Korley, M.D., Ph.D., an assistant professor of emergency medicine at Michigan

Medicine. "To be successful at preventing strokes from occurring, we first need to accurately identify those who are likely to have a stroke so we can target stroke prevention therapies to the correct at-risk people."

Korley is the author of a new study, published in *Stroke*, that measured levels of a blood protein in patients with diabetes, who had not previously had a stroke, to predict their risk of experiencing a stroke in the future.

"We hypothesized that before an individual has a stroke, they often have 'small strokes' that do not cause clinical symptoms," says Korley, also a member of the Michigan Center for Integrative Research in Critical Care.

"However, these small strokes may result in the release of proteins that are associated with brain cell death, and these proteins can be measured in blood," he says. "One of these proteins is neurofilament light chain (NfL), the focus in our study."

Blood levels of NfL

Korley and team examined blood samples from 113 [diabetic patients](#) who were stroke-free at the time of study enrollment but developed a stroke during a seven-year follow-up period, and 250 diabetic patients who were stroke-free at study enrollment and did not develop a stroke during the seven-year follow-up period.

The research team found that levels of NfL in the blood appeared to contribute to stroke risk.

"We found that those who developed a stroke had [blood levels](#) of NfL that were about 43 percent higher than those who did not develop a stroke," Korley says. "And those with the highest NfL levels—the top 25

percent of our study participants—were 10 times more likely to develop a stroke during the seven-year follow-up period, than those with low levels of NfL—the bottom 25 percent of our study participants."

While the results confirmed the research team's hypothesis, Korley says he was a bit surprised by the results.

"The strength of the association between the blood test and stroke was larger than we were expecting," he says.

Korley says that the research team also found that adding NfL levels to the current method of predicting stroke, the Framingham Stroke Risk Score, increased the method's accuracy.

"The Framingham Stroke Risk Score looks at stroke [risk factors](#) in a patient and predicts 10-year probability of a stroke occurring," he says. "The score currently includes factors such as diabetes, current smoking status and [blood](#) pressure. When we added NfL levels as a risk factor, the score appeared to become even more accurate in predicting stroke."

Future use

Korley notes that this is the first study reporting the usefulness of this [blood test](#) in predicting stroke occurrence, and additional studies are needed to confirm the team's findings.

"Our test also looked specifically at patients with diabetes, and further studies will need to take place to determine how well this test will work in nondiabetics and the general population," he says.

But, Korley hopes those additional studies can happen soon.

"As an emergency physician, I see patients after they have experienced a

stroke, and for some patients, the options for treating them at that time point are limited," he says.

"If our findings hold true in other study populations, physicians could use this test to monitor [patients](#) and target stroke prevention treatments to the right at-risk people to hopefully help them avoid a stroke from ever happening."

More information: Frederick K. Korley et al, Serum NfL (Neurofilament Light Chain) Levels and Incident Stroke in Adults With Diabetes Mellitus, *Stroke* (2019). [DOI: 10.1161/STROKEAHA.119.024941](#)

Provided by University of Michigan

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