

Study discovers new way to prevent some strokes

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Micrograph showing cortical pseudolaminar necrosis, a finding seen in strokes on medical imaging and at autopsy. H&E-LFB stain. Credit: Nephron/Wikipedia

Larry Ambrose woke up one night, wandered into his kitchen but couldn't completely read the time on his microwave. A few days later when he noticed his blood pressure was unusually high, he went to the hospital and was diagnosed as having a stroke. Ambrose, like 25 percent of all stroke patients, experienced a cryptogenic stroke, meaning despite

numerous tests, physicians were unable to determine a cause.

"There were no warning signs and I felt there was nothing I could do to stop it from happening again," said Ambrose, who is 75 years old. "It's a scary feeling."

For [stroke](#) patients like Ambrose, physicians believe [atrial fibrillation](#), or a fast and irregular heartbeat, may occur without the patient's knowledge, causing the stroke. To better understand the connection between atrial fibrillation and stroke, Northwestern Medicine® physician researchers from cardiology and neurology teamed up to monitor people diagnosed with a cryptogenic strokes for intermittent atrial fibrillation using a tiny implantable cardiac monitor about the size of a jump drive. The patients monitored were part of a study called CRYSTAL AF (Study of Continuous Cardiac Monitoring to Assess Atrial Fibrillation after Cryptogenic Stroke). Northwestern Memorial Hospital was the leading enrolling site in North America for the four-year trial which enrolled 441 people across 55 centers. At Northwestern Memorial, 19 subjects enrolled in the trial, including Ambrose.

Approximately half were continuously monitored by the implanted cardiac monitor. The device monitored for the first documented event of atrial fibrillation following enrollment in the trial. Co-investigators Richard Bernstein, MD, PhD director of the Northwestern Medicine Stroke Program and Telestroke, and Rod Passman, MD, medical director for the Center for Atrial Fibrillation at the Bluhm Cardiovascular Institute, are on the international steering committee for the CRYSTAL AF trial sponsored by Medtronic Cardiac Rhythm Disease Management.

The results – unveiled on Feb. 14 at the American Heart Association's International Stroke Conference in San Diego, Calif. – found that the device detected atrial fibrillation in 30 percent of people with

[cryptogenic stroke](#) who were monitored. Using standard techniques, physicians only found atrial fibrillation in about 3 percent of these patients. Because of these results, the 30 percent patients were almost all switched to blood thinners which should protect them better from having another stroke, said Bernstein, who is also a professor of neurology at Northwestern University's Feinberg School of Medicine,

"Having a stroke really rattles your foundations," Bernstein said. "Being told by your doctor that they have no idea why you had it and that they are just guessing at the best medication to prevent another one is even worse. With this clinical trial, we eliminated that second problem— not knowing the cause—in about a third of those patients."

Because cryptogenic strokes are common, these findings could help hundreds of thousands of people every year. More than 750,000 people suffer a stroke in the United States every year and about one third of those are cryptogenic strokes.

When atrial fibrillation is detected in a patient following stroke, anticoagulant therapy is recommended for secondary stroke prevention. While anticoagulant therapy can be successful in preventing future stroke, physicians do not use it proactively unless atrial fibrillation has been detected because of potential risk from the medication and complexity of the treatment.

The continuous monitoring device captured and automatically stored any abnormal ECG activity. Passman and his team then reviewed and analyzed the remotely-transmitted data. After the participants were implanted, they are followed at one month and every six months thereafter for three years. The control group received standard of care optimal medical treatment and followed up at the same intervals.

"We found using a tiny implantable device to detect an abnormal heart

rhythm is much better than the usual tests we previously used," said Passman, who is also a professor of cardiology at the Feinberg School of Medicine "This is critical because finding a-fib in patients with stroke of unknown cause is important because once we find it, we put the patients on blood thinners and they are much more effective than the aspirin-like drugs they would otherwise take."

Ambrose was identified by Bernstein as a cryptogenic stroke patient and was the first subject implanted by Passman with the cardiac monitoring device at Northwestern Memorial. Each morning, he used a handheld Patient Assist Device to monitor if the implanted monitor has recorded any abnormalities. While atrial fibrillation was not detected in Ambrose, he said simply having the device was a comfort.

"I knew people were monitoring me and I was helping doctors figure out a way to end the worry of having a second stroke for other patients like me," said Ambrose, a Chicago resident. "Otherwise, I would have just gone home and been very nervous it was going to happen again." To learn more about stroke services at Northwestern Memorial, visit our website or connect with us on social media.

Provided by Northwestern Memorial Hospital

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