

# Nerve 'zap' treatment may speed stroke recovery

1 March 2017, by Maureen Salamon, Healthday Reporter



(HealthDay)—An implanted device that provides electrical stimulation of the vagus nerve leading to the brain enhanced arm movement in a small group of stroke patients, researchers report.

Evaluating 17 [stroke patients](#) with chronic arm weakness who also received intense [physical therapy](#), scientists found that three-quarters improved with vagus nerve stimulation (VNS), while only one-quarter of those receiving "sham" nerve stimulation did.

"Arm weakness affects three of every four of our [stroke](#) patients and persists to a disabling degree in at least 50 percent of them, so it's a hugely important problem in the long term," explained study author Dr. Jesse Dawson. He's director of the Scottish Stroke Research Network and a clinical researcher at University of Glasgow.

"A unique aspect of this [device] is that patients can deliver the brain stimulation technique in their own home during exercise . . . which is an

important breakthrough that opens a huge number of possibilities for increasing patient access to this potential treatment," Dawson added.

The study was funded by the VNS device's manufacturer, MicroTransponder Inc., based in Texas.

About 700,000 Americans suffer a stroke each year, two-thirds of whom need post-stroke rehabilitation to help them regain skills lost due to stroke-related brain damage, according to the U.S. National Institute of Neurological Disorders and Stroke.

The vagus nerve is the longest nerve leading to the head, which passes through the neck and down into the abdomen. Surgically implanted just below the collarbone, the VNS device stimulates the brain with small electrical pulses through an internal wire as patients simultaneously move.

All 17 study participants (average age nearly 60) had the device implanted, but Dawson and his team randomly assigned half to receive VNS and half to receive "sham" stimulation. All had suffered clot-caused strokes and took part in six weeks of intensive physical therapy. Their strokes had occurred up to five years prior to the study and had caused chronic arm weakness.

Not only did more patients receiving VNS experience enhanced [arm movement](#), but those patients continued to improve throughout the 90-day study period, Dawson said.

Stimulating the vagus nerve, Dawson said, triggers the release of various chemicals in the brain, two of which are known to increase the brain's potential to recover after injury.

"We can conclude that VNS does drive a change and have an effect for patients recovering from stroke, but we can't [yet] conclude there's

magnitude enough to introduce it into clinical practice," he said.

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A larger clinical trial enrolling 120 [patients](#) from the United States and the United Kingdom will begin this summer, Dawson added.

Dr. Daniel Labovitz is director of the Stern Stroke Center for the Montefiore Health System in New York City. He said the new research was promising, but the study's design and small number of participants made it difficult to discern if results are "sustainable."

"I think it's exciting to at least be working toward proof of concept—that we can influence the brain to organize itself and enhance recovery long after a stroke occurs," said Labovitz, who wasn't involved in the new research.

"This is the holy grail of rehabilitation," Labovitz said. "And this technique may be the first time where we can actually get the brain to heal itself better than just having the patient move their limb around [during physical therapy]."

Dawson pointed out that implanting the VNS device does carry certain potential risks, such as infection around the device; anesthesia complications; and temporary hoarseness due to vocal cord trauma.

The study was presented at the recent International Stroke Conference in Houston. Research presented at medical meetings should be considered preliminary until published in a peer-reviewed journal.

**More information:** Jesse Dawson, M.D., director, Scottish Stroke Research Network, and clinical researcher, University of Glasgow, Scotland; Daniel Labovitz, M.D., director, Stern Stroke Center, Montefiore Health System, New York City; Feb. 24, 2017, presentation, International Stroke Conference, Houston

The American Stroke Association offers more on [post-stroke rehabilitation](#).

APA citation: Nerve 'zap' treatment may speed stroke recovery (2017, March 1) retrieved 4 March 2021 from <https://medicalxpress.com/news/2017-03-nerve-zap-treatment-recovery.html>

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