

Brain stimulator shown to reduce 'untreatable' epileptic seizures

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Brain stimulation, already approved by the U.S. Food and Drug Administration for the treatment of Parkinson's disease and essential tremor, has now been shown to offer significant relief to patients with intractable seizures for whom drugs and other treatments have not worked.

This is the major finding of a first-of-its-kind study of responsive electric brain stimulation in adults with "medically refractory," or hard to treat, epilepsy.

The NeuroPace Responsive Neurostimulation (RNS) System consists of a miniaturized, implanted computer which can detect seizures from [electrodes](#) implanted into or on the surface of the brain and deliver an [electrical pulse](#) to stop them.

Henry Ford Hospital was the only site in Michigan to participate in this multicenter investigation, which was based in California. The study is published in the current issue of *Neurology*.

"For the third of people who have tried two or three medications for their epilepsy, but are still having seizures, the standard of care is removing the abnormal part of the brain that is causing seizures. Over 50 percent of patients undergoing surgical removal of [brain tissue](#) causing seizures will be cured of their epilepsy," says Jason M. Schwalb, M.D., Director, Movement Disorder and Behavioral [Neurosurgery](#) at Henry Ford Health System.

"However, there are people who are not candidates for this type of surgery because of potential side effects. Until now, we have not had great treatment options. The RNS system is an attractive option for these patients, especially since it is reversible."

A total of 191 adults, ages 18 to 70, whose disabling [epileptic seizures](#) had not been controlled by at least two medications, were chosen. They

were studied at 32 medical sites throughout the U.S. for three years, beginning in late 2005.

All patients were implanted with electric leads attached to one or two seizure focal points in their brains. Their abnormal [brain activity](#) was recorded for a month, and then they were chosen at random either to receive electric stimulation or to be given "sham," or no treatment.

The researchers found:

- The 97 patients who were treated with the RNS system had 37.9 percent fewer seizures than before surgery. Those 94 patients in the sham, or untreated group, had only 17.3 fewer seizures than before surgery.
- When those in the sham group had the RNS system turned on, seizures were significantly reduced.
- There was no difference between the two groups in the number of adverse events associated with the treatment.
- The effects of the treatment led to significant improvements in patients' quality of life. (Medically refractory epilepsy patients with frequent [seizures](#) are at risk of depression, suicidal thoughts and actions, memory loss, and SUDEP, or sudden unexplained death in epilepsy.)

Provided by Henry Ford Health System

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