

MEDICAL BREAKTHROUGHS **RESEARCH SUMMARY**

TOPIC: PERCEPT: SMART DEVICE FOR EPILEPSY AND MOVEMENT DISORDERS
REPORT: MB #4816

EPILEPSY: Epilepsy is a chronic disorder of recurring and unprovoked seizures. Epileptic seizures may be related to a brain injury or a family tendency, but the cause is often unknown. Many people with epilepsy have more than one type of seizure and may have other neurological problems as well. Sometimes EEG testing, clinical history, family history, and outlook are similar with people who have epilepsy. In these situations, their condition can be defined as a specific epilepsy syndrome. The electrical events that produce the symptoms of a seizure occur in the brain. The location of the event, how it spreads, how much of the brain is affected and how long it lasts all have profound effects. All these factors determine the character of a seizure and its impact on the individual.

(Source: <https://www.epilepsy.com/learn/about-epilepsy-basics/what-epilepsy>)

DIAGNOSIS AND TREATMENT OF EPILEPSY: Epilepsy is diagnosed if a patient has two unprovoked seizures that were not caused by some known and reversible medical condition like alcohol withdrawal or extremely low blood sugar. To diagnose your condition, a doctor will review your symptoms and medical history. The doctor may order several tests to diagnose epilepsy and determine the cause of seizures. The evaluation may include a neurological exam and blood tests. They may also suggest tests to detect brain abnormalities, such as an Electroencephalogram (EEG), high-density EEG, computerized tomography (CT) scan, magnetic resonance imaging (MRI), functional MRI (fMRI), positron emission tomography (PET), single-photon emission computerized tomography (SPECT), and neuropsychological tests. A doctor might also use analysis techniques to help pinpoint where the seizures start including statistical parametric mapping (SPM) and magnetoencephalography (MEG). An accurate diagnosis of your seizure type and where it begins gives you the best chance for finding an effective treatment. Most people with epilepsy can become seizure-free by taking an anti-seizure medication called anti-epileptic medication. Doctors usually perform surgery when tests show your seizures originated in a small, well-defined area of your brain and the area in your brain does not interfere with vital functions such as speech, language, motor function, vision, or hearing. Other potential therapies that offer an alternative for treating epilepsy are vagus nerve stimulation and ketogenic diet.

(Source: <https://www.mayoclinic.org/diseases-conditions/epilepsy/diagnosis-treatment/drc-20350098>)

PERCEPT DEVICE: Percept is the first and only deep brain stimulation neurostimulation system with the ability to capture and record brain signals while delivering therapy to patients with neurologic disorders associated with Parkinson's disease, essential tremor, dystonia, epilepsy or obsessive-compulsive disorder (OCD). Physicians can track patient brain signals and correlate these with patient-recorded symptoms, side-effects, or medication intake. This enables more personalized, data-driven neurostimulation treatment. Dr. Jason Gerrard, assistant professor of Neurosurgery and Neuroscience at Yale School of Medicine said, "This is going to be extremely helpful for the patients who come in to see their neuro team. The program gets set in the device, stays there, and stimulates like that all the time or the patients will have a couple different programs, and they can change it manually. This is a totally different level of interface with the brain, where the device itself is changing its programming on its own as it senses the patient's disease state."

(Sources: <http://www.implantable-device.com/2020/06/26/medtronic-receives-approval-for-its-percept-pc-neurostimulator-with-brainsense-technology/#more-2901>, Jason Gerrard, MD)

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If this story or any other Ivanhoe story has impacted your life or prompted you or someone you know to seek or change treatments, please let us know by contacting Marjorie Bekaert Thomas at mthomas@ivanhoe.com