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With more treatment options, outcomes improve for patients with epilepsy

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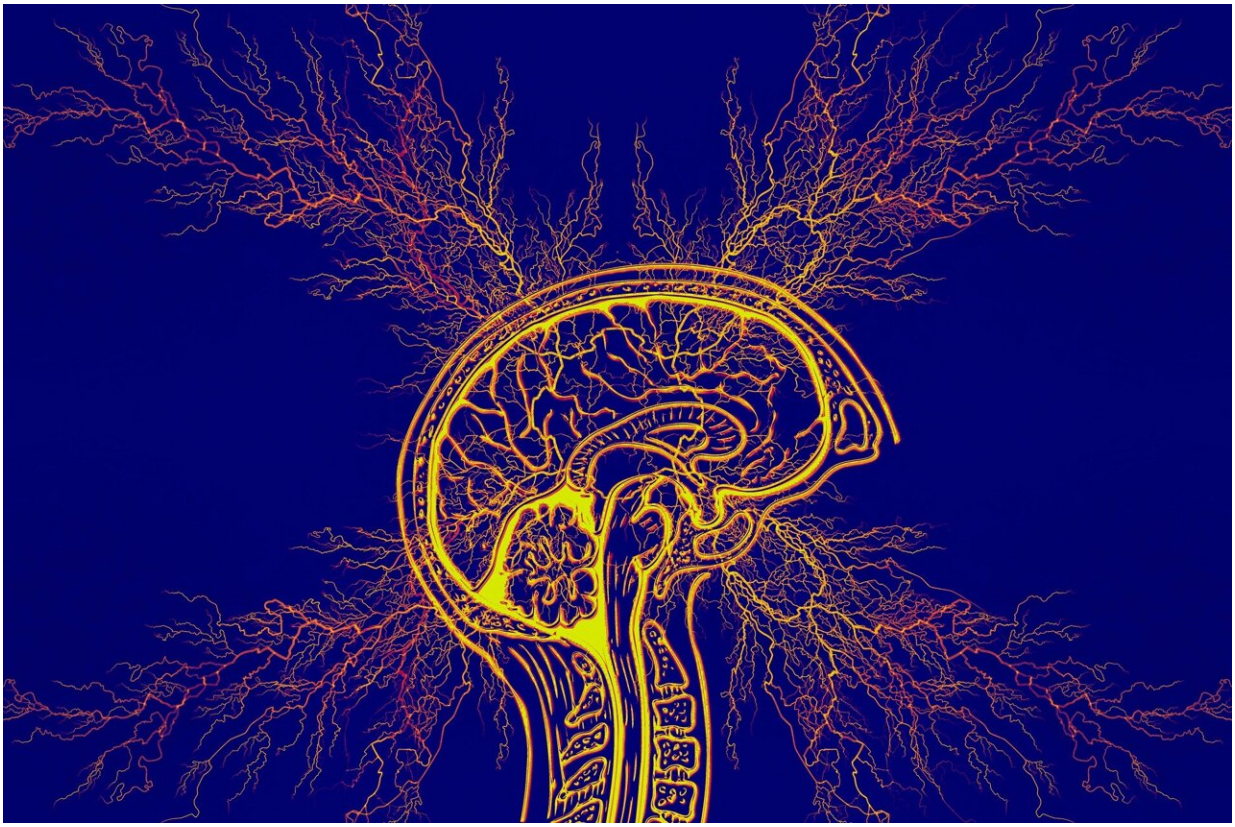

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Epilepsy is a neurological disorder in which brain activity becomes abnormal, causing seizures or periods of unusual behavior, sensations, and sometimes loss of awareness. Anyone can develop epilepsy, and it

affects both males and females of all races, ethnic backgrounds and ages.

In this expert alert, Jamie Van Gompel, M.D., a neurosurgeon at Mayo Clinic, explains how newer treatment options are improving outcomes for people with epilepsy.

"The game is much different now," says Dr. Van Gompel. "We've really improved the outcomes for patients. I think it's important to explore treatment options because they can have substantial, meaningful impacts in people's lives.

Medications for epilepsy have improved and remain the most common way to treat epilepsy. Open surgery to remove the portion of the brain that's causing the seizures is still an important treatment option for epilepsy that isn't controlled by medication. Some people require lifelong treatment to control seizures, but for others, the seizures eventually go away.

In recent years, new treatment options for epilepsy, including minimally invasive procedures, have developed. Some of the latest treatments include:

- Laser interstitial thermal therapy (LITT). This is less invasive than surgery that removes brain tissue. It uses a laser to pinpoint and destroy a small portion of brain tissue. An MRI is used to guide the laser.
- Minimally invasive surgery. New minimally invasive surgical techniques, such as MRI-guided focused ultrasound, show promise at treating seizures with fewer risks than traditional open brain surgery for epilepsy.
- Deep brain stimulation. This is the use of a device that is placed permanently deep inside the brain. The device releases regularly timed electrical signals that disrupt seizure-inducing activity.

This procedure is guided by MRI. The generator that sends the electrical pulse is implanted in the chest.

- Responsive neurostimulation. These implantable, pacemaker-like devices can help significantly reduce how often seizures occur. These responsive stimulation devices analyze brain activity patterns to detect seizures as they start and deliver an electrical charge or drug to stop the seizure before it causes impairment. Research shows that this therapy has few side effects and can provide long-term seizure relief.

Dr. Van Gompel encourages people with epilepsy to check in with their primary care provider or neurologist about their current treatment, and don't hesitate to seek a second opinion at an epilepsy center, especially if you have side effects from your medications or are continuing to have seizure events.

"If you haven't seen a specialist in the last five years, you should see an epileptologist at a specialized care center. Epilepsy treatments are changing so rapidly right now with the introduction of robotics and stereotactic techniques," says Dr. Van Gompel, referring to use of a three-dimensional coordinate system combined with imaging to precisely locate targets deep within the brain. "There might be something new that can help you with your seizures or epilepsy management."

Research in the field continues to focus on seizure prevention, prediction and treatment. Dr. Van Gompel predicts that the use of artificial intelligence and machine learning will help neurologists and neurosurgeons continue to move toward better treatment options and outcomes.

"I think we will continue to move more and more toward removing less and less brain," says Dr. Van Gompel. "And in fact, I do believe in decades, we'll understand stimulation enough that maybe we'll never cut

out brain again. Maybe we'll be able to treat that misbehaving brain with electricity or something else. Maybe sometimes it's drug delivery, directly into the area, that will rehabilitate that area to make it functional cortex again. That's at least our hope."

Provided by Mayo Clinic

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