



# UPMC Comprehensive Epilepsy Center

## Customized Care for Every Patient – From Our Team of Leading Experts

**UPMC**  
LIFE CHANGING MEDICINE



For more information  
on epilepsy treatment  
at UPMC, call:  
**833-398-0286**

Visit our website at  
**UPMC.com/epilepsy**

## Message From Center Leadership

Welcome to the UPMC Comprehensive Epilepsy Center. We're a multidisciplinary team of internationally renowned epilepsy experts who are dedicated to compassionate, competent, and comprehensive epilepsy care.

What sets us apart from other epilepsy centers is our dedicated comprehensive multidisciplinary team approach. Our team consists of board-certified epileptologists (neurologists with specialized training in epilepsy), a board-certified neurosurgeon with specialized training in epilepsy surgery, neuroradiologists, neuropsychologists, as well as physician assistants, nurse practitioners, and nurses with many years of experience in the field. We are among a few select centers with a psychiatrist and psychotherapist integrated within our epilepsy clinic. We all work together to provide exceptional care tailored to each individual patient.

The UPMC Epilepsy Center is comprehensive, meaning we offer all services to address the needs of our patients supported by the most advanced technology for diagnosing and treating epilepsy. Our team of experts work to make a clear-cut diagnosis and tailor treatment to control your seizures and reduce side effects. If you have medication-resistant epilepsy, we offer the full spectrum of modern surgical techniques for epilepsy, including less invasive and robotic-assisted surgeries. Our experts also spearhead a variety of projects that are on the cutting edge of epilepsy research.

We hope you find the information in this epilepsy guide helpful. We are here to guide you through this journey and find a customized treatment plan that works for you. You can count on our full commitment to provide you the best chance for seizure freedom and normalcy of life.

Sincerely,



**Anto Bagić, MD, PhD**  
*Center Director*



**Jorge Gonzalez-Martinez,  
MD, PhD**  
*Center Co-Director*

## Why Choose UPMC for Epilepsy Care?

At the UPMC Comprehensive Epilepsy Center, our patients are at the center of our approach. We understand the impact that epilepsy has on a person's life, from physical burdens to emotional and social problems. It is our goal to provide you with a broad understanding of your condition and work toward the best seizure control possible, allowing you to enjoy a greater quality of life.

The center is accredited as a level 4 epilepsy center, the highest ranking afforded by the National Association of Epilepsy Centers (NAEC), and is among the highest volume epilepsy centers in the country.

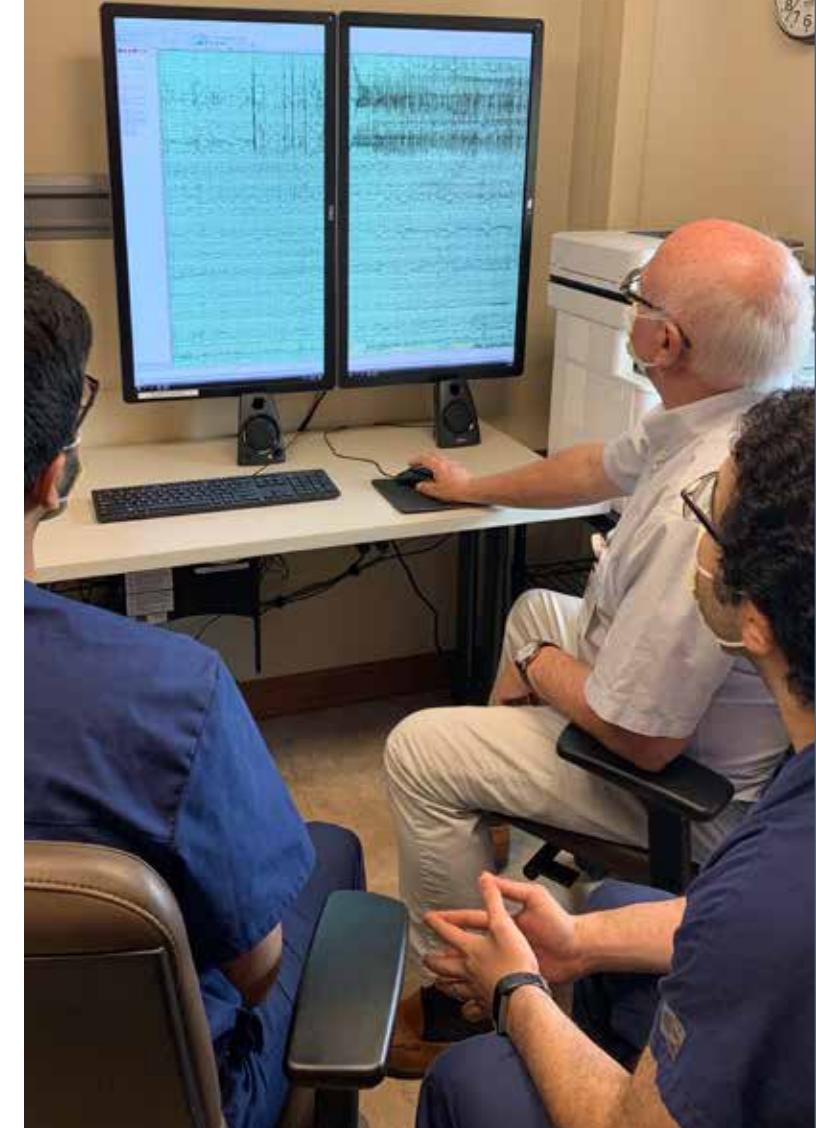
You do not have to leave the care of your current neurologist if you choose to have an evaluation at UPMC. Our experts work alongside your neurologist to ensure the most accurate diagnosis, determine the cause of your seizures when possible, and start you on the path toward seizure freedom.

## About Epilepsy

Epilepsy is a chronic (long-standing) medical condition marked by recurrent unprovoked seizures, and it affects about one in 26 people in the U.S.

A seizure is a sudden surge of electrical activity in the brain that alters brain function. The symptoms of a seizure can vary greatly from a subtle sensory change or feeling of *déjà-vu* to a convulsion, depending on which part of the brain is affected. Focal seizures begin in one localized area of the brain, whereas generalized seizures quickly affect both sides of the brain at the same time. A seizure can begin as focal at the onset but later spread to the entire brain, causing a convulsion.

We can distinguish 30 to 40 different kinds of seizures. A person may have multiple types of seizures as part of their epilepsy. It is of great importance that all seizure types are tracked meticulously and reported consistently to a treating physician.



## Causes of Epilepsy

There are many known causes of epilepsy, including tumor, stroke, genetics, brain infection, brain trauma, autoimmunity, and congenital abnormalities of the brain (an abnormality of brain formation that is present at birth). Often, however, the underlying cause is unknown or yet to be determined.

It is important to determine the cause of your epilepsy when possible to aid in treatment. Some types of seizures respond better to certain treatments than others. Overall, our team can successfully treat more patients when we can identify the specific cause of their epilepsy.

In about half of epilepsy cases, the cause is unknown.

## Diagnosing Epilepsy

The evaluation of a person with epilepsy is aimed at determining the type(s) of seizures they have as well as their cause. The answers to these questions are typically found through the following:

### Medical History

- Description of seizure, as well as any aura (warning) that may be present
- Frequency (how often) and duration (how long) of seizures
- Age at seizure onset
- Risk factors for epilepsy (for example, brain injury, stroke, or tumor)
- Seizure triggers (for example, flashing lights or lack of sleep)
- Present general health and family medical history
- Use of any drugs or alcohol now or in the past
- Previous medications taken to treat seizures and any side effects that occurred

### Physical Exam

- A standard, focused neurological exam will be performed.

### Tests

- **EEG:** This is a recording of your brain waves that looks for changes in the brain's electrical patterns that are related to seizures. Small electrodes (metal, cup-shaped discs) are attached to measured locations on your scalp and connected to a recording device.
- **MRI:** This study reads magnetic waves to generate a detailed picture of your brain to assess for any structural abnormalities that could be causing seizures.
- **Blood work:** These tests can be used to determine the concentration of various cells, compounds, and electrolytes in your blood.
- **Advanced imaging:** Depending on the results of your medical history, exam, and tests, more specialized noninvasive imaging tests may be recommended including:
  - > Single-photon emission CT (SPECT) scan
  - > Neuropsychological testing (NPT)
  - > PET scan
  - > MEG (magnetoencephalogram)
  - > Magnetic resonance spectroscopy

## Epilepsy Monitoring Unit (EMU)

For further evaluation, some people might need to stay in our eight-bed, state-of-the-art EMU at UPMC Presbyterian to undergo testing. Our EMU is a subspecialized diagnostic unit that provides gold standard testing for patients with epilepsy and similar disorders. In the EMU, heart rate, oxygenation, blood pressure and blood glucose are checked for comprehensive monitoring. A typical admission may last up to seven days or even longer.

During this study, we use a video EEG (VEEG) to record seizures and assess the electrical impulses that cause them. VEEG is a simultaneous recording of clinical symptoms with video and brain activity via EEG for the purpose of getting the most accurate diagnosis and identification of a seizure.

## Treatment for Epilepsy

The goal of treatment for epilepsy is seizure freedom without side effects. For about two-thirds of patients with epilepsy, seizure freedom can be achieved with medication. For those patients whose seizures do not stop after trying two appropriate medications, surgery may be an option.

### Medications

More than 25 different medications can be used to treat seizures. The exact medication you are prescribed will depend mostly on the type of seizure(s) you have, which is why a thorough epilepsy evaluation is important. Other factors determine the best medication for you, including age, weight, gender, general health, and known drug sensitivities.

When a seizure medication is first started, usually it is prescribed at a low dose and increased gradually through a process called titration. It is extremely important that you take your medication exactly as directed by your doctor and never suddenly change or stop taking it without talking to your doctor first.

Any medication can cause side effects either on its own or through interactions with other medications. The most common side effects of seizure medications are drowsiness, dizziness, blurry vision, and double vision that often resolve spontaneously as you adjust to your medication. If you experience a medication side effect, please call your doctor immediately. It may take some time to find the right medication and dose for you.

## Surgery

One-third of patients with epilepsy have seizures that do not stop when they take seizure medications. We call this "intractable," "uncontrolled," or "drug resistant" epilepsy. If one seizure medication has been unsuccessful, the chance of becoming seizure free from trying a second medication is about 10-15%. After a second medication proves unsuccessful, the person's chance of becoming seizure free from additional medication trials drops to less than 5%.

It is extremely important for someone who has failed two or more appropriate seizure medications to be evaluated at a comprehensive epilepsy center. A thorough epilepsy evaluation can ensure that you have been diagnosed correctly and that you have tried the best possible medical treatment for your seizure type. A comprehensive epilepsy evaluation may also confirm that you have intractable epilepsy and may be a candidate for epilepsy surgery.

### Presurgical Testing

To determine whether or not you are a candidate for epilepsy surgery, extensive testing must be done to localize your seizure focus. This comprehensive process is performed under the guidance of your epileptologist. Depending on your type of epilepsy and the location of your seizure focus, you may need to undergo the following tests:

- High-resolution MRI
- Magnetoencephalography (MEG)
- SPECT and PET
- Neuropsychological testing (NPT)
- MR spectroscopy (MRS)
- Functional MRI (fMRI)



## Patient Management Conference

Once the necessary tests are completed, our expert, multidisciplinary team—epileptologists, neurosurgeons, neuroradiologists, neuropsychologists, and others—meets to review the results and discuss a surgical treatment plan. In this way, care is individualized for each patient who comes through the UPMC Epilepsy Center. After a detailed review of the data, our entire team agrees on a plan. Following this discussion, a member of your care team will contact you to discuss our recommendations. You will also be asked to follow up with the epilepsy surgeon to discuss the type of surgery that is recommended for you.

### Types of Surgery

- Robotic SEEG to locate the seizure onset zone. This advanced technique lets neurosurgeons perform more precise and less invasive approaches to epilepsy surgery.
- Resection surgery to remove the abnormal brain tissue causing seizures.
- Laser ablation using focused heat to destroy the brain tissue causing seizures.
- Responsive neurostimulation (RNS®) to detect seizure activity and stimulate the brain's response to reduce seizures.
- Deep brain stimulation (DBS) to reduce seizure frequency and severity.
- Vagus nerve stimulation (VNS) in the neck to reduce the number of seizures.
- Corpus callosotomy for generalized epilepsy.

## Research and Academic Mission

Our physicians are involved in advanced basic, translational, and clinical research and have developed a broad network of national and international collaborations. We aspire to be the national and international leaders in the field of epilepsy.

## Our Experts

### Department of Neurology

#### Physicians:



**Anto Bagić, MD, PhD, FAES, FACNS**  
Professor and Chief, Epilepsy Division  
Director, UPMC Comprehensive  
Epilepsy Center  
Director, Epilepsy Monitoring Unit,  
UPMC Presbyterian  
Director, MEG Epilepsy Program



**Patrick Chauvel, MD**  
Professor of Neurology  
and Neurosurgery  
Scientific Director, Neural Network  
Disorders Program (NNDP)



**Rafeed Alkawadri, MD**  
Associate Professor of Neurology



**Joanna Fong, MD**  
Assistant Professor of Neurology  
Director, Critical Care EEG Monitoring



**Thandar Aung, MD, MS**  
Assistant Professor of Neurology



**Vijayalakshmi (Viji) Rajasekaran, MD**  
Assistant Professor of Neurology  
Associate Director, Clinical Neurophysiology  
and Epilepsy Fellowship



**Niravkumar Barot, MD, MPH**  
Assistant Professor of Neurology  
Medical Director, Epilepsy Surgery Program



**Alexandra Urban (Popescu), MD,  
FAAN, FAES**  
Associate Professor of Neurology  
Director, CNP and Epilepsy Fellowships  
Director, UPMC Presbyterian Hospital  
EEG Laboratory



**James Castellano, MD, PhD**  
Assistant Professor of Neurology

#### Other Providers:



**Hallie Gilbert, PA-C**  
Physician Assistant

### Department of Neurosurgery

#### Physicians:



**Jorge Gonzalez-Martinez, MD, PhD**  
Professor of Neurosurgery and Neurology  
Director, Epilepsy and Movement  
Disorders Surgery  
Co-Director, UPMC Comprehensive  
Epilepsy Center

#### Other Providers:



**Karen Miller, PA-C**  
Physician Assistant

**Danielle Corson, PA-C**  
Physician Assistant



**Alexus Sieger, PA-C**  
Physician Assistant

**Luke Henry, PhD**  
Neuropsychologist  
Assistant Professor of Neurosurgery

#### Associated Providers:



**Alex Israel, MD**  
Assistant Professor of Psychiatry



**Joseph M. Mettenburg, MD, PhD**  
Associate Professor of Radiology  
Division of Neuroradiology

## Contact Us

For more information on epilepsy treatment  
at UPMC, call: **833-398-0286**

Visit our website at: [UPMC.com/epilepsy](http://UPMC.com/epilepsy)

UPMC policy prohibits discrimination or harassment on the basis of race, color, religion, ancestry, national origin, age, sex, genetics, sexual orientation, gender identity, marital status, familial status, disability, veteran status, or any other legally protected group status. Further, UPMC will continue to support and promote equal employment opportunity, human dignity, and racial, ethnic, and cultural diversity. This policy applies to admissions, employment, and access to and treatment in UPMC programs and activities. This commitment is made by UPMC in accordance with federal, state, and/or local laws and regulations.

UPP519880 IB/AD 4/21

© 2021 UPMC