

Epilepsy



The Epilepsy Program at Barrow Neurological Institute uses a multidisciplinary approach to helping patients find the best treatment available for seizure disorders.

→ **EPILEPSY IS THE FOURTH** most common neurological condition in the United States. More than 3.4 million Americans have epilepsy – twice as many as cerebral palsy, muscular dystrophy, multiple sclerosis and cystic fibrosis combined. Brain damage, brain tumors, infections or genetic conditions can spark seizure disorders, but in about 60 percent of cases, there is no identifiable cause. Anti-seizure medications can help, but for one-third of epilepsy patients – more than one million Americans – surgery is the **only** option. Yet there are just 2,000 procedures in the United States annually. Often, patients skip surgery because the exact focal point of their seizures cannot be identified. The Barrow Neurological Institute Epilepsy Program is unique in bringing together the full range of epilepsy experts: neurosurgeons, neurologists, neuropsychologists, neuroradiologists, dieticians, clinicians, researchers, and imaging experts that strive to identify the best treatment options for every patient. Barrow's Epilepsy Program is accredited as a level 4 epilepsy center, the highest designation possible.



3.4 MILLION

people in the United States have epilepsy



1 MILLION

live with uncontrollable seizures



60%

of people with epilepsy don't know the cause

ABOUT BARROW
NEUROLOGICAL INSTITUTE



#1 IN ARIZONA
#11 IN THE UNITED STATES
for neurology and neurosurgery



CLINICAL IMPACT

92,515

BNI Clinic visits

3,135

number of neurosurgeries

1,578

number of spine surgeries

\$2.8 MILLION

amount of charity care



GLOBAL IMPACT

54

visiting scholars, research fellows and observers from Mexico, India, Egypt, Pakistan, UK, Russia, China, Chile, Spain, Brazil, Japan, France, Italy, Kingdom of Saudi Arabia, Indonesia, Turkey, Germany, Poland, Colombia, Philippines, Israel, Argentina and Thailand.

PROGRAM ACCOMPLISHMENTS

Susan Herman, MD, a nationally renowned expert in epilepsy, is the new director of Barrow's Epilepsy Program. Her expertise includes the treatment of drug-resistant epilepsy. She is a national leader in electroencephalography (EEG) technology and interpretation, including video-EEG monitoring for epilepsy, continuous EEG monitoring in critically ill patients, and high-density EEG and source localization. Dr. Herman's focus will be standardizing and improving clinical care and using clinical data for epilepsy research. She was recently named president of the National Association of Epilepsy Centers, an organization committed to quality epilepsy care.

Barrow's Epilepsy Program focuses on patient care and education to assist each patient in finding the treatment option that works best. In addition to medications that may help, there are other options available for seizure control including deep brain stimulation (DBS) and surgery.

Barrow's Kris Smith, MD, a neurosurgeon, is internationally known for surgical interventions for epilepsy including minimally invasive procedures.

Barrow Neurological Institute also has acquired the first **magnetoencephalography, (MEG)** instrument in Arizona. It measures the magnetic fields generated by neuronal activity in the brain. MEG shows great promise for accurately identifying where a seizure begins, giving neurosurgeons the information they need to intervene for the best surgical outcomes.

Barrow's mission includes educating the next generation of health providers. Dr. Smith, Zaman Mirzadeh, MD, PhD, Francisco Ponce, MD, and Kyle Swanson, MD, a neurosurgery fellow at Barrow, wrote a section about epilepsy, neurosurgery and pain for a publication called *Essential Neurosurgery for Medical Students*.



↑ The magnetoencephalography (MEG) uses magnetic fields to accurately locate the origin of seizures in the brain. Barrow has the only MEG in Arizona.



“Never in a million years did I think I would be living this life. Barrow and Dr. Smith gave my life back. I will be forever grateful.”

LAURA MELLOW, ARTIST AND ACTOR, BARROW PATIENT

Artist and actor Laura Mellow had minimally invasive surgery at Barrow to remove a lump of scar tissue in her brain that had been causing seizures. She has not had a seizure since the surgery in 2005. ↑

RESEARCH ADVANCES

Improving the quality of patient care and quality of life for seizure disorders requires research. Stereoelectroencephalography (SEEG) is one way to identify where seizures originate. Implanting electrodes requires highly specialized equipment and shaving the patient’s entire head. Dr. Smith compared traditional methods to a minimally invasive technique using cost-effective neurosurgical equipment and requiring very little hair shaving. He published a paper showing the minimally invasive, cost-effective technique for SEEG electrode implantation is safe and efficient. This publication may be useful for centers with more limited resources.

ON THE HORIZON

Under Dr. Herman’s leadership, Barrow will be a lead center in the Epilepsy Learning Healthcare System – a collaborative network of patients, families, epilepsy advocates and physician-scientists collecting data from every patient at every visit. The Network will help centers improve the care they provide today and outcomes over time. ELHS will work in smaller groups to share expertise across institutions with the specific purpose of improving clinical care and research capabilities at every participating institution. ELHS also allows Barrow to participate in clinical trials testing medications for rare types of epilepsy. A single institution may not have enough patients to test these medications but as a group, ELHS will be able to better predict whether existing therapies may be effective.

BY THE NUMBERS



RESEARCH

320

active research studies

839

patients enrolled in clinical trials

\$9 MILLION

in federal research grant support



DONOR IMPACT

\$3.98 MILLION

for basic and translational research

\$3.65 MILLION

for strategic initiatives including Barrow Aneurysm & AVM Research Center, Barrow Artificial Intelligence Center, neuroimaging and stroke

\$1.26 MILLION

for education and fellowship programs

\$2.52 MILLION

for community outreach programs



↑ *Susan Herman, MD*
Director, Epilepsy Program
Barrow Neurological Institute

THANK YOU FOR YOUR SUPPORT

In order to bring our patients the best possible care, our physicians work collaboratively looking for the right treatment for each patient. To advance patient care, we rely on philanthropy to test innovative ideas. We would not be able to improve the lives of our patients without you.

With Gratitude,

Susan Herman, MD

DIRECTOR, EPILEPSY PROGRAM

BARROW NEUROLOGICAL INSTITUTE

Barrow Neurological Foundation raises awareness and funding for patient care, medical education, community outreach and research offered at Barrow Neurological Institute. Barrow is an internationally-recognized leader in neurology, neurosurgery and neuroscience research, treating patients with a wide range of conditions, including brain and spinal tumors, concussion and brain and spinal traumas, neuromuscular diseases, stroke, cleft and craniofacial disorders, and cerebrovascular disorders. It is home to several centers of excellence, including the Ivy Brain Tumor Center, Muhammad Ali Parkinson Center and Gregory W. Fulton ALS and Neuromuscular Disease Center. **www.SupportBarrow.org**



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