

PALMETTO HEALTH • Vol. 3 Issue 1 Winter 2017

# Neuroscience Journal

New telemedicine  
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# As physician co-leaders of Palmetto Health's neuroscience service,

we share a vision to provide the most advanced neurology and neurological surgery treatments available to the residents of South Carolina. We are excited to share this edition of our neuroscience journal featuring articles about epilepsy and a new telemedicine platform being utilized at Palmetto Health that is leading to more reliable stroke care.

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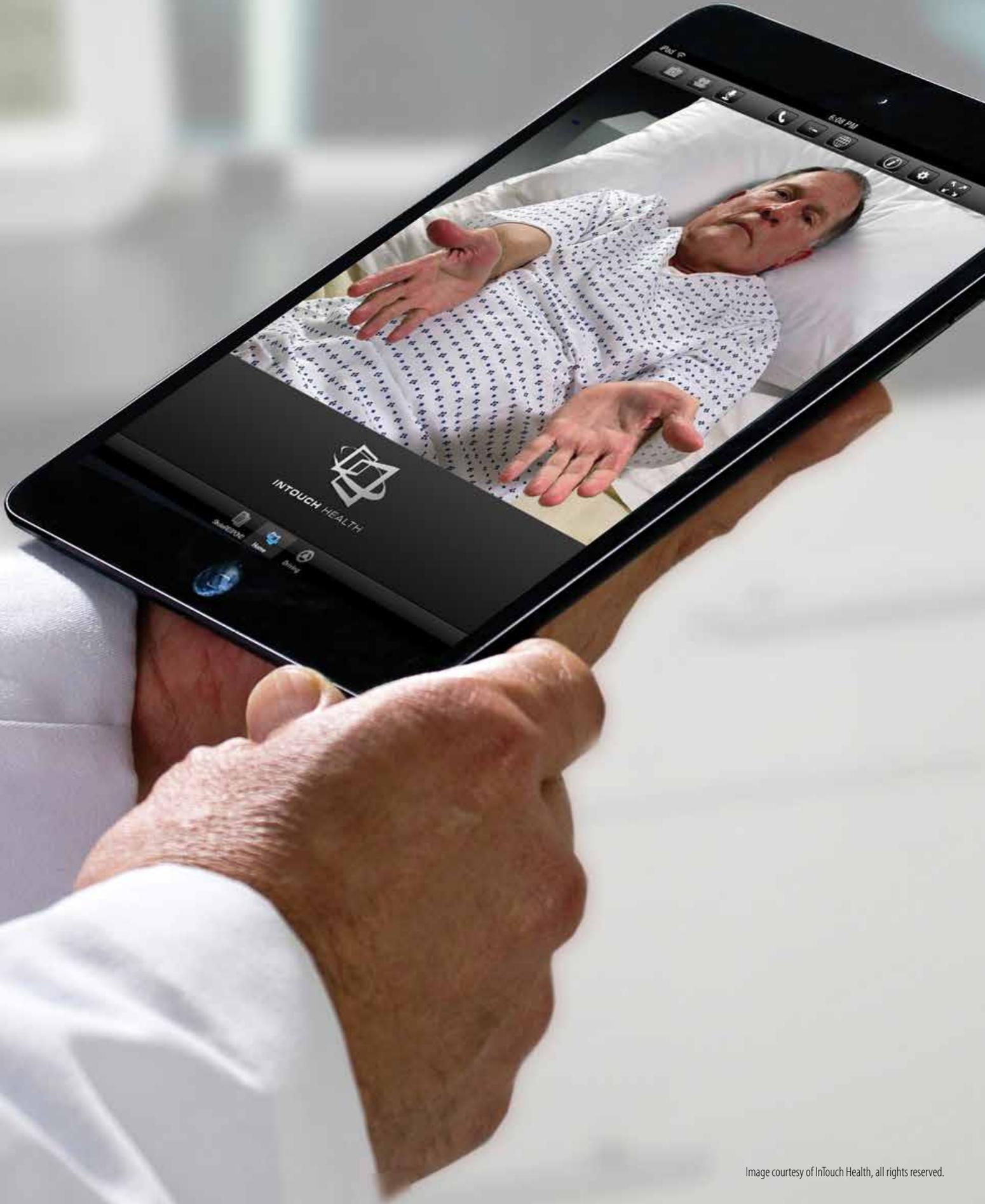
Palmetto  
Health's  
"4-BRAIN"  
phone line for  
neurosurgical  
transfers—  
*Because seconds  
matter.*

Providers now can call 844-64-BRAIN to transfer urgent and emergent neurosurgical and neurological patients easily and efficiently.

Studies have shown that one of the challenges faced by emergency room providers and referring physicians is fast and efficient access to neurological and neurosurgical physicians in tertiary medical centers. Palmetto Health's 4-BRAIN line allows emergency room providers and referring physicians to speak directly with a neurosurgeon or neurologist without going through an operator or long waits on the phone. Neurological problems that the 4-BRAIN line may be used for include intracerebral hemorrhages, subarachnoid hemorrhage, aneurysms, vascular malformations and brain tumors. The 4-BRAIN line is answered 24 hours a day, seven days a week.

**Call 844-64-BRAIN (27246) for emergent neurosurgical transfers.**





# New telemedicine platform improves stroke care

*by Kelly Hawsey, Director of Medical Transport Services, Palmetto Health and Jessica Hallman, Project Manager, Palmetto Health Neuroscience*

**Stroke is the fifth leading cause of death in the United States and the third leading cause of death in South Carolina.** It also is the leading cause of long-term disability nationwide. While much advancement has been made, treatments must be administered within eight hours of the patient's last known well time. Alteplase treatment is available for up to four-and-one-half hours and interventional therapy is available for up to eight hours. Although patients cannot be transferred specifically for a clinical trial, Palmetto Health Richland participates in several clinical trials that allow the window of treatment to be extended for a longer period of time. Determining appropriate care requires an examination by a qualified neurologist who understands and is familiar with the treatments that the patient may be qualified to receive.

Nationally, there is a shortage of neurologists with only one specialist available for every 100,000 patients. As a result, many hospitals do not have access to the specialty care needed to treat acute stroke patients. With the use of telemedicine programs, Palmetto Health is able to provide 24/7/365 immediate access to a neurologist. Telemedicine allows the receiving hospital physician to consult with our neurologist to treat stroke patients quickly

and appropriately. By only transferring patients who are in need of a higher level of care, more patients can remain at the receiving hospital.

In the 1950s a few hospitals and universities began to experiment with the telemedicine concept by sending radiologic images via telephone. It wasn't until 1964 that the first telemedicine link was developed between the University of Nebraska and Norfolk State Hospital. Even as technology continued to progress, health professionals thought this type of technology only would be useful for patients located in rural areas. Today, telemedicine is used not only for patients in rural areas but is also used to supplement physician shortages and provide convenient care in metropolitan areas.

For the patient, telemedicine makes health care more accessible, saves money, extends access to specialties, increases engagement and helps deliver better quality care. So far, reimbursement for telemedicine has been different for each state and has led to the constant revision of state policies. However, most states are now requiring private payers to reimburse through parity laws.

According to eVisit's 2016 telehealth whitepaper, in 2014 the telemedicine market was worth an



estimated \$17.9 billion. In 2015, more than 800,000 consultations were performed via telemedicine; and by 2018, the number of patients served by telemedicine will reach over 7 million. Studies show that 90 percent of all health care executives are developing or initiating some type of telemedicine plans for their system, if they are not already in place.

Although telemedicine is not new to Palmetto Health, we are constantly looking for better ways to serve our community. In 2012, Palmetto Health implemented its first telemedicine program in stroke with the leadership of Souvik Sen, MD, Chair of Neurology at Palmetto Health-USC Neurology. Since then, Palmetto Health has expanded its telehealth footprint and will continue to do so in the future, including telehealth programs in transport, mental health, skilled nursing facilities, ICU, tele-sitter, stroke, infectious disease, psychiatry and school-based primary care and education. According to Dr. Sen, "Telemedicine has and will continue to prove its worth by removing barriers in acute specialty care, such as stroke, and will have significant effects on patient outcomes and quality of life."

Palmetto Health's guiding principles for telehealth are to transform the health care experience for our patients and guests, physician partners, and team members through the use of innovative and integrative telehealth technologies. This telehealth care delivery model will allow Palmetto Health to manage our patient

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“To be able to sit there and conference in with a neurologist and have everybody there at one time – I must have had two doctors and one video-conferencing doctor – was impressive in itself.”

*Stroke patient Michael Battani*

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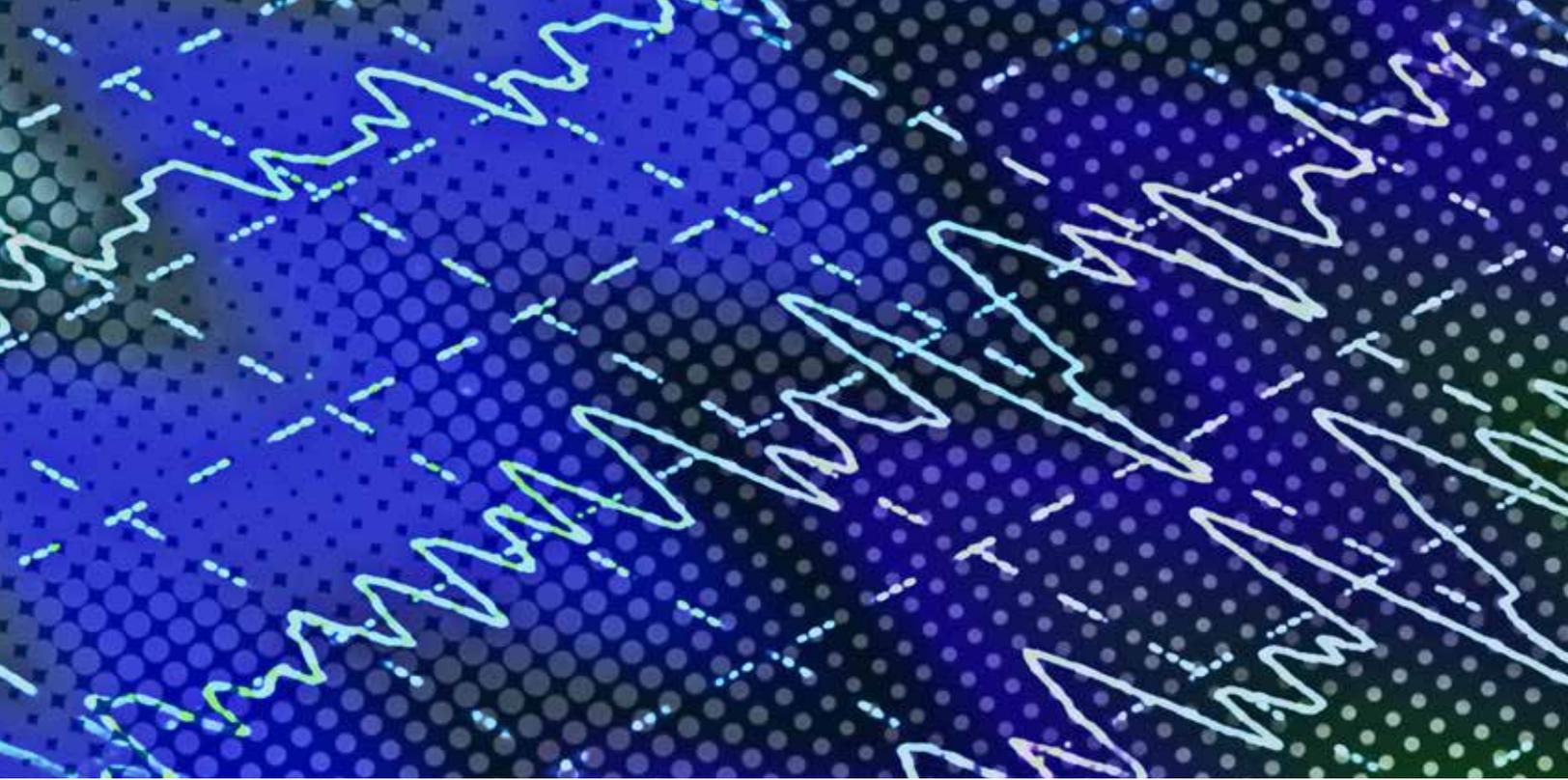
populations more effectively and efficiently, increase access, improve care quality and health outcomes, and decrease overall costs.

Telehealth allows Palmetto Health to facilitate, coordinate and improve access to quality care, education and research that is patient-centered, reliable and timely. We will grow the telehealth program to support care delivery for all South Carolinians in the Midlands region with an emphasis on the underserved, rural and urban communities. By establishing telehealth excellence in the Midlands, we support the South Carolina Telehealth Alliance vision of becoming a nationally recognized state that is uniquely collaborative, valuable and cost effective.

In May 2016, Palmetto Health partnered with InTouch Health to provide a more reliable telestroke service. Across the United States there is a shortage of neurologists, and South Carolina is no different. InTouch allows our Palmetto Health-USC Medical Group neurologists to provide acute stroke specialty coverage for all four of our campuses.

InTouch Health's cloud-based telehealth network supports more than 19,000 encounters each month with connections made at 1,500 locations. Hospitals across the United States and throughout six continents have chosen InTouch as their partner for telemedicine services.

InTouch Health manufactures the only FDA-cleared Class II telemedicine remote presence devices on the market. This allows physicians to make real-time reliable remote consults with patients and other health care providers through the Provider Access Software interface. These interfaces allow physicians to access the software at any time or anywhere through desktop computers, laptops, iPads or iPhones. ◀



# Evaluating and treating epilepsy

*by Walter Hamilton Peters IV, MD, Palmetto Health-USC Neurology*

**Epilepsy is defined as two or more unprovoked seizures in a patient, and can be classified as generalized or focal.**

History, exam, electroencephalogram (EEG) and imaging are used in attempts to classify epilepsy, as this can influence the medication used or the types of treatment available. Medical treatment for epilepsy has evolved over the last several decades with the introduction of newer antiepileptic drugs (AEDs). Unfortunately, superiority to older AEDs in randomized controlled trials is difficult to establish; but it is beneficial to have a larger armament of medications with better side effect profiles. Epilepsy that is associated with a lesion (focal) tends to respond more poorly to AEDs than idiopathic generalized epilepsy; however, it may respond better to epilepsy surgery<sup>1</sup>. Examples of lesions would include: mesial temporal sclerosis (MTS), low-grade neoplasms, vascular malformations, focal cortical dysplasia and encephalomalacia from trauma.

Approximately one-third of patients with epilepsy have medically refractory epilepsy. Epilepsy is considered refractory when two AEDs used in an appropriate manner have failed to control seizures. A third medication in this instance has an approximately 11 percent chance of controlling the seizures,<sup>2</sup> and, therefore, it is appropriate to send patients for surgical evaluation when they have failed two AEDs. In temporal lobe epilepsy, surgery is superior to prolonged medical therapy.<sup>3</sup> It is appropriate to refer a patient with intractable epilepsy to an epileptologist or neurologist in order to classify and, potentially, localize the epilepsy in an epilepsy monitoring unit (EMU).

An initial surgical evaluation should include history, physical exam, EEG and MRI with thin cuts through the temporal lobes on coronal sequences. If these studies don't help to classify or localize the epileptogenic zone, EMU should be considered. An EMU allows the epileptologist to stop or taper the current AEDs and capture seizures on prolonged

video-EEG. We currently have a two-bed EMU at Palmetto Health Richland. EMU hospitalization typically lasts three to seven days with a goal of capturing multiple seizures and all seizure types. It is most important to pay careful attention to the seizure onset. It is important to note any interictal epileptiform discharges and their location as well.

All patients considering epilepsy surgery should have neuropsychological testing. This is important in order to lateralize language and memory, but to also help determine that one is psychologically healthy enough to undergo brain surgery. Other studies that are helpful in surgical evaluation may include positron emission tomography (PET), single-photo emission computed tomography (SPECT), functional MRI, subtraction ictal SPECT co-registered to MRI (SISCOM), MR spectroscopy, sodium amobarbital study and invasive video EEG monitoring. Invasive video EEG monitoring involves subdural implantation of electrodes into the brain by a neurosurgeon. The patient goes to the neurosurgical ICU for one day and then is typically placed back in the EMU. This allows electrical discharges from the brain to be more easily and accurately recorded.

Each patient's epilepsy surgery work up may be unique and will depend on the individual case. Once all the data has been obtained, it is common for it to be presented at an epilepsy surgery conference. Ideally, each clinician who participated in the evaluation would be available to discuss the case. This often would include an epileptologist, neurosurgeon, neuropsychologist and neuroradiologist. At this point, it would be determined if the patient needs further studies such as invasive monitoring or, if they are a surgical candidate, what type of surgical procedure will be performed.

The most common surgically treated epilepsy is mesial temporal lobe epilepsy. Its effectiveness has been demonstrated in a randomized controlled trial.<sup>3</sup> The pathology most associated with temporal lobe epilepsy is MTS, involving hippocampal neuronal loss. The surgical procedure typically used to treat temporal lobe epilepsy is an anterior temporal lobectomy, in which the temporal pole is removed to allow resection of the hippocampus and part of the amygdala. Radiosurgery and MRI-guided laser therapy also are being investigated as alternative options to lobectomy. These alternative therapies may reduce damage to neighboring neurons.

The goal of epilepsy surgery is seizure freedom with no harm to the patient. Resecting areas of brain is a risky task, and this is why many tests are used to identify the epilepsy focus and eloquent cortex. The temporal lobe is an area of the brain that is important in language and memory and we must do everything we can to preserve these functions. One multicenter study showed that 68 percent of patients with mesial temporal resections were seizure free for two years.<sup>4</sup> Seizure free rates are lower for patients with non-lesional epilepsy or epilepsy outside of the mesial temporal lobe (neocortical epilepsy) but, in certain instances, it is still appropriate to evaluate these patients for surgery. Some patients are able to come off of AEDs after epilepsy surgery. One would generally like to see a patient go seizure free for two years prior to attempting to taper AEDs. The University of South Carolina School of Medicine currently has the resources needed to provide epilepsy surgery to our community. We invite local physicians to refer patients to our clinic if they feel an epilepsy surgery evaluation is appropriate. ◀

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# Meet our newest physicians



## **Pornpimol Becky Anprasertporn, MD**

**Neurologist**  
**Palmetto Health-USC Neurology**

Pornpimol Becky Anprasertporn, MD, specializes in neurology and movement disorders.

Dr. Anprasertporn received her medical degree from Mahidol University, Faculty of Medicine Siriraj Hospital in Bangkok, Thailand. After receiving her medical degree she completed a medical internship at Somdejprasangkraj 17th Hospital in Suphanburi, Thailand. Dr. Anprasertporn completed her residency in neurology at Saint Louis University as well as a fellowship in movement disorders from the University of Alabama at Birmingham. She is board certified in neurology and serves as a clinical assistant professor of neurology at the University of South Carolina School of Medicine. Dr. Anprasertporn has received numerous professional honors and awards and is published in several peer-reviewed journals.



## **Mohit Datta, MD**

**Neurointensivist**  
**Palmetto Health-USC Neurosurgery**

Mohit Datta, MD, specializes in stroke and neurocritical care.

Dr. Datta received his medical degree from the Medical University of South Carolina in Charleston, South Carolina. After receiving his medical degree he completed an internship in preliminary medicine from the Medical College of Wisconsin. He also completed a residency in neurology at the Medical University of South Carolina and a fellowship in neurological critical care at Johns Hopkins University. Dr. Datta has received numerous professional honors and awards and is published in several peer-reviewed journals. He is board certified by the American Board of Psychiatry and Neurology, Inc.



## **William Alvin McElveen, MD**

**Neurologist**  
**Palmetto Health-USC Neurology**

William Alvin McElveen, MD, specializes in neurology and memory disorders.

Dr. McElveen received his medical degree from the Medical College of Georgia in Augusta, Georgia. He completed an internship and residency, both in internal medicine, from the Tucson Hospitals Medical Education Program in Tucson, Arizona. Dr. McElveen completed an additional residency in neurology at the University of Arizona. He is board certified in neurology and vascular neurology, as well being board certified with the American Board of Independent Medical Examiners. Dr. McElveen has received numerous professional honors and awards, is published in several peer-reviewed journals and has participated in numerous clinical trials.



## **Walter Hamilton Peters IV, MD**

**Neurologist**  
**Palmetto Health-USC Neurology**

Walter Hamilton Peters IV, MD, specializes in neurology and epilepsy.

Dr. Peters received his medical degree from the Medical University of South Carolina in Charleston, South Carolina. After receiving his medical degree he completed an internship in internal medicine and a residency in neurology at Vanderbilt University. He also completed a fellowship in electrophysiology/epilepsy while at Vanderbilt and is board certified in neurology. Dr. Peters is published in several peer-reviewed journals and has participated in a number of clinical trials.



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**Our Vision:** To be remembered by each patient as providing the care and compassion we want for our families and ourselves.