

# The Medical Minute: The team approach to epilepsy care

March 1 2010, By Michael D. Sather and Jayant N. Acharya

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Epilepsy is a disease characterized by recurrent seizures, which occur when the electrical activity of the brain becomes abnormal, resulting in a variety of different symptoms (seizure types). Depending on the location of the epileptic region in the brain and its cause, there are different types of epilepsy. Individuals with epilepsy may not be able to do many of the things most Americans take for granted, such as driving, swimming and cooking. They may live in constant fear of the next seizure because they do not know when it will start or what they will be doing when it does. Epilepsy is highly treatable, and the goal is to completely control or significantly reduce the frequency of seizures and minimize medical side effects.

Comprehensive care for patients with epilepsy is best accomplished in specialized epilepsy centers that not only provide routine care but specialize in providing diagnostic and treatment services to patients with uncontrolled or intractable epilepsy. Specialized epilepsy centers utilize a team approach involving personnel from a number of fields and specialties. The team is composed of adult and pediatric epileptologists (neurologists with specialty training in epilepsy), epilepsy surgery-trained neurosurgeons, midlevel providers, EEG technologists, neuroradiologists, nuclear medicine radiologists, psychiatrists, clinical neuropsychologists, neuroscience nurses and dietitians. Decision-making in this team atmosphere is patient-focused and individualized, maximizing patient outcomes and quality of life.

Management of epilepsy begins with an accurate diagnosis.

Epileptologists usually accomplish this through a detailed history and clinical examination followed by appropriate tests. These tests may include electroencephalography (EEG), inpatient video-EEG monitoring in dedicated epilepsy monitoring units and brain MRI. Identification of the correct epilepsy syndrome and rapid treatment with the best possible medication can minimize the number of seizures and their effect on the quality of life. In some cases, patients may have been misdiagnosed with epilepsy and actually have non-epileptic events. Inpatient video-EEG monitoring enables early diagnosis of such events and avoidance of the inappropriate use of antiepileptic medications.

Approximately 70 percent of patients with epilepsy have seizures fully controlled with medications. The remaining 30 percent of patients who are poorly controlled with medications are considered to have refractory or [intractable epilepsy](#). In addition to antiepileptic medications, available treatment options for these patients include surgery, vagus nerve stimulation and dietary therapy. Of these, surgery has the best chance of resulting in a cure. However, not all patients with refractory epilepsy are suitable candidates for surgery. In addition to being refractory, they need to have partial rather than generalized epilepsy, meaning their epilepsy arises from a single part of the brain rather than from both sides or from all over the brain. Further, the epileptic region should be in a part of the brain that, if removed, is unlikely to result in major neurological complications. Whether or not patients are likely to benefit from surgery is determined by detailed testing.

After reviewing and discussing the results of this testing, if the epilepsy team feels that a patient can be cured or improved safely with surgery, then the type and location of surgery is individualized for that patient. In general, surgery for epilepsy can be divided into three different categories: resection -- removal of abnormal brain tissue; disconnection -- disconnecting abnormal brain from the rest of the brain; and neuromodulation -- stimulating nerves or brain structures with a

mechanical device.

Removal of one lobe of the brain is called a lobectomy. Temporal lobectomy is the most common surgical resection performed for epilepsy. When one half, or hemisphere, of the brain is diseased and causing seizures, this may be removed or disconnected from the rest of the [brain](#). This is called a hemispherectomy and is most commonly performed in children. The goal of these surgeries is curing the epilepsy.

The vagus nerve stimulator (VNS) is a form of neuromodulation. It involves the surgical implantation of electrodes around the vagus nerve in the neck and a generator placed below the collar bone in the upper chest region. It rarely cures seizures, but may reduce frequency and severity of seizures. It is an option for those who are not candidates for other types of surgery.

Another option for patients with refractory [epilepsy](#) who are not surgical candidates is dietary therapy, which is mainly performed in children. Trained dietitians can help initiate the ketogenic diet or the modified Atkins diet, both of which are known to be helpful in controlling seizures in a subset of patients.

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