

# Advances, options and answers for people with uncontrolled seizures



**Epilepsy affects almost 3 million Americans**, and between 25 and 44 percent of these patients have medically intractable seizures. Uncontrolled seizures are associated with significant emotional, social and educational consequences. Some epilepsy patients are unable to drive, fail to complete their desired level of education or become socially isolated.

A number of modern treatments are now available for uncontrolled seizures, including improved medical management, vagus nerve stimulation and a variety of surgical options. UCLA has been at the forefront of surgical treatment dating back to 1961. UCLA's Pediatric Epilepsy Program is one of the few clinics that extend the possibility of surgical treatment to children.

A persistent seizure disorder can lead to injuries or accidents, worsening of the condition and brain damage. American Academy of Neurology guidelines recommend referral to an epilepsy center for further evaluation if seizure control cannot be achieved after two medication trials or when side effects from medications are intolerable. Trying more than two medications before seeking expert evaluation at an epilepsy center is not advised as this often leads to unnecessary years of debilitating seizures.

## Referral to a specialized center expands choices

More than one-third of people with epilepsy have seizures that are not controlled by antiseizure drugs. Of these, fewer than 1 percent are referred to full-service epilepsy centers where they can get specialized care. "Patients are often not referred because they are not thought to be surgical candidates and there is a misperception that surgery is the only treatment offered at epilepsy centers," states Jerome Engel Jr., MD, PhD, director of the UCLA Seizure Disorder Center.

Specialized full-service centers like UCLA's not only have the expertise to recognize candidates for epilepsy surgery who are not identified in the community, but can also offer alternative therapies to those who are not surgical candidates.

"Disabling epileptic seizures can interfere with school, work and interpersonal relationships. Patients who have disabling epileptic seizures that have not responded to two appropriate trials of antiseizure drugs deserve to be referred to a full-service epilepsy center where specialized personnel can perform more sophisticated diagnostic testing and offer alternative treatment options," explains Dr. Engel.

## Emphasizing a thorough evaluation

Seizures can be the result of a wide variety of diseases or injuries, including head injury, birth trauma, central nervous system infections, brain tumors, stroke, ingestion of toxic substances and metabolic imbalance. At UCLA, patients with uncontrolled seizures undergo a multi-step, diagnostic workup including:

- Examination by an epileptologist
- High-resolution MRI specific to epilepsy
- Simultaneous recording of seizures with video and EEG in the hospital
- A glucose PET scan to identify abnormalities in the brain that could be the source of the seizures even when MRI findings are normal
- Neuro-psychological evaluation to assess cognitive functions

## Technological advances provide new information

Because of advanced imaging techniques, comprehensive diagnostic workup can also benefit people who were not previously eligible for surgery. Improvements in structural MRI allow for superior images compared to PET and help identify seizure sources with greater accuracy. Functional MRI enhances the clinician's understanding of the anatomical characteristics of the brain activity.

Surgery is recommended based on the identification of a clear abnormality that is the source of seizures and after a full safety assessment. Surgical treatment is possible for many types of seizures. A March 2012 *Journal of the American Medical Association* article by UCLA physicians concluded that resective surgery plus antiepileptic drug (AED) treatment reduced seizures for people with mesial temporal lobe epilepsy during two years of follow-up compared to AED treatment alone for people who were recently diagnosed with medication-resistant seizures.

## High success rates for total seizure control

Depending on the cause of the seizures, up to 80 percent of patients who undergo surgery at UCLA emerge seizure-free. Even when total control seizure control is not achievable, the majority of patients experience substantial improvement in seizure control and in quality of life.

Key questions concerning surgical treatment of pediatric patients center on whether the seizure-generating abnormality can be identified and safely removed and whether improved seizure control will provide a more normal life experience. Early diagnosis and treatment is critical in pediatric patients to relieve what is often a severe disability. Following surgery, most children are seizure-free and no longer need medication. Others require continued use of anticonvulsants.

Patients who are not candidates for surgery receive a comprehensive evaluation that typically results in enhanced options for seizure control through medication or targeted treatment of the newly diagnosed cause of the seizures.

## Participating Physicians

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