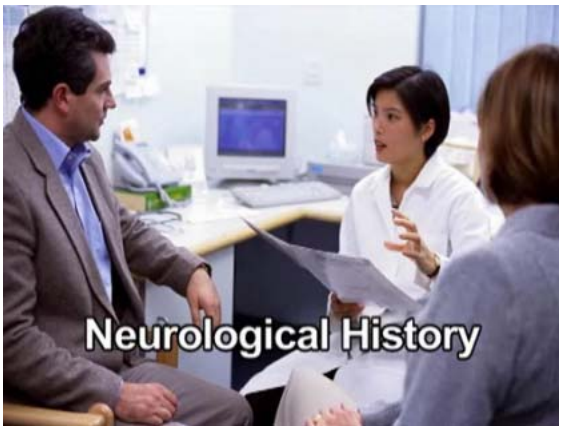
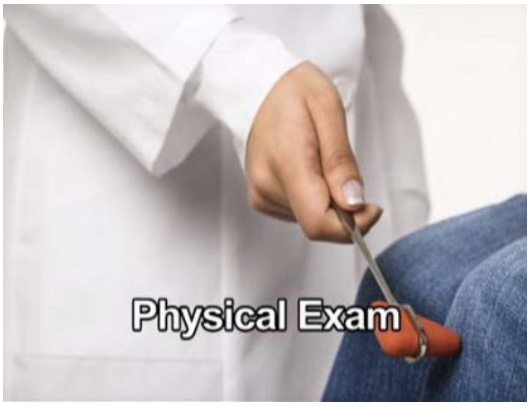
HOW IS EPILEPSY DIAGNOSED?

Seizures can be confused with the symptoms of a number of other conditions. For this reason, doctors rely upon four distinct methods to diagnose epilepsy.



To make a proper diagnosis of epilepsy, doctors use four methods: history, exam, EEG and MRI. The first method used to make a diagnosis of epilepsy is the neurological history, when the doctor is given a clear description of any past seizure activity. Most seizures have a clear start and finish, last from seconds to a few minutes, occur at seemingly random times and comprise certain sensations and behaviors that clinicians can recognize. Patients may not remember their behavior during seizures, so descriptions from observers are very important.



The second method used to diagnose epilepsy is the physical exam. A physical exam cannot uncover epilepsy, but it can show problems indicating that a part of the brain isn't working properly and therefore may be generating seizures.

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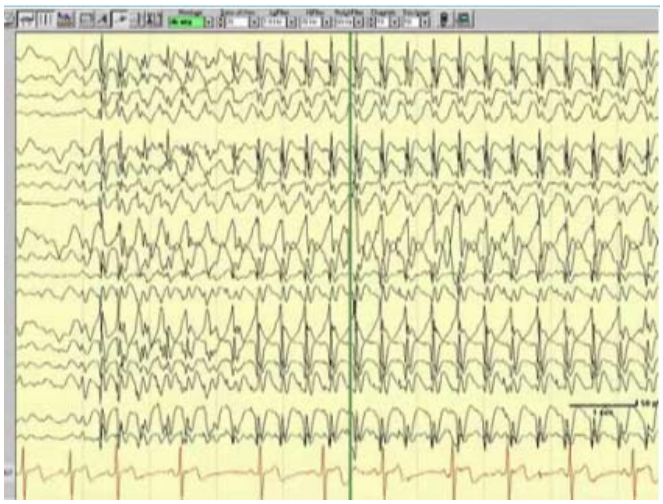
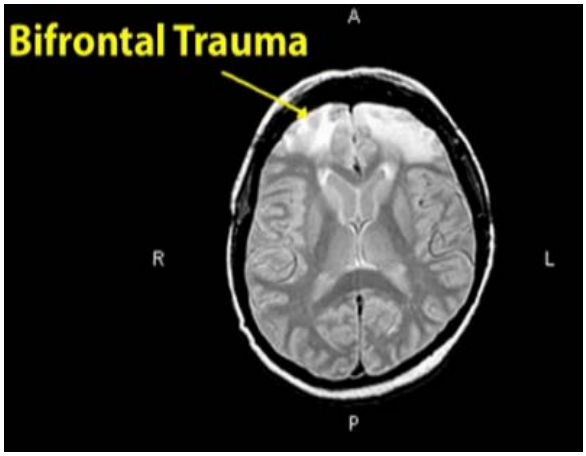


The third method of diagnosis is an EEG or electroencephalogram, which measures the patient's brain waves. The brain produces electricity, which can be measured by wires glued onto the scalp. The EEG records and charts these electrical voltages. The normal up-and-down movements of the voltages create the wave-like patterns seen here. Spikes on the EEG are markers of hyper-excitable parts of the brain, which mark potential locations where seizures may arise. The presence of spikes helps to confirm a diagnosis of epilepsy, provided the history is also convincing. Some people have EEG spikes without seizures, so a history of seizures is needed to make a diagnosis.

The fourth method to diagnose epilepsy is neuroimaging. Neuroimaging looks at the structure of the brain. The two most commonly used neuroimaging tests are a brain CT scan and a brain MRI. A CT is faster, easier and less expensive, but an MRI shows more detail. Neuroimaging cannot show abnormal electrical activity or a seizure itself, but may show physical changes in the brain which may suggest a reason for seizures.



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This MRI shows bruising of both frontal lobes in a case of head trauma, although head trauma without loss of consciousness rarely causes epilepsy. Serious head trauma with prolonged loss of consciousness sometimes does.

People with seizures worry that they might have a brain tumor, like the one seen in this MRI. But fortunately, brain tumors only cause a small percentage of seizures.

This MRI shows a region of stroke, which results from a sudden blockage of blood flow to the brain. Seizures don't cause strokes, but strokes can lead to seizures when brain cells are injured and can no longer control their electrical activity. One stroke can cause ongoing seizures for years.

Abnormal blood vessels in the brain, such as aneurysms, arteriovenous malformations or cavernous angiomas can all cause seizures. The malformation itself does not generate seizures, but the irritated brain cells nearby may.

This is a congenital abnormality of the brain called a dysplasia or a birthmark in the brain. A dysplasia is made up of normal cells in an abnormal location. Dysplasias don't grow, but they are a common cause of epilepsy.

Your doctor will combine information from your history, exam, and if needed, EEG and MRI to determine if you have epilepsy. A diagnosis cannot always be made, but if diagnosis is difficult, you can be referred to an epilepsy specialist for a more detailed evaluation.