

What is an EEG?

EEG is short for **E**lectro**E**ncephalo**G**raph which is the graphic representation of a brain's electrical activity. The brain functions by its cells, neurons, producing tiny electrical signals to communicate with other cells. EEG machines can sense these electrical signals using painless surface electrodes attached to the scalp with a conductor (paste or collodion). The machine records then amplifies these electrical signals and presents them in a form so that the physician may interpret them. In the past the EEG machine produced paper tracings. Now, the EEG machine is a computer that produces a digital "tracing" read on a computer monitor. Often, video is also collected. Again, the EEG test is painless and harmless. It only records the brain activity. No shocks are delivered.

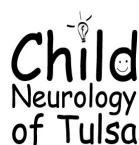
Why have an EEG?

The EEG is intended to (1) help determine if someone may be having seizures or (2) help manage those who have had seizures. Often, EEGs show normal activity even in people with epilepsy. The EEG is often repeated as abnormalities that may help make a diagnosis or guide treatment may not be seen until the 4th or 5th EEG.

Preparing for the EEG

The EEG attempts to record brain activity during the awake and sleep states. Therefore, most EEGs are requested as "sleep deprived." That means that the patient is expected to arrive for the test with having had far less sleep the preceding night to "stress" the brain in hopes of having any potential abnormalities captured on the EEG. From newborns to about 2 year olds (who sleep a lot), no sleep deprivation is needed. At 3 years or older, the general rule is to limit the child to half his/her normal sleep (staying up late and getting up early). The child should arrive to the test having been awake at least two hours. Other requests to ensure a good study are as follows:

- Arrive with clean dry hair (clean the night before)
- **DO NOT USE CONDITIONERS, HAIR SPRAY, OILS** or other products
- Clean hair the night before; do not use any conditioners, crèmes, sprays, holders
- Patient is to take prescribed medications unless asked not to
- Hold infant's upcoming bottle to be given during the EEG to induce sleep
- All other children may eat normally but **AVOID CAFFEINE** (coffee, tea, some soft drinks, chocolate)
- If other children (siblings) must be present, please have another adult present to watch over them in the waiting room as the EEG lab space is limited to one adult.



How is the EEG test done?

The EEG technologist measures the scalp and marks the locations with a grease pencil. Then she applies flat metal electrodes to the scalp with a gel and blows air from a compressor to dry and ensure a good attachment. The gel smells like nail polish. The room is well ventilated with a commercial-grade ventilation fan that keeps the air fresh. Wires from the electrodes are connected to the EEG machine. The test takes about 20-30 minutes with the total time being about 60 minutes. Afterwards, the electrodes are removed and gel is washed out.

During the test, capable children are asked to hyperventilate. All patients have light flashed into their eyes (with a harmless strobe light) which are intended to stress the brain and possibly induce EEG abnormalities. All patients are then asked to try to fall asleep. A bed (padded gurney) is available to rest on. These can sometimes trigger patterns of electrical activity in the brain which are associated with certain types of epilepsy.

Results

- If the EEG is ordered by your primary care physician: EEG results will be faxed to him or her typically within 2 or 3 working days, unless Dr. Siegler is out of town.
- If your child has an appointment with Dr. Siegler following the EEG: Dr. Siegler will review the EEG results with you at that time.
- In certain situations, the results will be called to the ordering physician or established patients.
- Not all abnormalities are diagnostic and is often normal in people with seizures
- Sometimes the EEG pattern will be “diagnostic” and aid Dr. Siegler in providing the diagnosis, prognosis and treatment options for the diagnosed disorder.

Continuous EEG (with or without video):

Depending on your child’s symptoms, a routine EEG may be followed by a longer study (Long-Term Monitoring or LTM) that lasts for several days (typically 3 to 5 days). These studies (depending on the insurance) may be performed in a hospital or at home. The advantages of hospital based LTMs is the potential of treating the child with medications through an intravenous line to help decrease very frequent seizures. The advantage of home-based LTMs includes **less exposure to infectious illnesses, more normal physical activity, less missed time from school and work, no need for childcare for siblings, better sleep and better food. In the hospital, the child’s physical activity is limited to the hospital room and must remain in view of the camera. At home, two cameras are set up in two separate rooms with wide angles allowing more movement. Also, at home, the EEG data is sent wireless to the EEG machine where as in the hospital the child is attached by wire.**

