

## EEG test

The electroencephalogram (EEG) is a medical test used to measure the electrical activity of the brain, via electrodes applied to your scalp. This procedure is completely painless and can be performed without shaving any of your hair. EEG can help diagnose a number of conditions, including epilepsy, sleep disorders and brain tumours. Another name for EEG is brain wave test.

### Conditions diagnosed by EEG

Normal brain waves occur at a rate of up to 30 per second, but in someone with epilepsy, for example, the EEG may show bursts of abnormal discharges in the form of spikes and sharp wave patterns. Suspected epilepsy is the most common reason for an EEG.

Other conditions that may be diagnosed with the aid of an EEG include:

- Sleep disorders (such as narcolepsy)
- Head injuries
- Brain infection
- Brain haemorrhage
- Alzheimer's disease
- Degeneration of brain tissue
- Metabolic conditions that affect brain tissue
- Hormonal conditions that affect brain tissue
- Certain disorders of the central nervous system
- Stroke
- Brain tumour
- Brain death.

### Medical issues to consider

An abnormal EEG doesn't automatically mean that you, for example, have epilepsy. The EEGs of babies and young children can often record irregular patterns that don't mean anything, or the irregularities may flag previously diagnosed neurological conditions such as cerebral palsy. On the other hand, a normal EEG doesn't rule out epilepsy either. Sometimes, a person with epilepsy will only display abnormal brain waves during a seizure.

### EEG procedure

Your hair must be thoroughly clean, but most importantly dry. A number of electrodes are applied to your scalp (generally between 8 and 23, depending on the condition under investigation). A gel may be applied to help the electrodes to stick firmly in place and improve recordings.

You will need to lie quietly to avoid any electrical interference from muscle contractions. Sometimes, you may be asked by the doctor to open and close your eyes and to breathe heavily. Lights may be flashed before your eyes. An EEG usually takes from 30 to 60 minutes to complete. Sometimes, a sleep recording is also required. If the patient is a baby or young child, it helps if the parents delay the child's nap until the time of the EEG.

Sedatives (medications to help sleep) may be needed if sleep won't come naturally during the test. Some EEG testing centres may record a video of your tests to help with diagnosis.

### Immediately after the EEG

Once the test is complete, the electrodes are removed and you are allowed to get up. The results need to be analysed at a later stage by a neurologist (a doctor who specialises in brain disorders).

Generally, if there is no abnormality to the brain's electrical activity, the pattern of 'peaks and valleys' charted by the EEG should be fairly regular. If excited, the pattern will show considerable variation, and any departure from the regular pattern can indicate abnormalities.

## Complications of EEG

EEG is a safe test with no side effects. However, a person with epilepsy may experience a seizure, triggered by the various stimuli used in the procedure, including the flashing lights. (This is not seen as a 'complication' by medical staff, because a seizure during an EEG can greatly help in diagnosis.)

## Taking care of yourself at home

EEG is a safe procedure. Be advised by your doctor, but generally, there are no special instructions for after-care. However, you will need to wash your hair thoroughly to remove all traces of gel and other fluids.

## Long-term outlook

The EEG technologist can't interpret the test results on the spot. The EEG recording must be analysed by a neurologist, who then sends the results to your doctor. It is important to make a follow-up appointment with your doctor. In many cases, the test results are sent to your doctor within 48 hours of the test. Treatment depends on the diagnosis.

## Other diagnostic tests

Other diagnostic tests depend on the condition under investigation. For example, magnetic resonance imaging (MRI) scans and computed tomography (CT) scans may be used in the case of suspected brain tumour.

## Where to get help

- Your doctor
- Neurologist

## Things to remember

- The electroencephalogram (EEG) is a medical test used to measure the electrical activity of the brain.
- A number of electrodes are applied to your scalp.
- EEG can help diagnose a number of conditions including epilepsy, sleep disorders and brain tumours.

**This page has been produced in consultation with, and approved by:**

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