

What is an EEG?

An EEG (electroencephalogram) is a non invasive, painless test which records brainwaves. It is the main investigation used in the assessment and management of epilepsy. Small contacts called electrodes which are about the size of shirt buttons, are placed on the scalp and the signals are amplified and recorded by a computer.

Routine EEG

A routine EEG can be useful for anyone with a diagnosis, or suspected diagnosis, of epilepsy. This is a short recording (up to 45 minutes) performed whilst the person is awake. During a routine EEG activation procedures are often performed (see below).



Ambulatory EEG

An ambulatory EEG recording stores the information in a small recorder, worn in a bag around the waist. This allows you to move about freely.

This type of EEG allows for sleep to occur in the normal environment, and typical day to day activities to continue. On occasions a portable video camera can be used in association with the ambulatory EEG.

The recording may be performed for up to a week; however, periods of 24 to 48 hours are more usual.



Video Telemetry

Video telemetry involves video monitoring taking place at the same time as the EEG recording. The main advantage over the ambulatory EEG is that the person's activities are recorded at the same time as their brainwaves. Another advantage is that additional electrodes can be positioned for a more detailed and widespread recording.

A disadvantage of video telemetry is that the person will need to spend most of their time in the same room, and this can be quite tedious, especially for young children.

Although this test can continue for up to a week, the duration usually varies from 1-3 days. A parent or guardian is required to accompany the person having telemetry.

Activation Procedures

These procedures are used to obtain additional information which is not always evident on the EEG whilst just sitting quietly. However, even though these activation procedures are carried out very carefully, they do carry a slight risk of inducing a seizure in those people who are susceptible (estimated at less than 1 in 1000). There are 5 main types:

Hyperventilation

This involves deep breathing for about 3 minutes (with the use of a windmill to encourage good performance when appropriate). This may cause a light-headed feeling, or tingling of the lips and fingers, which is normal and passes quickly after the exercise. This procedure may enhance changes in the brain activity which could assist in a diagnosis.

Photic Stimulation

A flashing light is watched at different flashing rates, and when possible the eyes are opened and closed as required. The technician will be watching the EEG and the flashing light will be stopped if sensitivity appears. This procedure can be used to help determine if an individual is sensitive to flashing lights (photosensitive).

Pattern Sensitivity & Fixation Off

These are not carried out routinely, but are occasionally necessary. Pattern sensitivity involves looking at a stripy pattern board while it is moved from side to side.

Fixation off involves wearing goggles which prevent the eyes from focusing.

Exercise

This usually consists of the person using a trampette for prolonged periods to see if exercise/tiredness enhances changes in the brain activity.

Sleep Deprivation

The aim is to reduce the number of normal sleeping hours. This usually means going to bed as late as possible and getting up early the following morning. This is to enhance changes in the brain activity related to tiredness.



Drug Reduction

To increase the chances of seizure activity being recorded, the consultant may occasionally request withdrawal, or reduction of some, or all of antiepileptic medication. If this occurs a cannula will have to be inserted into a vein in the arm/hand as a precautionary measure for emergency treatment.