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Medicine for Managers

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The Electroencephalogram

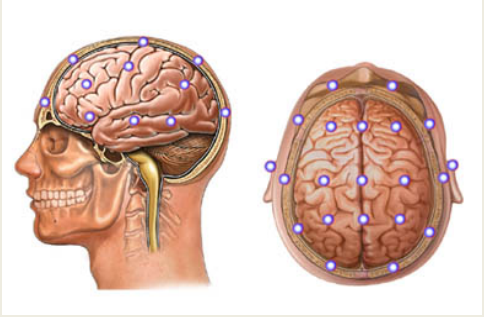
In a recent article I wrote about sleep. A key tool in the study of sleep is the electroencephalogram (EEG) which is a recording used to measure the electrical activity in the brain. It is a simple non-invasive technique achieved by attaching small metal electrodes to the scalp. The operation of the brain involves communication by patterns of electrical waves which are used in the identification of a wide range of brain disorders.

The EEG is very useful because it is effective and non-invasive and may be valuable in the diagnosis of:

- Sleep disorders such as sleep apnoea
- Encephalitis (brain inflammation)
- Head injury, concussion and brain damage
- Psychoses
- Brain tumours
- Stroke
- Dementia and other brain dysfunction

An EEG, usually carried out by a clinical neurophysiologist, can also be used to confirm brain death in a patient who is persistently comatose.

About twenty sensors (electrodes) are placed on the scalp and to help them stick more easily, hair should be clean and free of wax or gel. The electrodes may be held in place with an elastic cap. The sensors are placed in specific areas to coincide with specific lobes of the brain.

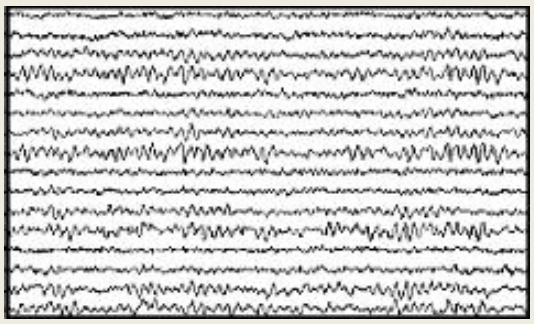


Preparation is minimal and patients can eat and drink normally and take any regular medication unless specifically asked not to do so. The EEG itself takes between 20 and 45 minutes to complete, during which time the patient will be asked to sit and rest comfortably. Requests may be made during specific parts of the test, such as blinking, or speaking.

During the test, which is usually captured on video, signals from the electrodes (brain waves)

are amplified and recorded on computer equipment.

Sometimes, ambulatory EEGs are obtained. They can capture brain activity over a prolonged period and during activity. If being used to study seizures, this may allow a prolonged period to increase the chances of recording actual seizure activity.



There is a small risk that, on occasion, a seizure will occur whilst undergoing the EEG.

A sleep EEG is carried out whilst asleep. It is used mostly to test for sleep disorders. Patients undergoing such tests may be asked to stay awake during part of the previous night to foster sleep when required for the test.

The results are complex and doctors trained to analyse and interpret EEGs review the results and provide reports to the ordering physicians.

The report states the reason and the nature of the technique used, together with the purpose.

It usually reviews findings at rest and during activities. It will report background brain activity, arousal activities, evidence of any seizures, the interpretation and note of any pathological features and, importantly, whether the findings support the clinical findings.

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