



**The Leeds  
Teaching Hospitals**  
NHS Trust

# Clinical Neurophysiology Tests

Information for patients



Leeds Centre for  
Neurosciences

Please note there are several tests described within this leaflet. Please look carefully for the test you are having. This is marked on your appointment letter.

If you are unsure please telephone **0113 392 6855**

## **Electroencephalogram (EEG)**

### **What is an EEG?**

An EEG is the recording of the electrical activity produced by the brain.

It is not painful and has no after-effects. You will be able to drive after this procedure. The test is performed by a physiologist.

### **Preparation for the test**

- You should eat and drink as normal prior to the test
- Continue to take medications as prescribed
- Hair should be clean and dry. Please do not use any hair products i.e. gel, hairspray
- If you have a weave or complex braids please call the department before your appointment as it may affect the test.
- Bring a list of current medications
- The test can last up to one hour

## How is it done?

The test involves attaching 23 electrodes to the surface of the head. The area beneath the electrodes is rubbed with a cotton bud and the electrodes are applied using a sticky paste. This takes approximately 10-15 minutes. Some minor skin irritation may occur. Please make the staff aware if you have a skin complaint or allergy. The electrodes are then connected to the EEG machine.

You will then be asked to relax in a chair whilst the EEG recording is made. A video recording is also made throughout the test. This allows the doctors to see what you are doing and it will record any symptoms you may have. Viewing the video as well as your electrical activity can help the doctors make a diagnosis. The video recording will form part of your confidential medical records.

A copy of the recording may be saved and made available to the medical staff involved in your care. If your video recording is not deemed to be helpful it will be erased, You may be asked to consent for the video to be used for teaching purposes.

A video recording is also made throughout the recording.

This allows the doctors to see what you are doing and it will record any symptoms you may have. Viewing the video as well as your electrical activity can help the doctors make a diagnosis. The video recording will form part of your confidential medical records.

The recording will take approximately 20 minutes. During this time the physiologist will ask you to sit as still as possible and follow instructions such as opening and closing your eyes.

### *Some of the following may be required during the test:*

- **Deep breathing** (this may produce changes in the electrical activity, which can help with the diagnosis). You will be asked to take deep breaths for approximately three minutes. This can cause a feeling of light-headedness and some slight tingling in the lips and fingertips. This is normal and will pass when you return to normal breathing.
- **Flashing lights.** You may be asked to watch a flashing light. This will flash at different speeds for short periods of time and will last for 2-3 minutes in total.

*This may, in rare circumstances, cause a seizure in some patients. However, the physiologist will be closely monitoring you throughout and will try to limit this occurring.*

Once the recording is finished the electrodes and paste are removed. You may wish to wash your hair when you get home.

## **Sleep EEG**

### **What is a Sleep EEG?**

An EEG is the recording of the electrical activity produced by the brain.

It is not painful and has no after-effects. The purpose of a sleep EEG is to record this activity when you are drowsy/asleep. The test is performed by a physiologist.

### **Preparation for the test**

- **So that you are more likely to fall asleep during this test, we request that you take about half the usual amount of sleep that you normally do on the night before this recording.**

- For example, if you normally sleep for 8 hours then halve your sleep time to four hours. If you normally go to bed at 11.00 pm then you would need to get up at 3.00 am. We ask that you get out of bed and perform some absorbing task, like some (quiet) housework. Please be aware that if you stay in bed you could easily fall asleep again.

***Please note sleep deprivation can increase the risk of seizures.***

- You may wish for someone to accompany you, as you may still feel tired.
- You should eat and drink as usual prior to the test.
- Continue to take medications as prescribed.
- Hair should be clean and dry. Please do not use any hair products i.e. gel, hairspray.
- If you have a weave or complex braids please call the department before your appointment as it may affect the test.

**How is it done?**

The test is performed by a physiologist and takes approximately two hours. The test involves attaching approximately 23 electrodes to the surface of the head. The area beneath the electrodes is rubbed with a cotton bud and the electrodes are applied using a sticky paste. This takes approximately 10-15 minutes. Some minor skin irritation may occur. Please make staff aware if you have a skin complaint or allergy. The electrodes are then connected to the EEG machine.

You will then be asked to relax on a bed, the lights will be dimmed and you will be left to fall asleep.

We will record for at least 20 minutes even if you do not fall asleep. If you do sleep, we will record for approximately one hour. A video recording will be made during this time. This allows the doctors to see what you are doing and it will record any symptoms you may have.

Viewing the video as well as your electrical activity can help the doctors make a diagnosis. The video recording will form part of your confidential medical records. A copy of the recording may be saved and made available to the medical staff involved in your care.

If your video recording is not deemed to be helpful it will be erased, You may be asked to consent for the video to be used for teaching purposes.

*We may also ask you to perform the following:*

- **Deep breathing** (this may produce changes in the electrical activity, which can help with the diagnosis). You will be asked to take deep breaths for approximately three minutes. This can cause a feeling of light-headedness and some slight tingling in the lips and fingertips. This is normal and will pass when you return to normal breathing.
- **Flashing lights.** You may be asked to watch a flashing light. This will flash at different speeds for short periods of time and will last for 2-3 minutes in total.

*This may, in rare circumstances, cause a seizure in some patients. However, the physiologist will be closely monitoring you throughout and will try to limit this occurring.*

Once the recording is finished the electrodes and paste are removed. You may wish to wash your hair when you get home.

## 24 Hour ambulatory EEG

### What is an ambulatory EEG?

An EEG is the recording of the electrical activity produced by the brain.

An ambulatory EEG continually records this activity during your normal daily routine. It is not painful and has no after-effects.

### Why have i been asked to have this test?

We want to try and record the events which you have recently reported to your consultant/epilepsy nurse. You have probably already had a routine or sleep EEG which only monitors your electrical activity for up to 2 hours. We often do not record a typical event in this time. Ambulatory EEG can be used to increase the chances of recording an event or to understand how many events you have over a period of time. Even if you are not having frequent events it can help to review your electrical activity over a longer period of time.

### Before the appointment

You should have an appointment letter with this leaflet. Since we want to record your typical events, if you think a different appointment date or time would be more beneficial please contact the department on **0113 3926855** to rearrange the date.

### Preparation for the test

- You should eat and drink as normal before the test.
- Continue to take medications as prescribed.

- Hair should be clean and dry. Please do not use any hair products i.e. gel, hairspray. It is difficult to perform the test if you have a hair weave or extensions, it is ideal to remove these before the test.
- Please wear clothing that has buttons, or a loose neck, as taking your clothes off over your head may disturb the electrodes.
- You may want to bring a hat to wear so the electrodes are not in view when you return home.
- Bring a list of current medications.

### How is it done?

The test is performed by a physiologist and takes approximately 1 hour to 1.5 hour to attach and set up the equipment.

The test involves attaching 23 electrodes to the surface of the head.

The area beneath the electrodes is rubbed with a cotton bud and the electrodes are applied using water soluble paste and a special medical glue. This glue ensures that the electrodes are firmly applied. A head bandage can be used to secure the electrodes in younger patients. Some minor skin irritation may occur. Please make staff aware if you have a skin complaint or allergy. These are then connected to a small recorder box, which is placed in a bag which is worn on a belt around the waist. The box will record your brainwaves for a 24 hour period.

You can then return home and continue the day as usual.

During the test you will be asked to keep a diary detailing



your actions, such as any symptoms, seizures or events and the times you went to bed etc. Please record as much detail as possible about any warning signs, length of the attack or seizure and any triggers you feel might have been involved. Keeping a log of this information is a vital part of the test. This will be explained fully by the physiologist during your visit.

It is strongly advisable that you have someone who knows your events with you during the test set up and at home. If you do have any typical events during the test they can attend to you and help you complete the diary.

You must keep the bag attached to you around the waist at all times, even when you are in bed.

You are not able to have a shower or bath at all during the test. The equipment must not get wet.

Though you should behave normally, try and avoid repetitive physical movements such as running on a treadmill.

Please avoid chewing gum for prolonged periods as this interferes with the recording.

You will be given a time to return the following day to have the equipment removed.

The electrodes are removed using a solution which dissolves the glue. Small traces of glue will remain in your hair and it will feel greasy. You will need to wash your hair with shampoo when you get home.

Though unlikely, if you have any problems with the glue after you leave please do not hesitate to contact the department who can help and advise you with this.

## 24 Hour Video ambulatory EEG

This is an ambulatory test with the addition of a video camera which will film you during the test. This is useful for certain types of events, such as night time events or for patients who have no one to witness their events.

The neurophysiology consultant will decide if this is a more suitable test for you.

If so a staff member will attempt to talk to you over the phone before your appointment so you are fully informed of the details of the test. You have the option to decline the video but it is beneficial in trying to understand and diagnose your events.

If you are having this test you will need to read the 24 hour ambulatory EEG instructions above. In addition you will be given a camcorder at your appointment. You will be given clear instructions on how to use it and where best to keep it once you are home. It is best to keep it filming at all times (except bathroom visits) both when awake and asleep so we can record your behaviors and any events which may occur in the 24 hour period. The camera will also record sound so we can hear what happens during an event.

### Other factors to consider

whoever is in the room may also be filmed. When you consent to the test it means you consent to the physiologist and the consultant to view the video with sound. This means they can see and hear whoever is recorded on the camera.

This is a specialized piece of medical equipment which is your responsibility once you leave the department until you return

it to the hospital. This includes when you are traveling to and from your home.

The camera is taken home in a protective case. It is bulky so please consider your transport to and from the hospital.

Once home you must not take the camera out of the house.

It is advisable to have a friend or family member with you for the test period as they can help with maintaining the diary and help with carrying and setting up the equipment. They can also help to make sure you are on camera if you have an event.

You will need to return the camera when you come back the following day.

## Nerve Conduction Studies (NCS) Electromyography (EMG)

### What is NCS?

It is a test to help assess the function of the nerves in the arms and legs.

You will have NCS and then depending on the results you may need to have an EMG (electromyography).

### Preparation for the test

- You should eat and drink as normal prior to the test
- Continue to take medications as prescribed (however, if you are taking blood thinning tablets, such as **Warfarin**, you should contact the department as soon as possible).

- **If you have a pacemaker, implanted device or cardiac defibrillator fitted you MUST telephone the department to discuss this as it may affect how the test is performed.**
- Please wear clothing that can be easily removed or rolled up. On the day of the test please remove all jewelry from your hands and leave it at home.
- Try to have hands and feet as warm as possible and avoid using lotions or creams for at least 24 hours prior to the test
- Bring a list of current medications.
- The test can last up to one hour.

### **How is it done?**

The test is performed by a physiologist and/or a consultant neurophysiologist and takes approximately 30 minutes.

The test involves attaching electrodes to the appropriate limbs to record the response from nerves. Other electrodes are used to stimulate nerves. This involves delivering a small electrical impulse to the skin. This is a slightly uncomfortable sensation but only lasts for a few seconds at a time. This may result in twitching of the muscles. This only affects the nerve in a small controlled area. It will not affect the heart. Several nerves may need to be assessed.

There are no after-effects from this test.

### **What is an EMG?**

Not all patients will require an EMG following the nerve conduction tests. An EMG is the recording of the electrical activity that is naturally produced in your muscles. The test will be performed by a consultant neurophysiologist.

A fine needle is used for this test, and although a sharp scratch is felt as the needle is inserted, the majority of our patients do not consider this test to be unduly uncomfortable. This allows the electrical information to be assessed on a screen. Several muscles may need to be tested during this examination.

The muscles tested may feel sore for a short time after the examination. The needle(s) may cause a small amount of bleeding and there is a chance of localised bruising. You will be able to drive after this procedure.

**If you have a pacemaker, implanted device or cardiac defibrillator fitted you must telephone the department to discuss this, as this may affect how the test is performed.**

## **Electroretinogram (ERG)**

### **What is an ERG?**

ERG stands for electroretinogram. This records the electrical activity from the nerves in the eye.

Although it is not painful, some parts of the test can be irritating or slightly uncomfortable. Sometimes eye drops may be needed, which can cause blurred vision for a few hours, so you should not drive after the test.

Hair should be clean and dry. Please do not use any hair products i.e. gel, hairspray.

## Preparation for the test

- There are no special preparations needed before this test. You can eat and drink and continue to take any medication as normal.
- Bring a list of current medications.
- Please bring your glasses or contact lenses with you.
- The test can last up to two hours.

## How is it done?

Some electrodes will be attached to your head. The skin beneath the electrodes is rubbed with a cotton bud and the electrodes are attached using a sticky paste. Some minor skin irritation may occur. Please make staff aware if you have a skin complaint or allergy. Some electrodes need to go near the eye.

Two types of electrodes are available. One sits close to the eye, this means it can be slightly uncomfortable, but not painful. The other is a sticker which sticks to the cheek below the eye.

The physiologist performing the test will discuss both options with you and will decide which is most appropriate for you.

You will then be asked to watch either a pattern on a TV screen or flashing lights. This will be performed in both light and dark conditions. Once the recording is finished, the electrodes and paste are removed.

## Visual evoked response (VER)

### What is a VER?

A visual evoked response is a recording to check the nerve pathway from your eyes to your brain.

It is not painful and has no after-effects.

## Preparation for the test

- You should eat and drink as normal prior to the test.
- Hair should be clean and dry. Please do not use any hair products i.e. gel, hairspray.
- Continue to take medications as prescribed.
- If you wear glasses, please bring them with you.
- Bring a list of current medications.
- The test can last up to one hour.

## How is it done?

The test involves attaching electrodes to the head. The skin beneath the electrodes is rubbed with a cotton bud and the electrodes are applied using a sticky paste. Some minor skin irritation may occur. Please make staff aware if you have a skin complaint or allergy.

You will then be asked to watch a moving pattern, which will be shown on a monitor. Alternatively a flashing light may be used. A series of recordings on a computer will be made. This lasts approximately 15 minutes in total.

Once the recording is finished the electrodes and paste will be removed. You may wish to wash your hair when you go home. The test is performed by a physiologist.

## Test results

All results will be analysed by a consultant who specialises in neurophysiology. The report will not be available immediately but should reach your GP/Consultant within 7-14 days.

**We welcome feedback about our services. Please tell a member of staff if you felt this service was good or otherwise.**

*Further information about EEGs is available from numerous organisations including:*

UK Epilepsy Helpline: **01494 601400**

or visit [www.epilepsynse.org.uk](http://www.epilepsynse.org.uk)

Helpline (Freephone): **080 8800 5050**

or visit [www.epilepsy.org.uk](http://www.epilepsy.org.uk)

If you have any queries or questions regarding the information in this leaflet, please contact the Neurophysiology Department on **0113 392 6855**.

Large print copies are available on request from the department on the number above.



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***Your views matter***

