

*Information for patients*

# What is an EMG/Nerve Conduction Study?



Department of Neurophysiology

**We must obtain your consent for any procedure beforehand. Staff will explain all the risks, benefits and alternatives before they ask for your consent. If you are unsure about any aspect of the proposed procedure, please do not hesitate to ask for more information.**

## **What is an EMG/Nerve Conduction Study?**

This is a routine test performed in specialist hospitals. The EMG (electromyography) records the electrical impulses that your muscles produce. The Nerve Conduction test measures the speed at which impulses travel along a nerve. These tests help us to work out how well your nerves and muscles are functioning. They are often referred to collectively as an EMG test and may incorporate one or both of the above techniques.

## **What does EMG stand for?**

- Electro-** The electrical impulses that are being measured.
- Myo-** Muscle.
- Graphy-** The way the results of the test are presented.

## **How do EMG/Nerve Conduction studies work?**

**The Nerve Conduction Study** records how fast nerves send messages to the brain and back. In the test, we stimulate the nerves using electrodes placed on the surface of a person's skin. We can then record how fast the impulse travels to another point, where it is recorded using a surface electrode placed on the skin (on rare occasions a fine needle electrode in the muscle may have to be used to take a recording). This tells us how fast the nerve is working.

**EMG** studies the electrical activity of the muscles. This is usually recorded using a small needle electrode inserted through the skin into the muscle, which produces a short pinprick sensation. Once in place the activity in the muscle can be observed at rest and then whilst being used.

### **Please note: (parents and guardians)**

We have no provision for accompanying children to be supervised whilst you are having your EMG. If you have any problems arranging childcare, please ring the department to discuss this.  
Tel: **0114 271 2129**

### **Is having a Nerve Conduction/EMG Study safe?**

During the nerve conduction test we stimulate the nerve and this results in you feeling a tapping/tingling sensation. Most people do not find this too uncomfortable. If you have a cardiac **pacemaker** implanted, then please tell the technician and the doctor before you have the test, you can still have the test but we need to modify the position of the electrodes slightly.

If you are taking **anticoagulant (blood thinning) treatment, for example, Warfarin tablets**, please tell us when you ring to make your appointment. You can still have the nerve conduction part of the test but we may not perform the EMG.

### **How will the test help me?**

The measurements and observations that we take from these tests help us to find out whether the problems you are having are caused by trapped or damaged nerves in your arms, legs, neck, back or face. We also use the tests to investigate a wide range of nerve and muscle disorders. The results from the tests help your consultant to make a diagnosis and to provide the right treatment for you.

## Where is the test done?

We do these tests in a recording room on N floor at the Royal Hallamshire Hospital. In the room is a couch, some chairs and medical equipment. A technician and a doctor will be present during your test but there will still be room for you to bring someone with you if you wish.

## Is there anything I need to do before the test?

Before you have the test, you should:

- Remove any jewellery, as this will make it easier for us to attach the electrodes. Leaving your jewellery at home is also a better way of keeping it safe.
- Wear clothing with short sleeves and/or loose clothing e.g. loose trousers or a skirt, as this will make it easier if we need to look at your legs or arms.
- Avoid using lotions and creams before your test as cream or lotion on your skin can make it difficult for us to attach the electrodes.
- Eat and take any medication as normal. It is helpful if you bring a list of your current medications with you.

## What happens before the test?

On the day of your test, our technician will take you into the room where the test will be done. They will make you comfortable on the couch. If your hands and/or feet are cold then we will put them in warm water to warm them up, this is because if your skin is cool it can affect the results. During this time you will be able to ask any questions you have and the technician will be happy to help where they can or they will ask the doctor to answer your queries.

## What happens during the test?

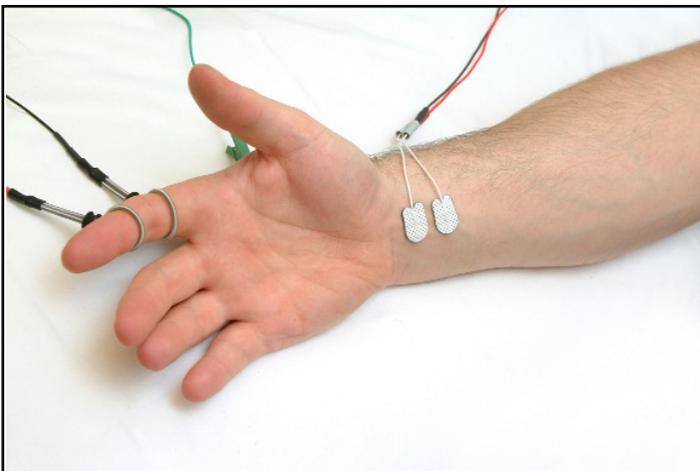
There are 3 parts to the test and these are described below. You may not need all three, this depends on your clinical problem and the doctor's findings during the test.

### Part 1 Sensory nerve testing

During this test you need to stay as still and relaxed as possible. First we clean your skin with an alcohol wipe. This improves contact between your skin and the electrode giving much better results.

Then the nerves, which supply sensation are tested using ring electrodes on the fingers or button electrodes on all other parts of the body. For a short time during the test you will feel a repetitive tapping/tingling sensation.

We will also need to make some measurements between the electrodes using a tape measure and a marker pen. This does mean that some small dots are made on your skin but these will wash off. The test checks your sensory nerves for any delays in sending messages along your limbs.



## Part 2 Motor nerve testing

This test also allows us to check the nerve supply to your muscles. You will feel a tapping/tingling sensation similar to that felt during part 1, this time it is caused by a muscle being stimulated. You will also see that the muscle being tested twitches. Again we will mark points and take measurements. Any delays in the stimulus being transmitted can give valuable information to the doctor about the nerve supply.



## Part 3 EMG Testing

If we need to look at your EMG signals, we will insert a small needle into the muscles to be tested. The needle we use is for single use and is disposed of after each patient. It is specifically designed to carry a fine recording wire. The Doctor will examine any electrical activity whilst the muscle is at rest. During the next part we will ask you to use the muscles so that we can observe their pattern of activity. The activity is displayed on a screen and

can also be heard on a speaker as a crackling sound. We may repeat the test for different muscles. This activity helps the doctor to decide whether the problem is a disorder affecting the nerve supply to the muscle or a disorder of the muscle itself. This is very important when making a diagnosis.



### **How long will I be at the hospital?**

Your appointment lasts about 45 minutes and whilst we try to keep to appointment times, very occasionally there can be a delay.

### **When will I get the results?**

You will not get the results on the same day because we will need to make further measurements and analysis of them. This is usually done within two days. The consultant who referred you for the test will be sent a report by post.

## What if I want any further information?

If after reading this leaflet you would like any further information, please ring the Department of Neurophysiology, Royal Hallamshire Hospital on:

**0114 271 2129** Mon-Fri 08.30-16.30



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