

# Nerve conduction studies

## What are nerve conduction studies?

Nerve conduction studies investigate how the nerves in your arms and legs are working. Nerves allow messages to pass as electrical impulses between your brain and the rest of your body. Sensory nerves are the ones that take messages from the skin, muscles and joints to the brain. They detect pain, movement and temperature. (Your senses, such as sight and taste, are very specialised sensory nerves). Motor nerves take messages from the brain and spinal cord to the muscles to get you moving. Nerve conduction studies can be used to test how both sensory and motor nerves are working in different parts of the body.

## What are they used for?

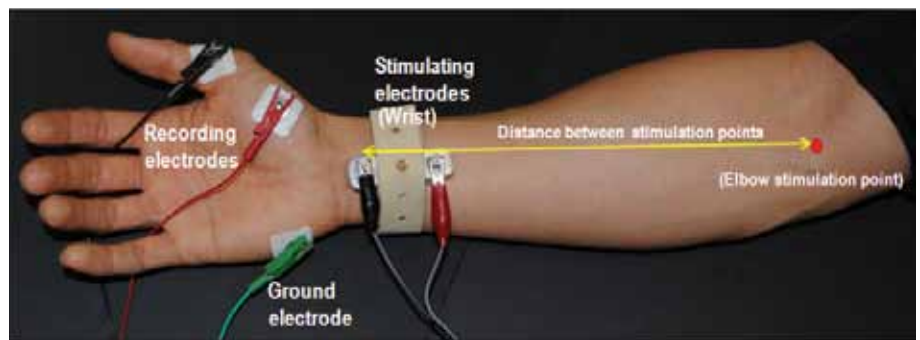
Nerve conduction studies are mainly used to help work out which part of a nerve or muscle isn't working well and if it is just one nerve or a more general problem. Nerve conduction studies are useful to investigate certain types of pain, unusual sensations such as 'pins and needles' and some forms of weakness.

Common conditions include carpal tunnel syndrome, which causes hand tingling; accidents that may have injured a nerve; or numb feet from diseases such as diabetes. Nerve conduction studies can also be helpful to monitor recovery and to check if certain medications are affecting the nerves.

Nerves need two key things to function well – the nerve itself (axon) that conducts the electrical impulse and a special coating insulation (myelin) that helps the impulse move quickly along the nerve. Nerve conduction studies help to distinguish which of these is causing the problem.

## What do nerve conduction studies involve?

Nerve conduction studies work by applying a small electrical impulse through your skin and measuring the response. This is done by applying pairs of sticky dots (electrodes) on



different spots. Usually the tests are done on your arms and legs but this varies depending on why you are having the test (see photo). One of the electrodes is used to deliver a small electrical signal to a nerve and the other electrode is used to detect the response.

Testing takes between 15 minutes and 1 hour, depending on how many nerves have to be checked and how complicated it is. Nerve conduction testing is done by a specially trained clinical neurophysiologist (usually also a neurologist) and you will need to book an appointment. The results are made available to your doctor in about 1 week, and you need an appointment to discuss what the results mean for you.

## Are they safe?

Nerve conduction studies are safe and the electrical impulses used are small. If you have a pacemaker or other internal heart device, make sure that someone checks with your heart specialist that it is compatible with the test.

## Will it hurt?

No. The electrical impulses are usually described as a 'tapping sensation' and most patients do not find it uncomfortable.

## How do I prepare for one?

You can take all your usual medications and you do not need to fast. You can immediately return to normal activities such as driving. Avoid applying moisturisers and other creams on the day as these can affect the test. Wear loose clothing that

allows access to your arms and legs and keep warm – nerves don't work as well in the cold.

## What will the test cost?

Some or all of the fee will be covered by a Medicare rebate but you should check what out-of-pocket expenses may be required.

## What will the results mean?

The results of nerve conduction studies are compared to 'average' people of the same age. Your test results need to be interpreted carefully by a doctor who is familiar with your medical history. In general, the results may show where along the nerve pathway your problem is and if the problem is mainly due to the nerve itself (axon) or the coating (myelin). Together with your medical history and other information this may help work out what is causing your symptoms and therefore what the treatment might be. Sometimes the nerve conduction study will not show what the problem is, and further tests may be needed. It is essential that you discuss the results with the doctor who ordered the test for you.

## Where can I find further information?

- Check with your GP or neurologist for further information
- The Brain Foundation has general information about many neurological disorders: <http://brainfoundation.org.au>.

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