

## What did other patients say about the testing?

-“The test was fine, at first I was scared but did not need to be. Everything was explained before the test”

-“I went through the test and it was quite tolerable (was a bit nervous in the start). Liked the professionally and sense of humour of the examining doctor. The test went smoothly and the electric pulses were very short. At the end, I was able to understand what is causing my symptoms”

**Please note that this brief summary is for general information and was not intended to review the issue. If you have any query or had any other unusual symptom, please do not hesitate to tell your doctor. It will help if you make a note of what you have experienced, when it started and how long it lasted.**

**We welcome feedback about our services. Following the test we would be grateful if you would complete a Patient Satisfaction Survey**

**Dr. El Miedany would like to thank Dr. Delamont, consultant neurologist, for reviewing this leaflet and for his valuable comments.**

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## Nerve conduction testing Severity Scale

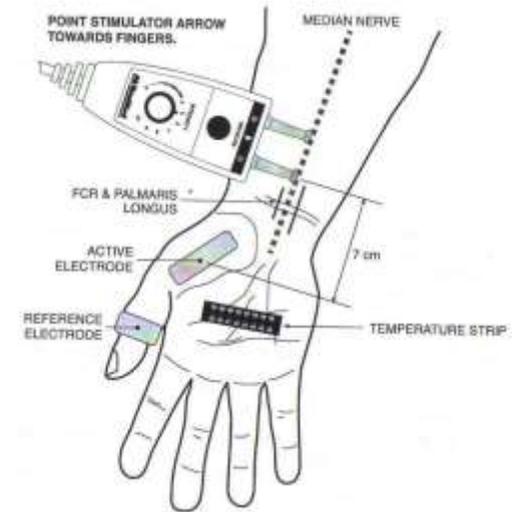
If you have a copy of your own nerve conduction studies to hand you may be able, as a patient, to translate the result to this grading if the details given are adequate. If you are about to attend for testing you can take the following guide to grading to the clinic and ask them what grade your results fall into.

- **Normal (grade 0):**  
(if both Distal sensory latency and distal motor latency measurements were normal, the doctor may perform one or more of the sensitive comparative tests described in the literature for CTS (see over leaf), though exactly which one does not matter. This requirement is according to AANEM guidelines.
- **Very mild (grade 1):**  
CTS demonstrable only with the most sensitive tests
- **Mild (grade 2):**  
Slow sensory nerve conduction velocity on finger/wrist measurement, normal terminal motor latency
- **Moderate (grade 3):**  
Slow sensory potential and motor response, distal motor latency to abductor pollicis brevis (APB) < 6.5 ms
- **Severe (grade 4):**  
Sensory potentials absent but motor response preserved, distal motor latency to APB < 6.5 ms;
- **Very severe (grade 5):**  
motor terminal latency to APB > 6.5 ms;
- **Extremely severe (grade 6):**  
Sensory and motor potentials effectively unrecordable. (Unrecordable surface motor potential from APB is technically defined as <0.2mV peak to peak amplitude).

### References:

- Bland J. Muscle Nerve. 2000; 23(8):1280-3.
- East Kent University Hospitals (Decmeber 2011):  
<http://carpal-tunnel.net/diagnosing/sevscale>.

## Nerve Conduction Testing



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## Nerve conduction testing

Nerve conduction studies (NCS) is the most common method for confirming the diagnosis of CTS. Nerve conduction tests can also detect causes of symptoms that mimic CTS but are caused by other problems, such as pinched nerves in the neck or elbow, thoracic outlet syndrome or inflammation of the peripheral nerves caused by systemic diseases such as Diabetes Mellitus. NCS aims at measurement of the conduction of the median nerve sensory and motor fibers across the carpal tunnel. Slowing of the conduction at a fixed distance outside normal range is indicative of nerve compression and is diagnosed as carpal tunnel syndrome. However, outcomes of the NCS vary according to the degree of median nerve compression, hence rating of CTS severity was developed to guide the treating doctor.

### .Preparing for nerve conduction testing:

- 1.You should not use creams or emollients on your hands and feet (the most common sites of your nerve tests) on the day of the test, and preferably since your last shower or bath.
2. Please advise the doctor performing the test if you have a pacemaker or other similar devices.
3. Please advise your doctor if you have epilepsy or on treatment for epilepsy.
4. Wear loose clothes as you may need to roll up your sleeves to mid arms or above.
5. Examination and NCS may take time. Be sure to allow extra time to check in.
6. It is advisable that you refrain from smoking for 3 hours before the test. Do not eat or drink foods that contain caffeine (such as coffee, tea, cola, and chocolate) for 2 to 3 hours before the test.

## How do Nerve Conduction Testing Work?

Small electrical pulses made by a machine are used to mimic the electrical signals made by nerves. By attaching an electrode (small device that is able to detect electricity or supply electricity) to the skin the nerve can be stimulated with a very small electrical pulse. If the nerve is attached to a muscle, the muscle will contract in response to the electrical signal.

To test sensory nerves, the electrodes are usually attached to the fingers or toes with another electrode either at the ankle or wrist. When the electrical pulse is applied to the fingers or toes the sensory nerve carries the electrical signal away from the arm or leg. The electrode at the wrist or ankle detects the electrical impulse when it reaches that point.

The electrodes are connected to a machine which generates the impulses and detects them. It can measure the time taken for the impulse to travel in the nerve from the first electrode to the second. This information, plus the distance between the two electrodes, can be used to work out the speed at which the impulse is travelling along the nerve. This is referred to as the conduction velocity. It is quite fast - usually, 50-60 meters per second.

Nerve conduction studies can also be used to measure whether the size of the electrical impulse decreases as it travels along the nerve.

### .What is nerve conduction testing used for?

Nerve conduction studies are used for a wide variety of reasons including:

- To check for trapped nerves such as median nerve at the wrist (Carpal tunnel syndrome) or ulnar nerve at the elbow (cubital tunnel syndrome)
- To assess nerve damage following an injury.
- To check for damage to nerves, caused by conditions such as diabetes.
- To test for conditions affecting the nervous system.
- To test for nerve root entrapment in the neck or lower back.

## What happens during Nerve conduction testing?

In this test, several electrodes will be attached to your skin. The electrodes can be stick-on or made of small felt pads soaked in salt water solution.

A pulse-emitting electrode is placed directly over the nerve to be tested. If the nerve controls a muscle, a recording electrode is placed over the muscles under control of that nerve. Several quick electrical pulses are given to the nerve. The electrical pulses are very brief and feel like a sharp tapping sensation on the skin. Most people do not find this too uncomfortable. The time it takes for the muscle to contract in response to the electrical pulse is recorded. The speed of the response is called the conduction velocity.

If the nerve being tested is a sensory nerve the recording electrodes are placed in a position that will record the impulses going back toward the brain (usually a finger). The same nerves on the other side of the body may be studied for comparison, if required.

Nerve conduction tests may take from 15 minutes to 1 hour or more, depending on how many nerves and muscles are studied.

### Are there any Possible Side Effects or Complications?

While it may sound alarming to have an electrical impulse applied to your skin, the amount of electricity that passes through you is very small. Most people tolerate the test very well and have no side-effects or complications after the test.