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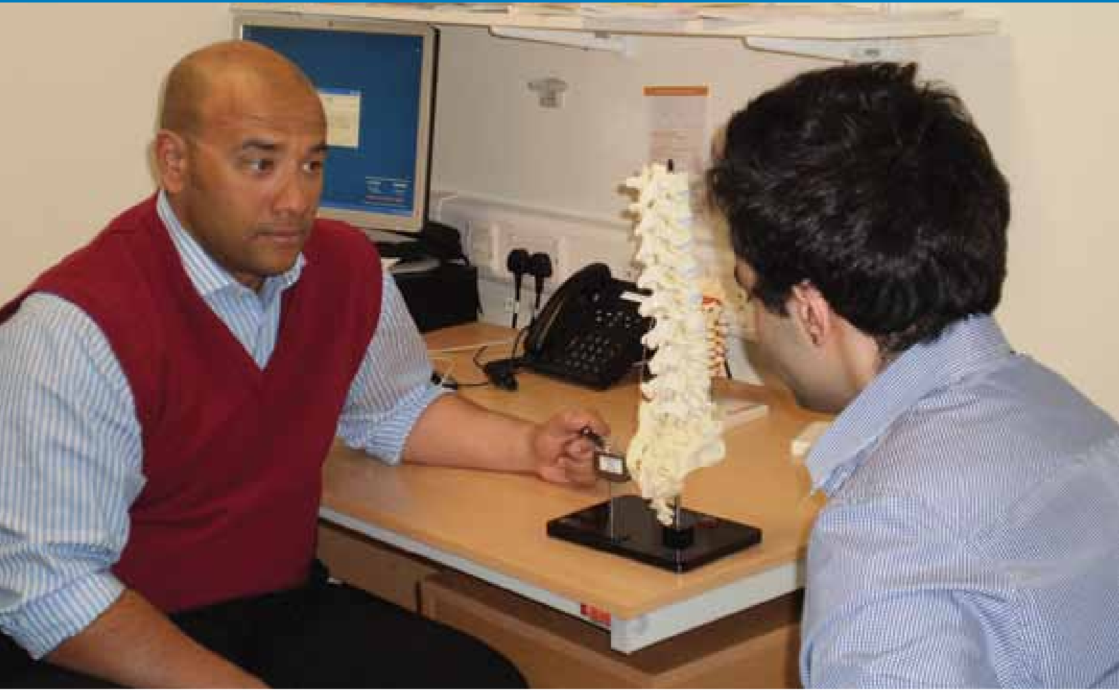
Spinal cord stimulation for chronic neuropathic (nerve) pain



Pain Centre
Irving Building
0161 206 4002

Health & care information you can trust
The Information Standard Certified Member

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Spinal cord stimulation for chronic neuropathic (nerve) pain

Chronic or persistent pain means that you have pain which has lasted for more than 6 months, and in some cases it can last for most of a lifetime. The chronic pain that you have may be able to be helped by a spinal cord stimulator. This leaflet explains more about stimulating the spinal cord for chronic pain. We would recommend that you read the 'Explaining Pain' leaflet first that explains more about chronic pain in general.

Why do we feel pain? What is its job or function?

Normally the job of pain is to tell the body about damage which can be from an injury or a disease and to help make decisions about what to do. However, in chronic pain, our most up to-date research tells us that something different is going on, the pain is no longer serving a useful function; it is a real sensation but not a useful one. There is a lot of research to show that in chronic pain there are changes in the way that the whole pain system is working.

These changes affect:

- How the pain messages are carried around the body
- How the brain makes sense of the messages
- What happens in the pain messaging system

Messages from the body about damage, light touch, heat, cold and pressure are sent to the brain using small nerves. These nerves are like small A and B roads which become bigger nerves (dual carriageways) and then the spinal cord (motorway) to eventually reach the brain. Pain messages, like cars, go in both directions to and from the brain.

If you were to cut your foot, nerves send the message to the spinal cord where it makes a connection – the information is passed to other nerves before it goes to the brain. Some of these messages in the spinal cord can be blocked by other messages that compete for 'the right of way'. When you rub an injured part of your body the rubbing messages block some of the damage messages. The 'damage' traffic slows to going in just one lane as another lane is opened for the 'rubbing' traffic.

When the "damage" message reaches the brain it goes to different departments which handle the information in slightly different ways. There are separate departments that:

- Work to focus our attention on the area that is painful
- Identify the location of pain and what it feels like (e.g. hot)
- Influence our movement
- Guides decision-making and planning about how we manage it
- Creates an emotional response (e.g. anxiety, anger, depression).

All these areas working together make up what we experience as pain. They happen without the person being aware of the process. All we know is that we have pain in one or more areas.

In **acute pain** (new injury), pain is very important. It makes us rest and protect the injured area so that no more damage happens and things have a chance to heal. However, even then, it is possible to have an increase in pain without further injury. Think of a new, purple, swollen bruise. What does it feel like if someone gently prods it? Gentle pressure on the bruise does not cause further damage – but it will certainly cause pain!

In **chronic pain** it is as if the useful changes that happen to the messaging system after an injury don't 'switch off' - even though any healing has finished.

The messages continue to be sent even though there is no more damage. It is a bit like having a fire alarm system that has gone off and keeps ringing even when the fire has been put out. Medical science has not yet discovered why the pain messages system stays "switched on" for some people after injuries have healed.

In chronic pain (no new or further damage), these initially useful sensations don't switch off, even though information has stopped and healing is complete.

- Pain "gates" (in the spinal cord) open and let through messages, which would not normally be painful (e.g. stretch and touch)
- Chemicals circulating in the body as a result of stress, fear or anxiety can increase the sensitivity of these gates
- Each message can set off many other nerves effectively turning up the 'volume' of pain
- Messages and nerves can fire off randomly with no stimulation at all
- Normally 'inactive' nerves in the area 'wake up' and become sensitive
- There are areas in your brain which have "memory maps" for pain. They can continue to signal pain even when there is no message coming from the original area of injury. This is similar to what happens in other pain conditions e.g. phantom limb pain where part of the body has been amputated but the experience of pain from that area continues as if the limb was still present and had recently been damaged. The brain, then, can become 'tuned' to expect pain. Being on 'high alert' makes it more likely that non-painful sensations get changed into pain sensations
- Thoughts, emotions and concentration can affect how we experience pain. Pain intensity can be reduced at times of excitement and increased at times of stress.

How does stimulating the spinal cord help with pain?

Stimulating the spinal cord blocks some of the pain messages directly or sends a different sensation (message) to the part of your body that is experiencing the pain and partially blocks the pain 'lane'. This stops some of the pain signals from going to your brain. We now know that if we send small amounts of electricity to specific parts of the spinal cord this can change the way in which pain signals are understood. This can reduce the pain in some people.

There are two types of spinal cord stimulators and the team will decide which one will be the most appropriate for your pain condition. The main difference between them is that you will either feel no sensation from the device or alternatively you will experience a tingling sensation in the area of your pain.

Stimulating the spinal cord will not reverse the stiffness in your muscles and joints which have set in because you have had pain for a long time. It is therefore important to gradually increase your activity levels, and we may be able to offer rehabilitation and support to help you do this. We know that when people are able to do more, their quality of life improves and the distress that often comes with being in pain can start to go away.

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What does a spinal cord stimulator consist of?

You will be shown all the equipment when you meet with our Specialist Nurse for Spinal Cord Stimulation.

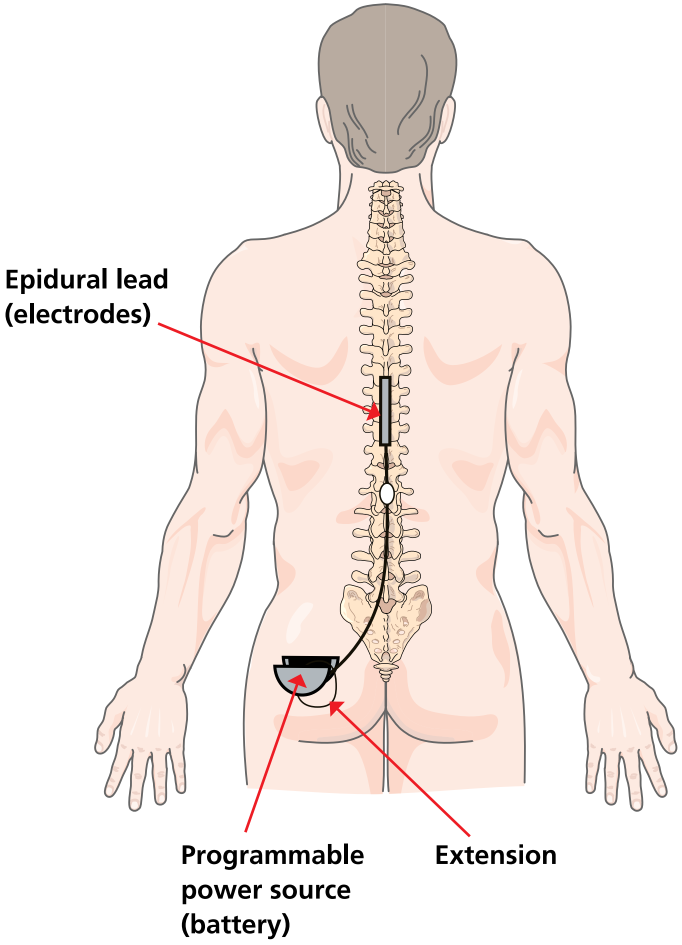
The doctor will place either 1 or 2 wires called an **electrode** is placed in the space (epidural space) above your spinal cord. These electrodes are inserted through a needle in your back under local anaesthetic. The wires come out through the skin and is connected to a **hand held controller** which allows you to adjust the stimulator programmes and switch the stimulation on and off. The procedure takes 1-2 hours .You will have this system for 7-10 days. During this time period you can decide whether the stimulation helps with your pain and allows you to do more, use less medication, or sleep better.

If you, together with our team, feel that the stimulator is helping you manage your pain, the wires coming out of your skin will be cut. You will still have the electrode in your spine and it will be used to complete the system. You will be brought back to the operating theatre and the electrodes will be connected to a mini-computer which has its own battery. This is the size of a small matchbox and is normally placed under the skin just above your buttocks. The completion procedure takes about an hour and is also done under local anaesthetic. You will continue to use the handheld controller to manage the mini-computer by placing it on the skin above the battery or it may use bluetooth connectivity.

If you do not feel that the stimulation is useful we will remove the electrode. This is a minor procedure which is done in the operating theatre under local anaesthetic and takes approximately 10 – 20 minutes.

The SCS system basically has two components:

- Epidural lead (electrodes)
- Programmable power source (battery)



Spinal cord stimulation can provide good to excellent pain relief in 50 - 70% of carefully selected patients who have not responded to medication or injections and surgery.

We may not be able to insert the electrode (lead or wire) into the right place or if required we may not be able to get tingling sensation in the area of your pain.

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What are the risks of having a spinal cord stimulator?

There are risks with any operation. Most of the problems that can happen with spinal cord stimulators are quite minor, but there are a few rare problems that you should know about. It is important that you ask your specialists about how common the following problems are.

Complications	Number of patients with this problem out of every 100 who have a stimulator
Lead migration	2
Lead breakage	1
Hardware malfunction	1
Battery failure	1
Postsurgical complications	
Infection	3
Headache	0.3
Spinal blood clot	0.3
Other complications	
Undesirable stimulation	1
Pain over implant	10
Battery erosion	2

- The electrodes in your spine may move and the tingling may not be in the area of your pain. You may need more surgery to move the electrode. Usually about one person out of every 100 needs more surgery for movement of the electrode.
- The battery will need replacing. This can be between 5 and 9 years.
- You may develop an infection as a result of the operation. Most infections don't cause serious problems, but your doctors may need to take out all or part of the spinal cord stimulator to be able to treat the infection properly. The chances of getting an infection are around 3 out of every 100 patients.
- As with any operation on the spine there is a chance that the spinal cord or the spinal nerves will be damaged. This is very rare, but it is of course something that we look out for in the first few hours after your operation. There has only been one case of paralysis with a spinal cord reported in the world.
- You may feel discomfort in the area around the cuts we have to make when we insert the electrode or mini-computer.

Is spinal cord stimulation effective in everyone?

The amount of pain relief varies from person to person and we regard successful spinal cord stimulation as more than a 50% reduction in pain. We consider spinal cord stimulation in patients who have pain from nerves which have been damaged from the pressure of a disc in their backs and who have pain despite having had surgery for this problem. The other groups of patients are those with nerve pain in a leg or arm due to a disease called Complex Regional Pain Syndrome or patients who have damaged nerves from trauma.

The tingling feeling can change with body position as the spinal cord moves relative to the wire. This happens more in the first 6 weeks.

Spinal cord stimulation is a big commitment and does not work for everyone. It is important for us to be sure you will benefit and for you to be sure that it is something you want to try.

Living with a spinal cord stimulator

During the first few weeks after the electrode is inserted you need to avoid excessive lifting, bending or twisting to allow the lead to fix. If your stimulator produces a tingling feeling this can change with body position as the spinal cord moves relative to the wire. This happens more in the first 6 weeks. There are systems like airport security gates which have a magnetic field which can affect the spinal cord stimulator and some medical investigations such as an MRI scan are not allowed with a stimulator.

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What happens next?

It is important that you understand the information in this leaflet. The doctor you have seen will refer you on to a Consultant in the Pain Centre who specialises in spinal cord stimulation (unless you saw this Consultant at your first visit). After you have seen this Consultant you may then be referred to see our Clinical Psychologist We include this step because spinal cord stimulation is a long term commitment, and to also begin to think about the way pain has affected your life and how we may be able to help you gain back some of the quality in your life. The final assessment is to see a Specialist Nurse in Spinal Cord Stimulation. They will assess your suitability for this treatment and show you the equipment. You will be asked what you thought about the information in the leaflet and what was discussed with your family. The team will then decide if this treatment will be of benefit to you. Prior to having a trial of spinal cord stimulation you will have a preoperative assessment.

You will be asked to complete some pain assessment questionnaires both prior and during the spinal cord stimulator trial this information helps us to determine how beneficial this treatment has been for your chronic neuropathic pain. You will be asked to keep a written diary of how you have felt during the trial of spinal cord stimulation.

If you have any questions please contact:

✉ Manchester and Salford Pain Centre

Salford Royal NHS Foundation Trust

Stott Lane

Salford

M6 8HD

☎ **0161 206 4002**

For more information you may want to look at the following resources:

Books (these may be available from your local library)

- **Butler, David S., and G. Lorimer Moseley.** *Explain Pain: Noigroup Publications, 2013.*
- **Shone, N. (1993).** *Coping Successfully with Pain (Overcoming Common Problems). Macmillan Reference USA.*

Weblinks

- http://www.britishpainsociety.org/patient_home.html
- http://www.neuromodulation.com/
- http://www.nevro.comhttps://www.sjmglobal.com/en-int/patients
- http://www.medtronic.com/healthconsumers/index.htm
- http://www.poweroveryourpain.com/

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In accordance with the Equality Act we will make 'reasonable adjustments' to enable individuals with disabilities, to access this treatment / service.

If you need this interpreting please telephone

Polish
Jeżeli potrzebne jest Państwu to tłumaczenie, proszę zadzwonić pod numer.

Urdu
اگرآپ کواس ترجمانی کی ضرورت ہے تو مہربانی کرکے فون کریں۔

Arabic
اذا كنتم بحاجة الى تفسير او ترجمة هذا الرجاء الاتصال

Chinese
如果需要翻译，请拨打电话

Farsi
اگر به ترجمه این نیاز دارید ، لطفآ تلفن کنید

☎ 0161 206 0224

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Under the Human Tissue Act 2004, consent will not be required from living patients from whom tissue has been taken for diagnosis or testing to use any left over tissue for the following purposes: clinical audit, education or training relating to human health, performance assessment, public health monitoring and quality assurance.

If you object to your tissue being used for any of the above purposes, please inform a member of staff immediately.

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