Nerve Monitoring During Spinal Surgery

Introduction
This leaflet gives you information about the spinal cord monitoring your surgeon has asked us to perform during your (or your child’s) spinal surgery. During the operation we routinely monitor the tiny electrical signals that travel along the spinal cord. This monitoring helps reduce the risk of spinal cord damage during the operation, but cannot entirely eliminate the risk. The risks of surgery will be discussed with you in detail by your surgeon.

Please fill out the attached ‘Patient Screening Form’ and send it back to us as soon as possible. This will help us plan your monitoring before the day of surgery.

Before surgery
We normally perform one test before your surgery to make sure you have electrical responses we can monitor. The test is called a sensory evoked potential (SEP), and we record it in the neurophysiology department. You will be given an appointment to attend for this.

How is the SEP test done?
The test takes about half an hour. The person who performs your test uses sticky paste to attach small disc electrodes to your head and sometimes your back and knees or arms. Small amounts of the sticky paste will be left in your hair – this washes out with shampoo.

During the test a nerve in your foot or hand is stimulated. This causes an unusual tapping sensation and causes small twitches of your foot or hand. It can be slightly uncomfortable, but should not be painful and is well tolerated by most people. There are no after effects, and no special precautions are needed before or after the test. You will be asked to take off your shoes and socks/ tights/ stockings for this test. It is helpful if you wear loose fitting clothing as this will reduce the need for undressing.

The day of your operation
Please ensure your hair is clean and dry as we will be putting recording electrodes on to your scalp for the surgery. We will do this once you are asleep under anaesthetic.
During the surgery

The following gives an outline of commonly used tests. The exact tests used depend on several factors and differs from patient to patient. You will not be aware of these occurring as you will be asleep under anaesthetic.

SEPs (Sensory Evoked Potentials). This tests the nerve pathways from your legs and arms through the spinal cord to the brain. Nerves at your ankles and wrists are stimulated and recordings are made of the electrical signals that pass up your arms and legs, through your spine to your head. The SEP tests are performed at frequent intervals throughout the surgery. If there are any significant changes we inform the surgeon.

MEPs (Motor Evoked Potentials). This tests the pathways from the brain down the spine to selected muscles in your arms and legs. Small needles are placed just under the skin on your head to stimulate part of the brain using electrical pulses. These pulses travel down the spine and we record them at various muscles in your arms and legs using other small needles under the skin. These tests are performed at critical stages during your surgery.

Are there any additional risks with the monitoring during surgery?

There is a very small risk of causing a seizure when doing the MEP test. If you have had epileptic seizures in the past this risk may be slightly higher. We will need to evaluate the risks and benefits of different methods of monitoring on an individual basis. There are a number of other items or conditions that may require special consideration during your or your child’s surgical monitoring – please complete the attached ‘Patient Screening Form’ to let us know about these.

The MEP test causes muscles to contract. This includes muscles of the jaw, so the anaesthetist inserts a soft bite guard in your mouth to minimise the chance of jaw or mouth injury.

Some minor bruising can occur at the sites of the needle electrodes on the scalp or in the muscles.

After the operation

All the needle electrodes and surface electrodes will be removed. In the sites where we have used needles you may have a small bruise or spot of blood but this will settle and disappear over a few days or so.

Any questions?

If you have any questions or concerns about the nerve monitoring, please discuss these when we see you for the pre-operation test. Please do not hesitate to contact our staff on 01223 217136 if you need to. The department is open Monday-Friday 8.30-14.30. There is a voicemail service to leave a message if we are unavailable.
What to do now

Please fill out and sign the attached **Patient Screening Form** as soon as possible. Please send it back to us at the address at the top of this form.

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We are now a smoke-free site: smoking will not be allowed anywhere on the hospital site.

For advice and support in quitting, contact your GP or the free NHS stop smoking helpline on 0800 169 0 169.

**Other formats:**

If you would like this information in another language, large print or audio, please ask the department where you are being treated, to contact the patient information team: [patient.information@addenbrookes.nhs.uk](mailto:patient.information@addenbrookes.nhs.uk).

Please note: We do not currently hold many leaflets in other languages; written translation requests are funded and agreed by the department who has authored the leaflet.

**Document history**

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