

Spinal cord monitoring during surgery: information for families

During certain orthopaedic and neurosurgery spinal operations, we may be asked to monitor your child's spinal cord to reduce the risk of nerve damage during surgery. This information sheet from Great Ormond Street Hospital (GOSH) explains the procedure for spinal cord monitoring which your surgeon has asked us to perform during your child's surgery. An Easy Read information sheet is included for your child.

Spinal cord monitoring involves sending small electrical signals up and down the spinal cord throughout surgery to ensure it responds properly. The brain responds to these signals. The responses are called evoked potentials. They can be recorded through the scalp and muscles using special techniques.

The day of the operation

When your child is under anaesthetic, a clinical physiologist will place small needle electrodes in their arms, legs, and scalp. These are used for stimulating their nerves and recording the responses. Your child will be asleep throughout and will not feel this. The needles we use are sterile, for single use only and will be disposed of safely after the surgery.

Asking for your consent

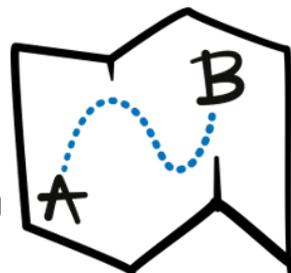
Your surgeon will ask permission for the surgery and spinal cord monitoring procedure before the operation. They will explain the risks and benefits and you will have the opportunity to ask any questions and discuss any worries you may have during this meeting. You should be aware that we cannot get rid of these risks entirely. They will then ask you to sign a consent form.

What does the test involve?

There are two main types of evoked potential that we monitor during orthopaedic and neurosurgery spinal surgery.

Somatosensory Evoked Potentials (SSEPs) test the nerve pathways from the arms and legs to the sensory part of the brain. These travel through the spine. We test these pathways throughout the surgery. If there are any significant changes, we inform the surgeon and the neurophysiology doctors.

Motor Evoked Potentials (MEPs) test the nerve pathways from the brain to major muscles in the arms or legs. We test these pathways by stimulating a part of the brain with electrical pulses through the scalp and record responses from certain muscles in the arms and legs. We test these signals at short intervals throughout the surgery. If there are any significant changes, we inform the surgeon and the neurophysiology doctors.



In the anaesthetic room, when your child is asleep, the physiologist will measure their head and mark points using a soft pencil. They will then clean your child's head using a sterile cleaning swab and place small needle electrodes just under the scalp. Additional needle electrodes will be applied to certain muscles in the arms and legs.

When all the electrodes are placed, we will collect SSEP and MEP responses before surgery starts. This gives us a baseline so we can compare the measurements we take during the operation. We will continue to collect these responses at short intervals during the operation.

After the operation

All the electrodes will be removed before your child wakes up from the surgery.

Are there any risks?

There may be some minor bruising where we have inserted the electrodes. These should disappear within a week. If there are any concerns, please speak to the clinical team looking after your child.

The muscle contractions during stimulation may cause a bite injury to the lip or tongue. A mouth guard will be placed in your child's mouth by the anaesthetist to reduce the risk of this happening.

If your child has an implanted device (such as a pacemaker or brain shunt) the electrical stimulation may interfere with its function. However, your clinical team will be aware of this and will make sure that the device is working properly after surgery. Your child's vital functions will be monitored throughout the surgery.

Please inform your surgeon or anaesthetist if your child has epilepsy or has had seizures in the past. The brain stimulation for MEP monitoring can trigger a seizure (even if your child does not have epilepsy). However, this is very rare, affecting less

than one per cent of children having spinal cord monitoring.

Getting the results

We work closely with the surgeon and neurophysiology doctors during the operation and alert them to any changes in the responses obtained. This allows the surgeon to make clinical decisions about the changes during surgery. Following the operation, a detailed report will be written and sent to your child's surgeon.

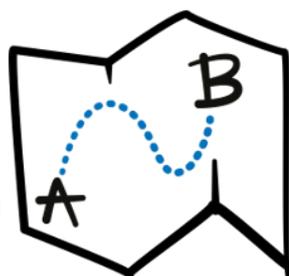
Further information and support

If you require more information about the test or have any questions, please contact the Department of Clinical Neurophysiology on 020 7813 8471, Monday to Friday between 9am and 5pm.

How to find us

Come in through the main entrance and walk through the main reception. At the glass doors, turn right and then first on the left (you are entering Southwood Building). Walk through the corridor until you find the stairs and the lifts. Go up to Level 4. Walk through the double doors and then down the corridor until you find another set of double doors. Clinical Neurophysiology (EEG) Reception is on your right.

For more information about travelling to GOSH, please visit our website on www.gosh.nhs.uk/your-hospital-visit/travelling-gosh



Your feedback

We take all feedback very seriously and want to hear about your experiences. Your feedback helps us to understand what we are doing well but importantly how we can improve. We will give you a feedback card during your stay on the ward but if you haven't received one, please ask a member of staff. You can also provide feedback using this QR code or via our website:



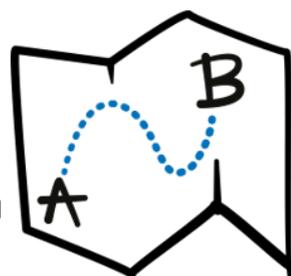
<https://www.gosh.nhs.uk/your-opinion-matters/>

Any concerns?

We know we do not always get things right. Please do raise any queries or issues with the ward/ clinic staff in the first instance. We want to help and often we are able to resolve things quickly.

Another way of raising a concern is to contact our **Patient Advice and Liaison Service 'Pals'** – they are based in the main reception area and open from Monday to Friday from 10am to 5pm. You can also call them on 020 7829 7862 or email pals@gosh.nhs.uk. The Pals team can offer independent advice and support, working with you to sort out a problem along with members of staff.

The **Complaints** team are also available if you want to make a complaint – you can call them on 020 7813 8402 or email complaints@gosh.nhs.uk



Having spinal cord monitoring during an operation



You are coming to hospital for an operation. During the operation, we also look at your brain, nerves, and muscles to help the surgeon with the surgery.



Your brain works using signals. When the brain reacts to something, the signals change. The SSEP test records these changes.



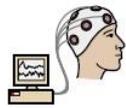
Your nerves and muscles work using signals from the brain. When the brain makes these signals, it will make the nerves and muscles react. The MEP test records these changes.



When you are asleep, we will clean small areas of your head, arms, and legs. You will not feel this.



Next, we will put some small sensors where we have cleaned on your head, arms, and legs. We use stickers to hold them in place. You will not feel this.



We will join the stickers to the computer with wires. You will not feel this.



When operation is finished, we will take off the stickers and sensors when you are asleep. You will not feel this.



You will go back to the ward where the doctors and nurses will look after you until you feel better.



Please ask us if you have any questions.

