

Evoked potentials (EPs): information for families

The brain works by a series of electrical signals. When something happens to the body such as seeing a light or hearing a noise, the brain responds to this. This response is called an 'evoked potential'. This information sheet from Great Ormond Street Hospital (GOSH) explains the procedure for Evoked Potential (EP) tests and what to expect when your child has one. An Easy Read information sheet is included for your child.

In most cases, we prefer the person bringing your child to their appointment to have 'Parental Responsibility' for them. Parental Responsibility refers to the individual who has legal rights, responsibilities, duties, power, and authority to make decisions for a child. This is because the person may need to give consent for your child to have the test. If you are unable to attend with your child but we still need you to give consent, we might need to contact you by phone during the test.

The electrical signals within the brain (also called brainwaves) can be recorded through the scalp. The brain's responses to those are often very small, but can be recorded using special techniques.

There are various types of evoked potentials, each with a different method of stimulation:

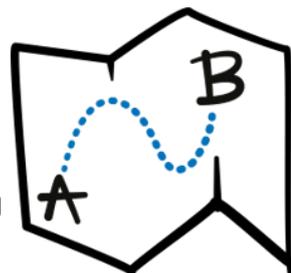
- **Flash visual evoked potential (FVEP)** tests look at the pathway from the eyes to the part of the brain where images are interpreted and turned into pictures. They use flashing lights to do this.
- **Brainstem auditory evoked potential (BAEP)** tests look at the pathway from the ear to the part of brain that interprets sound. They use clicking sounds to do this.
- **Somatosensory evoked potential (SSEP)** tests look at the pathway from the nerves in the arms and legs to the sensory part of the

brain. This is done by sending a small electrical pulse to the nerves.

Usually, we repeat each test several times so that plenty of responses are recorded. The computer then averages these out to show how the nerve pathways are working.

Why are EP tests used?

EP tests are a safe way of checking a variety of nerve pathways in the body without the need for sedation or an anaesthetic. All three tests are quick and pain-free but give good results before further testing or surgery. Children often have these tests at the same appointment as an electroencephalogram (EEG) or other neurophysiology tests.



Getting your appointment letter

If you are unable to keep this appointment, please inform the department as soon as possible beforehand. Sometimes, we can offer the appointment to another child on the waiting list.

As so many children and young people need to use our services, we have had to introduce a policy where if a child cancels or does not attend **two** appointments in a row, we will inform their referring consultant and close the referral.

Getting ready for the test

It is helpful if you make sure that your child's hair is clean before the test, with no mousse, gel, oil, or hairspray. If your child is taking medicines, you should continue to give them as normal. If your child wears glasses, make sure they bring them. Skin moisturisers can interfere with the test, so please do not use them on the day of the test.

If your child is having an SSEP test, we might have to access their wrists, collarbone, the base of their neck, ankles, the back of the knees and the lower back. To avoid having to take their clothes off at the appointment, it is helpful to wear loose-fitting clothing, preferably trousers and a top (no dresses or jumpsuits).

If you have other children, it is better if they could be looked after at home or by another adult if they come with you. We are unable to look after them during the test.

The day of the test

Your child will come to the Department of Clinical Neurophysiology, which is on Level 4, Southwood Building.

Once you are in the department, check in with reception and a clinical physiologist will come to meet you. They will confirm your and your child's details and take you to the recording room. They will explain in more detail how the test will take place and discuss any worries you may have.

Depending on the information needed by the doctor, your child may have all three types of EP tests or just one or two. This will be explained fully before the test starts.

Students and trainees

As we are a teaching hospital, we might ask you if you would agree for a trainee to perform the test under direct or indirect supervision. Sometimes other healthcare professionals or students might ask to observe the test as well. Saying no to this will not affect your child's treatment.

What does the test involve?

The physiologist will attach a few small silver discs (electrodes) to certain points on your child's scalp and face using a soft paste. Sometimes, they will measure your child's head and mark the points with a soft pencil before attaching the electrodes. Additional electrodes might be applied to the neck, shoulders, lower back and/or legs, if your child is having an SSEP test.

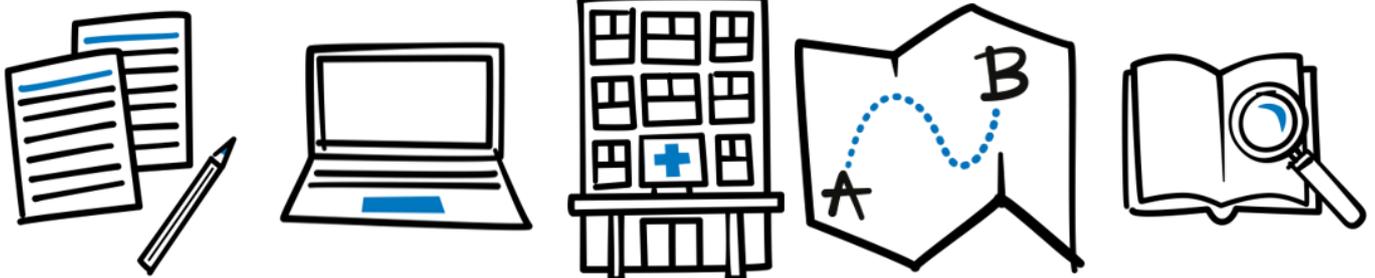
As each electrode is attached, the physiologist will clean the area of the scalp with a cotton bud and some cream. This does not hurt but some children do not like it. While all the electrodes are being applied, your child can sit on a chair, the bed, or your lap, and can play with toys – we have many toys in the department but feel free to bring your child's own favourite book, toy, or comforter.

- **Visual evoked potential (VEP) tests**

For this test, your child will need to look at a flashing light. As the light flashes, the brain responds to it. This is recorded as brainwaves.

- **Brainstem auditory evoked potential (BAEP) tests**

For this test, we will put headphones over your child's ears. If your child is not used to wearing headphones, you can prepare for the test with games as described on another information sheet available on our website at:



<https://www.gosh.nhs.uk/conditions-and-treatments/procedures-and-treatments/helping-your-child-get-used-headphones-hearing-assessment/>

We will play a clicking sound in your child's ears, one ear at a time. As this happens, the brain responds to the sound, and this response is recorded as brainwaves.

- **Somatosensory evoked potential (SSEP) tests**

In addition to the electrodes on the head, your child will have another electrode or two attached to their wrist and/or ankle. This will allow a small electric pulse to be applied to their skin. The pulse will make their fingers or toes tingle and wiggle but does not hurt. The brain's response to the pulse is recorded as brainwaves.

We repeat each test several times so that plenty of responses are recorded. This gives us a better idea of how the nerve pathways are working.

How long does the test last?

The length of all three tests depends on how much a child cooperates and how much information is needed. We usually allow up to two hours for all three tests. Individual tests will be much shorter.

Are there any risks?

No, the evoked potential tests are very safe. The procedure may be slightly uncomfortable but is usually painless. Only very rare minor skin irritation from the electrodes has been reported.

After the test

The physiologist will remove the electrodes from your child's head. This will not hurt as the paste stays soft and is easy to remove. They will also clean your child's hair, but it may feel a bit sticky to the touch until you wash it. Once all the electrodes have been removed, you will be free to

go if no other tests or appointments have been planned.

Getting the results

The team will look at the results and write a detailed report. We will send this to your child's consultant in time for their next appointment.

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.

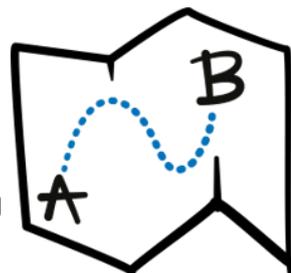
How to find us

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/>

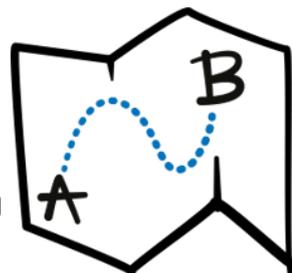
Any concerns?

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 an evoked potential test



You are coming to hospital for an evoked potentials test. This looks at how your brain works. This helps the doctors work out how to look after you.



Your brain works using signals. When the brain is made to react to something, the signals change. The evoked potential test records these changes.



First, we will clean small areas of your head with a cotton bud. This will not hurt.



Next, we will put some silver discs with stickers where we have cleaned on your head. We use sticky paste to hold them in place. This will not hurt.



We will join the stickers to the machine with wires. This will not hurt.



You will have to look at a flashing light.



You need to put on headphones for the next bit. Loud clicks are played through the headphones.



We will put another sticker on your hand or on your foot. This will make your hand or foot tingle.



When the test is finished, we will take off the stickers and wipe your head again.



If you are not having any other tests, you can go home.



Please ask us if you have any questions.

