

# Evoked Potentials (EPs)

## Neurophysiology Department



Patient information leaflet

This leaflet aims to provide information for patients attending Royal Surrey County Hospital for Evoked Potential testing (EPs). It describes what happens before, during and after the test(s), together with an explanation of any risks.

## What are Evoked Potentials (EPs)?

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EPs are a series of diagnostic tests which measure the electrical responses of the brain to repeated stimulation of the eyes, ears, arms or legs.

There are 4 different types of test:

1	<b>Visual Evoked Potential (VEP)</b>	tests the optic nerve (the pathway between the eye and the brain).
2	<b>Brainstem Auditory Evoked Potential (BAEP)</b>	tests the pathway of the auditory (hearing) nerve.
3	<b>Upper Limb Sensory Evoked Potentials (USEP)</b>	tests the nerve pathways in the arm and spinal cord.
4	<b>Lower Limb Sensory Evoked Potentials (LSEP)</b>	tests the nerve pathways in the leg and spinal cord.

## Why am I having this test?

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You have been referred for EPs to aid your doctor in reaching a diagnosis. You may need one or several tests depending on your symptoms and what information is required by your referring doctor. Please check your appointment letter to find out which EPs will be carried out.

## What should I do before the test?

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- Please ensure that your hair is clean and free from gel/lacquer etc.
- You may eat as normal prior to the test.
- Take any medication(s) as normal. Please bring a list of your medication(s) with you.
- For **VEP** – if you wear glasses, please bring them with you.
- For **BAEP** – if you use a hearing aid, please bring it with you.
- For **USEP/LSEP** – it would be helpful if you could keep the area(s) to be investigated warm and remove any jewellery if possible. Please wear a loose comfortable short sleeved top and loose fitting trousers or a skirt as the Clinical Physiologist will need access to your arms and/or legs.

## What does the test involve?

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A Clinical Physiologist will perform the test(s). He/she will explain the procedure to you and take any relevant medical history. Please feel free to ask any questions you have about the test(s) to be performed.

**For all EPs** – Small discs called electrodes are applied to your head by parting your hair and using a small dot of adhesive paste. Some of the tests also involve electrodes placed on the neck, shoulders, arms and legs. The paste will be easily removed after the test(s) although you may wish to wash your hair again later.

**VEP** – Prior to the test you will be required to read an eye chart to check your eyesight. Then you will be asked to focus intently on the centre of a television screen with a moving pattern of black and white squares on it, rather like a chessboard. The Clinical Physiologist will take recordings on the machine as you do this. Each eye will be tested separately – a patch is used to cover the eye not being tested.

**BAEP** – You will be asked to lie on a bed, wear a pair of headphones and listen to a repetitive clicking noise. Each ear is tested separately – a masking or “white” noise is used in the ear not being tested to prevent you from overhearing the clicking in that ear. Many people find this test very relaxing, some may even nod off to sleep, but this will not affect the results.

**USEP** – This test is performed on the wrist. A small electrical stimulator is used to deliver a mild electrical pulse to stimulate different nerves. The Clinical Physiologist will take recordings of the responses on the machine.

**LSEP** – This is similar to the USEP test as described above, but the test is performed on the ankle.

## Does it hurt?

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We would not expect any of these tests to hurt. However:

**USEP/LSEP** – Some people find the tapping and prickly sensation of the electrical pulse peculiar and sometimes uncomfortable but it is not usually painful.

## How long will it last?

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Test length can vary. In general each individual EP takes approximately 30 minutes, so if you are having all 4 EPs you should allow 2 hours for your appointment.

## Are there any side effects and risks?

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There are no serious side effects. There is a small risk of headache/migraine after VEP testing in people who are prone to this. Your ability to drive after the test is not affected.

## Are there any alternatives?

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EPs are diagnostic tests and there is no alternative. If you would prefer not to have the test(s) done you would need to discuss your options with your referring doctor.

## What happens next and how do I get my results?

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After the electrodes have been removed, you will be free to go home if you have no other tests or appointments planned.

You will **not** get the results of the test(s) on the same day. A report will be written by the Consultant Neurophysiologist and sent to the doctor who referred you for the test. They should have this within 2 weeks.

## Reference sources

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- Spehlmann R (1985)  
Evoked Potential Primer: Visual, Auditory and Somatosensory Evoked Potentials in Clinical Diagnosis.  
Butterworth Publishers.
- Walsh P, Kane N, Butler S (2005)  
The Clinical Role of Evoked Potentials  
J Neurol Neurosurg Psychiatry 76:ii16-ii22





## Contact details

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If you have any further questions, please contact the Neurophysiology department

**Telephone:** 01483 464128

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## PALS and Advocacy contact details

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Contact details of independent advocacy services can be provided by our Patient Advice and Liaison Service (PALS) who are located on the right hand side as you enter the main reception area. PALS are also your first point of contact for health related issues, questions or concerns surrounding RSCH patient services.

**Telephone:** 01483 402757

**Email:** [rsc-tr.pals@nhs.net](mailto:rsc-tr.pals@nhs.net)

**Opening hours:** 9.00am–3.00pm, Monday to Friday

If you would like information documents in large print, on tape or in another language or form please contact PALS.

Past review date: November 2017

Future review date: November 2020

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**PIN171127–1364**

